RIVER LAKES CONSERVATION AREA
LAND MANAGEMENT PLAN

BREVARD AND OSCEOLA COUNTY, FLORIDA

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

ACQUISITION AND RESTORATION COUNCIL
JUNE 2023

GOVERNING BOARD
MAY 2023

FLORIDA DEPARTMENT OF Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

June 12, 2023

Mr. Brent Bachelder
Division of Water and Land Resources
St. Johns River Water Management District
P.O. Box 1429
Palatka, Florida 32178-1429

RE: River Lakes Conservation Area – Lease No. 3803

Dear Mr. Bachelder,

On **June 9, 2023**, the Acquisition and Restoration Council (ARC) recommended approval of the **River Lakes Conservation Area** management plan. Therefore, Division of State Lands, Office of Environmental Services (OES), acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the **River Lakes Conservation Area** management plan. The next management plan update is due June 9, 2033.

Pursuant to s. 253.034(5)(a), F.S., each management plan is required to "describe both short-term and long-term management goals and include measurable objectives to achieve those goals. Short-term goals shall be achievable within a 2-year planning period, and long-term goals shall be achievable within a 10-year planning period." Upon completion of short-term goals, please submit a signed letter identifying categories, goals, and results with attached methodology to the Division of State Lands, Office of Environmental Services.

Pursuant to s. 259.032(8)(g), F.S., by July 1 of each year, each governmental agency and each private entity designated to manage lands shall report to the Secretary of Environmental Protection, via the Division of State Lands, on the progress of funding, staffing, and resource management of every project for which the agency or entity is responsible.

Pursuant to s. 259.032, F.S., and Chapter 18-2.021, F.A.C., management plans for areas less than 160 acres may be handled in accordance with the negative response process. This process requires small management plans and management plan amendments be submitted to the Division of State Lands for review, and the Acquisition and Restoration Council (ARC) for public notification. The Division of State Lands will approve these plans or plan amendments submitted for review through delegated authority unless three

or more ARC members request the division place the item on a future council meeting agenda for review. To create better efficiency, improve customer service, and assist members of the ARC, the Division of State Lands will notice negative response items on Thursdays except for weeks that have State or Federal holidays that fall on Thursday or Friday. The Division of State Lands will contact you on the appropriate Friday to inform you if the item is approved via delegated authority or if it will be placed on a future ARC agenda by request of the ARC members.

Pursuant to s. 259.036(2), F.S., management areas that exceed 1,000 acres in size, shall be scheduled for a land management review at least every 5 years.

Conditional approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

Deborah Burr Digitally signed by Deborah Burr Date: 2023.06.13 12:56:52 -04'00'

Deborah Burr
Office of Environmental Services
Division of State Lands


Northwest Florida
Water Management District
Suwannee River
Water Management
District
St. Johns
River Water
Management
District
Southwest
Florida Water
Management
District
South Florida
Water Management
District

LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: St. Johns River Water Management District (District)
COMMON NAME OF PROPERTY: River Lakes Conservation Area
LOCATION: Western Brevard and Eastern Osceola

ACREAGE TOTAL: 41,011 acres
ACREAGE BREAKDOWN:

Natural Community	Acres	Natural Community	Acres
Floodplain marsh	28,181	Floodplain swamp	751
Open water	5,078	Mesic hammock	537
Improved pasture	2,786	Hydric hammock	416
Wet prairie	1,934	Levees and roads	153
Mesic flatwoods	795	Dry prairie	41

LEASE/MANAGEMENT AGREEMENT NO.: 2,655 acres managed through Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees) lease #3803

USE:	**Management Responsibilities:**	
Single: Multiple: X	<u>Agency</u> District Board of Trustees Florida Fish and Wildlife Conservation Commission (FWC)	<u>Responsibilities</u> Co-owner and Lead Manager Co-owner Co-manager

DESIGNATED LAND USE: Conservation
SUBLEASES: The Board of Trustees parcel is incorporated into the Upper St. Johns Marsh Wildlife Management Area (WMA), hunting within the WMA is managed by FWC. A cattle grazing lease is active on District owned property.
ENCUMBRANCES: Two conservation easements, a power transmission line easement, two drainage easements and Trustees reservations.
TYPES OF ACQUISITION: Transfer Lands, Preservation 2000, Save Our Rivers, District Land Acquisition Funds, District Ad Valorem Funds, Donation, Exchange and Mitigation Donation.

UNIQUE FEATURES: Expansive wetland restoration areas, St. Johns River floodplain marsh, floodplain swamp, significant shoreline on three separate large and primarily undeveloped lakes. Approximately 28 miles of the St. Johns River channel.
CULTURAL AND HISTORICAL RESOURCES: Twenty-six documented cultural sites

MANAGEMENT NEEDS: Habitat restoration and enhancement, exotic and invasive species management, public access and recreation management.

ACQUISITION NEEDS/ACREAGE: An optimal boundary has been developed. Within the optimal boundary, approximately 15,660 acres have been identified as potential acquisition.

SURPLUS LANDS/ACREAGE: There are no surplus lands identified. No surplus actions have taken place on land owned by the Board of Trustees. In 2006 the District entered into a purchase agreement for a 573.67-acre conservation easement over the Greenbaum East parcel. The perpetual conservation easement over this parcel limits the development rights on Greenbaum East.

PUBLIC INVOLVEMENT: Management Advisory Group meeting and Public Hearing

DO NOT WRITE BELOW THIS LINE (FOR DIVISION OF STATE LANDS USE ONLY)

==========

ARC Approval Date: _____ BTIITF Approval Date: _____

Comments:

_____

_____

_____

_____

Land Management Plan Compliance Checklist

Section A: Acquisition Information Items			
Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
1	The common name of the property.	18-2.018 & 18-2.021	iv
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	iv
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	5
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	4, App. A
5	A map showing the approximate location and boundaries of the property, and the location of any structures or improvements to the property.	18-2.018 & 18-2.021	50
6	An **assessment** as to whether the property, or any portion, should be declared surplus. *Provide Information regarding **assessment and analysis** in the plan, and provide **corresponding map**.*	18-2.021	40
7	Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. *Please clearly indicate parcels on a map.*	18-2.021	52
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	6
9	A statement of the purpose for which the lands were acquired, the projected use or uses as defined in 253.034 and the statutory authority for such use or uses.	259.032	39
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	5
Section B: Use Items			
Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
11	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	40
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	39
13	A description of alternative or multiple uses of the property considered by the lessee and a statement detailing why such uses were not adopted.	18-2.018	40
14	A description of the management responsibilities of each entity involved in the property's management and how such responsibilities will be coordinated.	18-2.018	52
15	Include a provision that requires that the managing agency consult with the Division of Historical Resources, Department of State before taking actions that may adversely affect archeological or historical resources.	18-2.021	51
16	Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.	18-2.021	60
17	A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	259.032	40

18	A finding regarding whether each planned use complies with the 1981 State Lands Management Plan, particularly whether such uses represent "balanced public utilization," specific agency statutory authority and any other legislative or executive directives that constrain the use of such property.	18-2.021	40
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	App. L
20	An assessment of the impact of planned uses on the renewable and non-renewable resources of the property, including soil and water resources, and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to compensate/mitigate damage caused by such uses, including a description of how the manager plans to control and prevent soil erosion and soil or water contamination.	18-2.018 & 18-2.021	52
21	*For managed areas larger than 1,000 acres, an analysis of the multiple-use potential of the property which shall include the potential of the property to generate revenues to enhance the management of the property provided that no lease, easement, or license for such revenue-generating use shall be entered into if the granting of such lease, easement or license would adversely affect the tax exemption of the interest on any revenue bonds issued to fund the acquisition of the affected lands from gross income for federal income tax purposes, pursuant to Internal Revenue Service regulations.	18-2.021 & 253.036	40
22	If the lead managing agency determines that timber resource management is not in conflict with the primary management objectives of the managed area, a component or section, prepared by a qualified professional forester, that assesses the feasibility of managing timber resources pursuant to section 253.036, F.S.	18-021	51
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	40

*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.

Section C: Public Involvement Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
24	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	7, App. D
25	The management prospectus required pursuant to paragraph (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	259.032	App. D
26	LMPs and LMP updates for parcels over 160 acres shall be developed with input from an advisory group who must conduct at least one public hearing within the county in which the parcel or project is located. *Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.*	259.032	App. E

27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	App. E
28	During plan development, at least one public hearing shall be held in each affected county. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. *Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.*	253.034 & 259.032	App. D
29	The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. *Include manager's replies to the team's findings and recommendations.*	259.036	41
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	41
31	If manager is not in agreement with the management review team's findings and recommendations in finalizing the required 10-year update of its management plan, the managing agency should explain why they disagree with the findings or recommendations.	259.036	41

Section D: Natural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
32	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. *Use brief descriptions and include USDA maps when available.*	18-2.021	13, App. F
33	Insert FNAI based natural community maps when available.	ARC consensus	22
34	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding outstanding native landscapes containing relatively unaltered flora, fauna and geological conditions.	18-2.021	26
35	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding unique natural features and/or resources including but not limited to virgin timber stands, scenic vistas, natural rivers and streams, coral reefs, natural springs, caverns and large sinkholes.	18-2.018 & 18-2.021	39
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	38
37	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding mineral resources, such as oil, gas and phosphate, etc.	18-2.018 & 18-2.021	13
38	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding fish and wildlife, both game and non-game, and their habitat.	18-2.018 & 18-2.021	23
39	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding State and Federally listed endangered or threatened species and their habitat.	18-2.021	24

40	The identification or resources on the property that are listed in the Natural Areas Inventory. *Include letter from FNAI or consultant where appropriate.*	18-2.021	24
41	Specific description of how the managing agency plans to identify, locate, protect and preserve or otherwise use fragile, nonrenewable natural and cultural resources.	259.032	App. K
42	Habitat Restoration and Improvement	259.032 & 253.034	
42-A.	Describe management needs, problems and a desired outcome and the key management activities necessary to achieve the enhancement, protection and preservation of restored habitats and enhance the natural, historical and archeological resources and their values for which the lands were acquired.	↓	41
42-B.	Provide a detailed description of both short (2-year planning period) and long-term (10-year planning period) management goals, and a priority schedule based on the purposes for which the lands were acquired and include a timeline for completion.		58
42-C.	The associated measurable objectives to achieve the goals.		58
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. *Include fire management plans - they can be in plan body or an appendix.*		58, App. J
42-E.	A detailed expense and manpower budget in order to provide a management tool that facilitates development of performance measures, including recommendations for cost-effective methods of accomplishing those activities.		66
43	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. *See footnote.*	253.034	17
44	Sustainable Forest Management, including implementation of prescribed fire management		
44-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		51
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	18-2.021, 253.034 & 259.032 ↓	58
44-C.	Measurable objectives (see requirement for #42-C).		58
44-D.	Related activities (see requirement for #42-D).		58, App. I
44-E.	Budgets (see requirement for #42-E).		66
45	Imperiled species, habitat maintenance, enhancement, restoration or population restoration	259.032 & 253.034	
45-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	46
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		58
45-C.	Measurable objectives (see requirement for #42-C).		58
45-D.	Related activities (see requirement for #42-D).		58
45-E.	Budgets (see requirement for #42-E).		66

45-F	Assess the feasibility of managing the lands > 40 contiguous acres as a recipient site for gopher tortoises consistent with rules of the Fish and Wildlife Conservation Commission, as prepared by the agency or cooperatively with a Fish and Wildlife Conservation Commission wildlife biologist.	259.105	47
45-G	Economic feasibility of establishing a gopher tortoise recipient site, including the initial cost, recurring management costs and the revenue projections.	259.105	47
46	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. *See footnote.*	253.034	23
47	Place the Arthropod Control Plan in an appendix. If one does not exist, provide a statement as to what arrangement exists between the local mosquito control district and the management unit.	BOT requirement via lease language	53
48	Exotic and invasive species maintenance and control	259.032 & 253.034	
48-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	47
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		59
48-C.	Measurable objectives (see requirement for #42-C).		59
48-D.	Related activities (see requirement for #42-D).		59
48-E.	Budgets (see requirement for #42-E).		66

Section E: Water Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
49	A statement as to whether the property is within and/or adjacent to an aquatic preserve or a designated area of critical state concern or an area under study for such designation. *If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.*	18-2.018 & 18-2.021	2
50	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding water resources, including water classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Water under Rule 62-302.700, F.A.C.	18-2.021	26
51	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding swamps, marshes and other wetlands.	18-2.021	17
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. *See footnote.*	253.034	17
53	Hydrological Preservation and Restoration	259.032 & 253.034	
53-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	51
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		58
53-C.	Measurable objectives (see requirement for #42-C).		58

53-D.	Related activities (see requirement for #42-D).		58
53-E.	Budgets (see requirement for #42-E).		66

Section F: Historical, Archeological and Cultural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
54	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. *Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.*	18-2.018, 18-2.021 & per DHR's request	38
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034	38
56	A description of actions the agency plans to take to locate and identify unknown resources such as surveys of unknown archeological and historical resources.	18-2.021	51, App. K
57	Cultural and Historical Resources	259.032 & 253.034	
57-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	51
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		59
57-C.	Measurable objectives (see requirement for #42-C).		59
57-D.	Related activities (see requirement for #42-D).		59
57-E.	Budgets (see requirement for #42-E).		66

**While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.

Section G: Facilities (Infrastructure, Access, Recreation)

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
58	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. *See footnote.*	253.034	51
59	Capital Facilities and Infrastructure	259.032 & 253.034	
59-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	51
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		59
59-C.	Measurable objectives (see requirement for #42-C).		59
59-D.	Related activities (see requirement for #42-D).		59
59-E.	Budgets (see requirement for #42-E).		66
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034	48
61	Public Access and Recreational Opportunities	259.032 & 253.034	
61-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).	↓	48

61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		58
61-C.	Measurable objectives (see requirement for #42-C).		58
61-D.	Related activities (see requirement for #42-D).		58
61-E.	Budgets (see requirement for #42-E).		66

Section H: Other/ Managing Agency Tools

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
62	Place this LMP Compliance Checklist at the front of the plan.	ARC and managing agency consensus	vi
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034	iv
64	If this LMP is a 10-year update, note the accomplishments since the drafting of the last LMP set forth in an organized (categories or bullets) format.	ARC consensus	60
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032	55
66	Summary budget for the scheduled land management activities of the LMP including any potential fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitat, which fees shall be used to restore, manage, enhance, repopulate, or acquire imperiled species habitat for lands that have or are anticipated to have imperiled species or such habitat onsite. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3) which are resource management, administration, support, capital improvements, recreation visitor services, law enforcement activities.	253.034	66
67	Cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired, include recommendations for cost-effective methods in accomplishing those activities.	259.032	66
68	A statement of gross income generated, net income and expenses.	18-2.018	67

*** The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.

Page intentionally left blank

Table of Contents

Figures

Tables

Appendices

1. Introduction and General Information

River Lakes Conservation Area (River Lakes, Conservation Area or Property) (Figure 1) consists of approximately 41,011 acres (based on GIS coverage) and is located within the Upper St. Johns River Basin (Upper Basin) floodplain. The Conservation Area is managed by the St. Johns River Water Management District (District). The Property is dominated by floodplain marshes associated with the St. Johns River. This natural area provides significant water resource benefits and important habitat for a diverse assemblage of plants and animals. Recreational opportunities include camping, hiking, picnicking, paddling, boating, seasonal hunting, fishing, bicycling, horseback riding, and wildlife viewing.

Extensive floodplain acreage has been acquired by the St. Johns River Water Management District to implement the Upper St. Johns River Basin Project (Upper Basin Project), the goals of which are to restore and preserve important water resources, provide water storage to reduce and attenuate flooding, and provide related wildlife and environmental benefits. River Lakes is one of the properties the District acquired to meet the goals of the Upper Basin Project.

Approximately 28 miles of the St. Johns River channel flows through the conservation area. The District manages one parcel at River Lakes through a lease agreement with the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Board of Trustees), along the western shore of Lake Washington (Appendix A). Much of the property is in the Upper St. Johns River Marsh Wildlife Management Area (WMA, Appendix B). Recreation and public access at the WMA are cooperatively managed with the Florida Fish and Wildlife Conservation Commission (FWC). The Board of Trustees parcel is incorporated into the Conservation Area as well as the WMA.

A wide range of resource management actions are conducted on the Conservation Area each year including prescribed burning, habitat restoration and enhancement, non-native and/or invasive species management, recreation management, and cultural resources monitoring and protection. Additionally, portions of the Property are subject to both an active cattle grazing lease and conservation easements.

This document provides guidelines for land management activities to be implemented within River Lakes over the next ten years. This plan updates the management plan approved by the District's Governing Board in September 2011.

1.1 Location

The Conservation Area is located in Sections 1, 12, Township 25 South, Range 34 East, Sections 1, 12, 13, 24, Township 26 South, Range 34 East, Sections 34, 35, Township 24 South, Range 35 East, Sections 2-5, 8-17, 21-29, 31-36, Township 25 South and Range 35 East; Sections 2-11, 13-30, 32-36, Township 26 South, and Range 35 East; Sections 1-5, 12, 13, 24, 25, Township 27 South, Range 35 East, Sections 7, 18, 19, 30, 31, Township 25 South, and Range 36 East, Sections 29-33, Township 26 South, Range 36 East, and Section 31, Township 27 South, Range 36 East.

River Lakes lies almost completely within Brevard County. On the western boundary, approximately 1,184 acres of the Conservation Area fall within Osceola County (Figure 2). The Property is located just west of Rockledge, Viera and Melbourne, and east of County Road 419, between SR 520 to the north and U.S. 192 to the south. Access to the Property is possible from Wickham Rd to the east or via boat from the St. Johns River.

The Conservation Area is not located within an Aquatic Preserve or an Area of Critical State Concern (Section 380.05, F.S.).

1.2 Acquisition

The 41,011-acre conservation area is comprised of one land transfer, seven purchases, two donations, four mitigation donations, and one parcel the District manages through a lease agreement. (Figure 3 and Table 1). The LA numbers listed below refer to the District's recordkeeping identifiers for each individual parcel.

In 1977, 37,377 acres were transferred to the District from the Central and Southern Flood Control District (CSFCD), of which approximately 15,472.3 acres are included in the River Lakes Conservation Area (LA 1977-003-P2 and LA 1977-003-P2).

The Greenbaum properties (LA 1982-003-PA, PB, PC) were acquired in three separate purchases. The first, Parcel A, consisting of 1,243.98 acres, was acquired with Save Our Rivers (SOR) funds in 1983 for a total of $279,312.75. Another 1,226.23 acres, Parcel B, was added in 1984 for $307,052.50 (SOR funds). In 1985, 1,316.24 acres, Parcel C, was purchased for $363,352.00 (SOR-BOND85 funds). A 573.67-acre portion of parcel C that was separated from the main body of River Lakes by Interstate 95, was later surplused (LA 2006-025-P1) and a conservation easement was retained on the parcel. The portion of parcel C that remained in the Property is 742.57 acres.

Approximately 4,916.43 acres of Paradise Fruit Company and Katrnak properties (LA 1981-006-P1) were purchased with Preservation 2000 funds in June 1998 for $870,000.00.

The 14,113.09-acre Duda Cocoa addition (LA 1998-044-P1), also called Mocassin Island (MI), was purchased in July of 1999 for $24,753,439 in partnership with the United States Department of Agriculture Natural Resources Conservation Service (NRCS) Wetland Reserve Program (WRP). The NRCS has a 30-year conservation easement over 10,349.57 acres of the Duda Cocoa addition, The Thirty-Year Easement Deed is attached as Appendix C.

The 258.21-acre Driggers property (LA 1984-004-P1) was purchased in August 2000 for $156,450 using Preservation 2000 funds. The property is located west of the St. Johns River at its intersection with U.S. 192 in Brevard County.

The 60.00-acre Providence Land and DiChristopher property (LA 2014-006-P1) was privately donated to the District in November 2014. The property is located on the northeast side of Lake Poinsett. This parcel is encumbered by Brevard County through a perpetual conservation easement that was in place at time of acquisition.

The 259.00-acre River Lakes Robb M property (LA 2021-014-P1) was purchased in December 2021 for $310,788 using District Land Acquisition Funds. The property is adjacent to US Highway 192.

The 33.38-acre River Lakes Saffan property (LA 2021-015-P1) was purchased in December 2021 for $83,706 using District Land Acquisition Funds. The property is located adjacent to US Highway 192.

The 1.25-acre Gabriela Davis property (LA 2021-018-P1) was purchased in November 2021 for $1,875 using Ad Valorem funds. The property is located north of Lake Poinsett.

The 59.24-acre Crane Creek M1 property (LA 2021-020-P1) was donated by Brevard County to the District in January 2022. The property is located south of Lake Washington and approximately 0.5 mile east of the remainder of River Lakes. This parcel was acquired as a site for stormwater treatment associated with the District's Crane Creek/M-1 Canal Flow Restoration Project.

The 1,198-acre Krause property (LA 2021-022-P1) was acquired through exchange in November 2021. Parcels LA 1996-075-P1 and 1996-034-PB were provided by the District in exchange for the property located south of Lake Washington and is bisected by the St. Johns River.

Four additional parcels consisting of wetlands were donated to the District.
1. H.C. Fritz Estate (LA 1983-004-P1) – 2.5 acres
2. Kurt Wallach (LA 1992-040-P1) – 55.77 acres
3. Nurik Ltd. (LA 1996-031-P1) – 15.12 acres
4. Walter Lewis Donation (LA 1998-076-PB) – 2.5 acres

A 2,655-acre parcel that is owned by the State of Florida, located on the west side of Lake Washington, is managed as part of the River Lakes Conservation Area for the Board of Trustees through a lease agreement (Lease Number 3803). The parcel is included in FWC's WMA.

Table 1: Acquisition Summary

Name	LA Number	Acres	Date Acquired	Funding Source	Purchase Price
Transfer from CSFFCD	1977-003-P2	14,288	1/1/1977	Transfer	N/A
Transfer from CSFFCS	1977-006-P5	1,184.3	1/1/1977	Transfer	N/A
Paradise Fruit Co.	1981-006-P1	4,916.43	6/25/1998	P-2000	870,000.00
Greenbaum Parcel A	1982-003-PA	1,243.98	12/22/1983	SOR	279,312.75
Greenbaum Parcel B	1982-003-PB	1,226.23	12/26/1984	SOR	307,052.50
Greenbaum Parcel C	1982-003-PC	742.57	12/13/1985	SOR Bond 85	363,352.00
H.C.Fritz Estate	1983-004-P1	2.51	5/11/1983	Mitigation/Donation	N/A
Driggers	1984-004-P1	258.04	7/27/2000	P-2000	156,450.00
Kurt/Marilyn Wallach	1992-040-P1	55.77	12/31/1992	Mitigation/Donation	N/A
Nurik Ltd.	1996-031-P1	15.12	12/31/1996	Mitigation/Donation	N/A
Duda Cocoa	1998-044-P1	14,113.09	7/28/1999	P-2000	24,753,438.96
Walter Lewis	1998-076-P1	2.50	12/21/2000	Mitigation/Donation	N/A
Surplus to Wadsworth	2006-025-P1	573.67	3/24/2006	-Sale-	Sold For 158,272.05
Providence Land and DiChristopher	2014-006-P1	68.00	11/07/2014	Private Donation	N/A
River Lakes Robb M	2021-014-P1	259	12/16/2021	District Land Acquisition Funds	$310,788.00
River Lakes Saffan	2021-015-P1	33.38	12/20/2021	District Land Acquisition Funds	$83,706.00
Gabriela Davis	2021-018- P1	1.25	11/1/2021	Ad Valorem	$1,875
Crane Creek M1	2021-020-P1	59.24	1/14/2022	Donation	N/A
Krause	2021-022-P1	1,198	11/24/2021	Exchange	N/A
Board of Trustees Parcel	Leased	2,655		N/A	N/A

1.3 Title Interest and Encumbrances

One parcel totaling approximately 2,655 acres at River Lakes is titled to the Board of Trustees and managed through a lease agreement (Lease Number 3803). The remainder of River Lakes is titled full-fee to the District. Encumbrances include two conservation easements, a power transmission line easement and two separate drainage easements (Figure 4). Terrestrial access to the Property is provided by the adjacent landowner through an access easement. The Moccasin Island Conservation Easement, granted to the United States Department of Agriculture – Natural Resources Conservation Service (NRCS), will expire in July of 2029. A cattle grazing lease is active across 7,695 acres of the Duda Cocoa parcel. A majority of the Property, including the Board of Trustees parcel, is incorporated into FWC's WMA where it manages hunting.

1.4 Proximity to Other Public Lands

River Lakes is part of a complex of publicly owned conservation lands that run the length of the Upper St. Johns River Basin. Between Fort Drum Marsh Conservation Area in the south to Seminole Ranch Conservation Area in the north lies about 100 miles and 300,000 acres of protected river floodplain.

According to Florida Natural Areas Inventory (FNAI) data, there are more than 155 publicly owned lands totaling more than 714,000 acres and ten Florida Forever Projects located within 25 miles of River Lakes (Figure 5). In addition to federal and state government managed conservation lands (Table 2), local governments manage 78 conservation areas proximal to River Lakes. The Brevard County Environmentally Endangered Lands Program manages 17,934 acres of conservation land. In addition, numerous privately-owned lands within this region are also subject to conservation easements owned by governmental entities. The largest conservation lands proximal to River Lakes include Merritt Island National Wildlife Refuge, Three Lakes Wildlife Management Area, Canaveral National Seashore, Three Forks Conservation Area and Blue Cypress Conservation Area.

Table 2 – Public Conservation Lands over 200 acres within a 25-mile radius

Federal Government	**Managing Agency**
Archie Carr National Wildlife Refuge	USFWS
Canaveral National Seashore	NPS
Cape Canaveral Air Station	USAF
Malabar Transmitter Annex	USAF
Merritt Island National Wildlife Refuge	USFWS
Mills Creek Woodlands	USFS
Patrick Air Force Base	USAF
Pelican Island National Wildlife Refuge	USFWS
St. Johns National Wildlife Refuge	USFWS

State of Florida	**Managing Agency**
Charles H. Bronson State Forest	FFS
Grissom Parkway	FWC
Herky Huffman/Bull Creek Wildlife Management Area	FWC
Indian River County Public Shooting Range	FWC

Indian River Lagoon Preserve State Park	DEP - DRP
Little Big Econ State Forest	FFS
Micco Expansion	FWC
Salt Lake Wildlife Management Area	FWC
Sebastian Inlet State Park	DEP - DRP
Split Oak Forest Wildlife and Environmental Area	FWC
St. Sebastian River Preserve State Park	DEP - DRP
T. M. Goodwin Waterfowl Management Area	FWC
Three Lakes Wildlife Management Area	FWC
Tosohatchee Wildlife Management Area	FWC
Triple N Ranch Wildlife Management Area	FWC

Water Management District	**Managing Agency**
Blue Cypress Conservation Area	SJRWMD
Buck Lake Conservation Area	SJRWMD
Canaveral Marshes Conservation Area	SJRWMD
Fellsmere Water Management Area	SJRWMD
Hal Scott Regional Preserve and Park	SJRWMD
River Lakes Conservation Area	SJRWMD
Econlockhatchee Sandhills Conservation Area	SJRWMD
Seminole Ranch Conservation Area	SJRWMD

Acronym Key	Agency Name
DEP	Florida Department of Environmental Protection
DRP	Division of Recreation and Parks
FFS	Florida Department of Agriculture and Consumer Services, Florida Forest Service
NPS	United States Department of Interior, National Park Service
USDA-NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
SJRWMD	St. Johns River Water Management District
USAF	United States Department of Defense, Air Force
USFS	United States Department of Agriculture, Forest Service
USFWS	United States Department of Interior, Fish and Wildlife Service

1.5 Adjacent Land Uses

The entire conservation area is surrounded by agricultural, wetland and roadways. A very small portion of the property boundary borders residential development on the north side of Lake Poinsett. Interstate 95 borders more than two miles of River Lakes northeast border. Currently there are no land uses that conflict with the planned use of the Property. Future expansion of residential developments from both the east and west could eventually introduce challenges to managing smoke from prescribed burns on the Property. In March 2020 the Central Florida Expressway Authority began a Concept, Feasibility, and Mobility Study of the Osceola/Brevard

County Connectors transportation corridors. River Lakes intersects the entire north to south length of this Study Area (https://www.cfxway.com/agency-information/plans-studies/project-studies/osceola-brevard-county-connectors/).

1.6 Public Involvement

A noticed virtual public hearing was held on February 8, 2023 (Appendix D). The objective of the public hearing was to receive public input regarding the draft management plan.

This plan was prepared with input from the River Lakes Conservation Area Management Advisory Group. This group held a meeting on February 8, 2023. A summary of this meeting is in Appendix E.

The Acquisition and Restoration Council (ARC) public hearing and meeting provide an additional forum for public input and review.

The District's Governing Board will also be approving this management plan. This will be the third forum for the public to provide input to the plan.

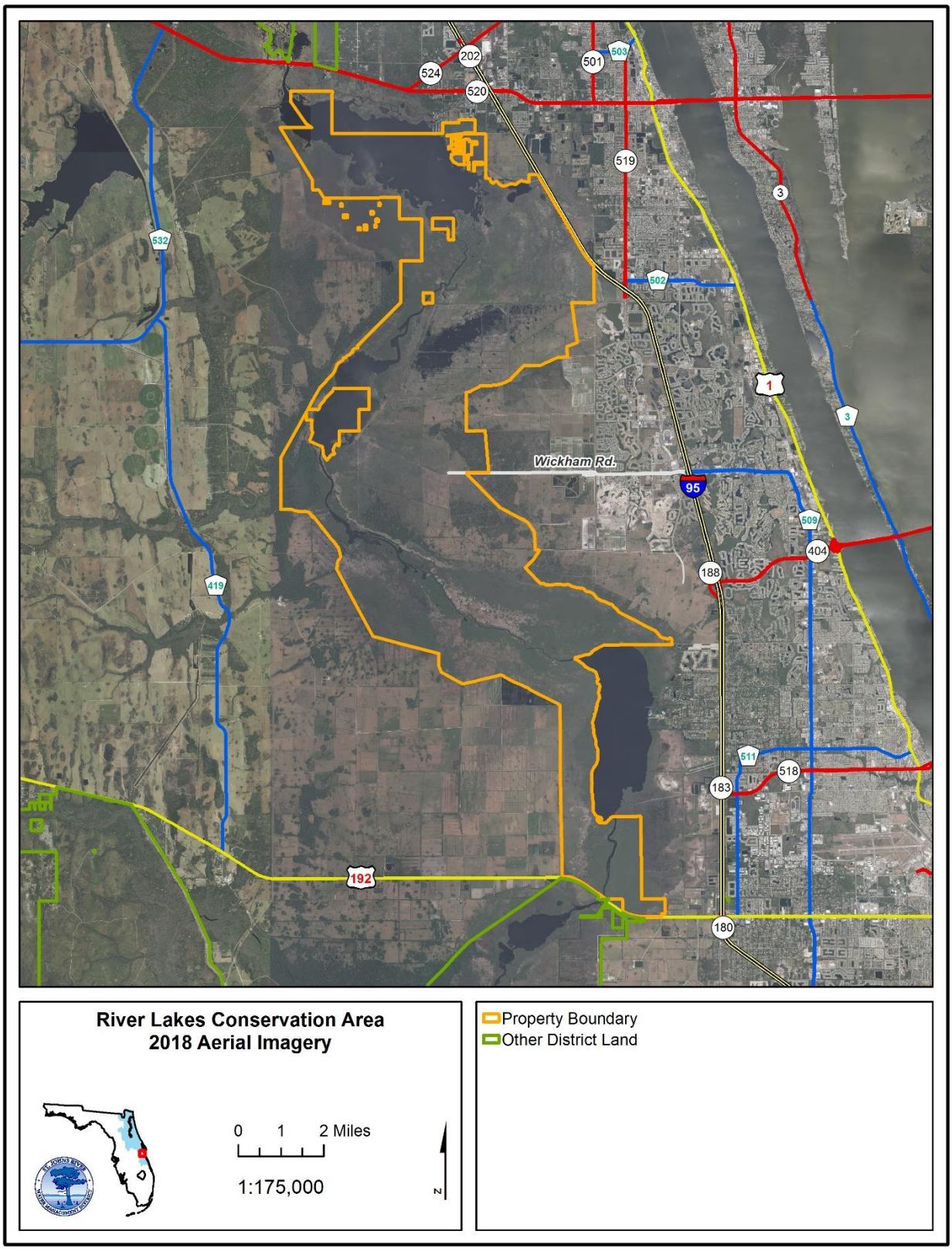


Figure 1: Aerial Map – 2018 Imagery

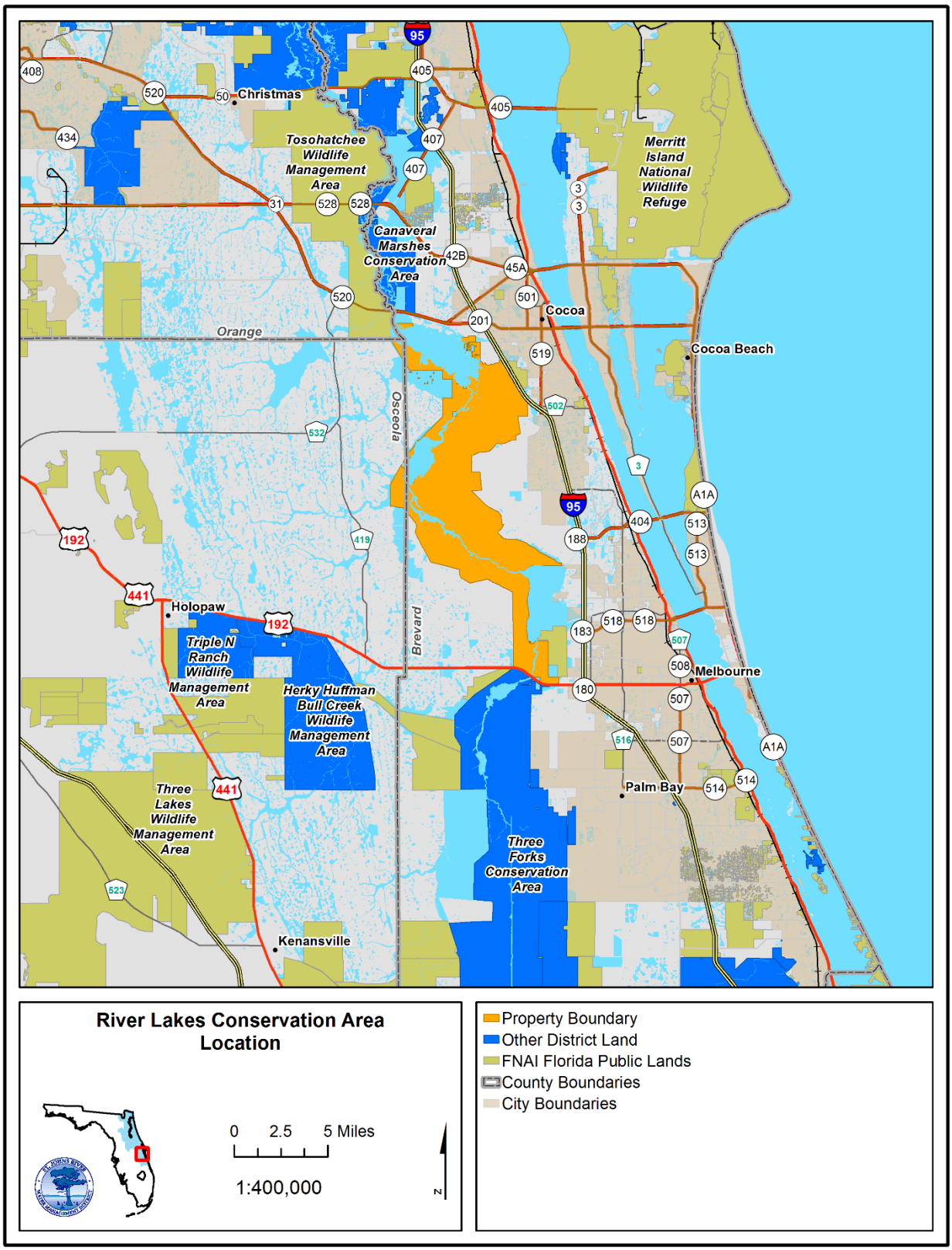


Figure 2: Location Map

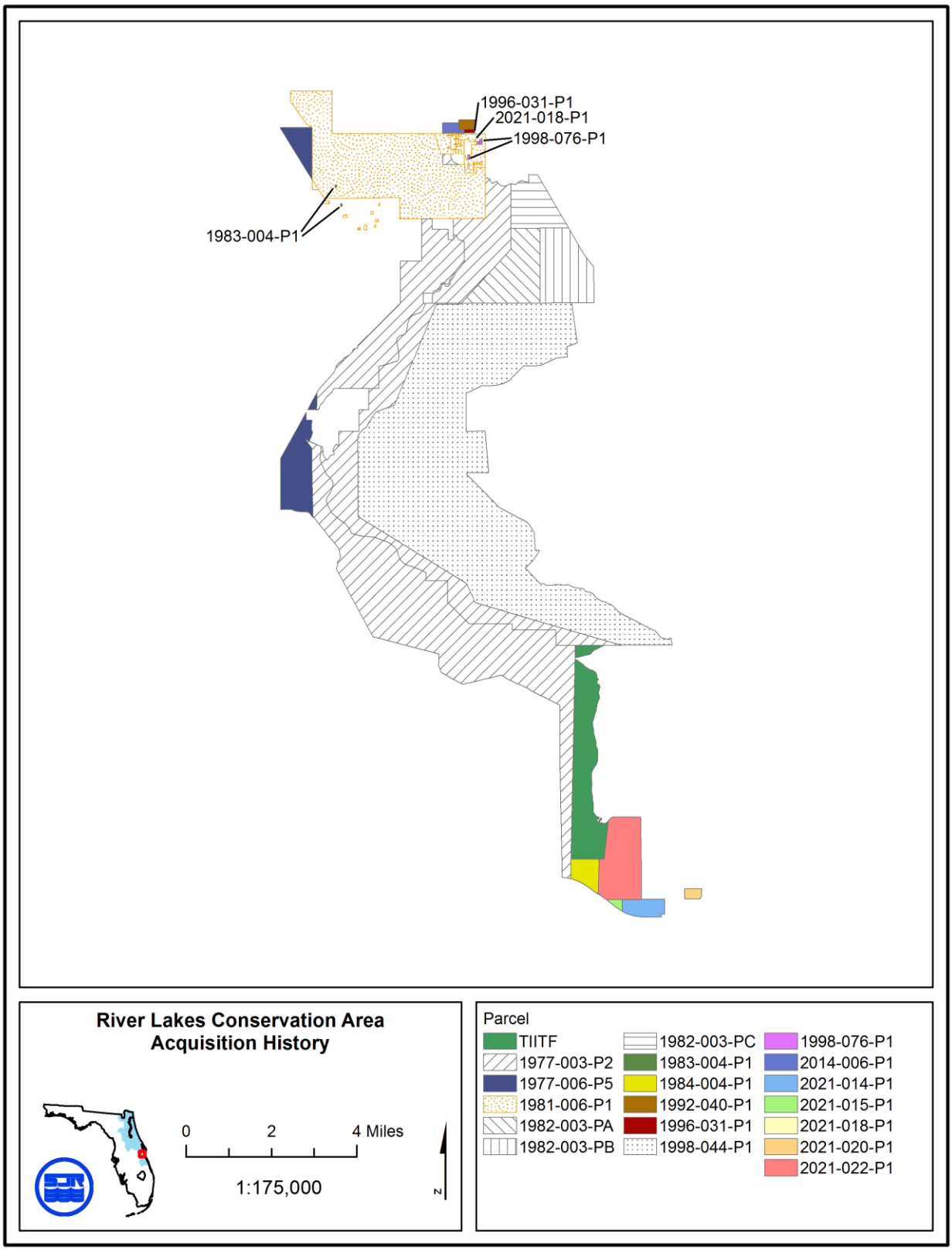


Figure 3: Acquisition Map

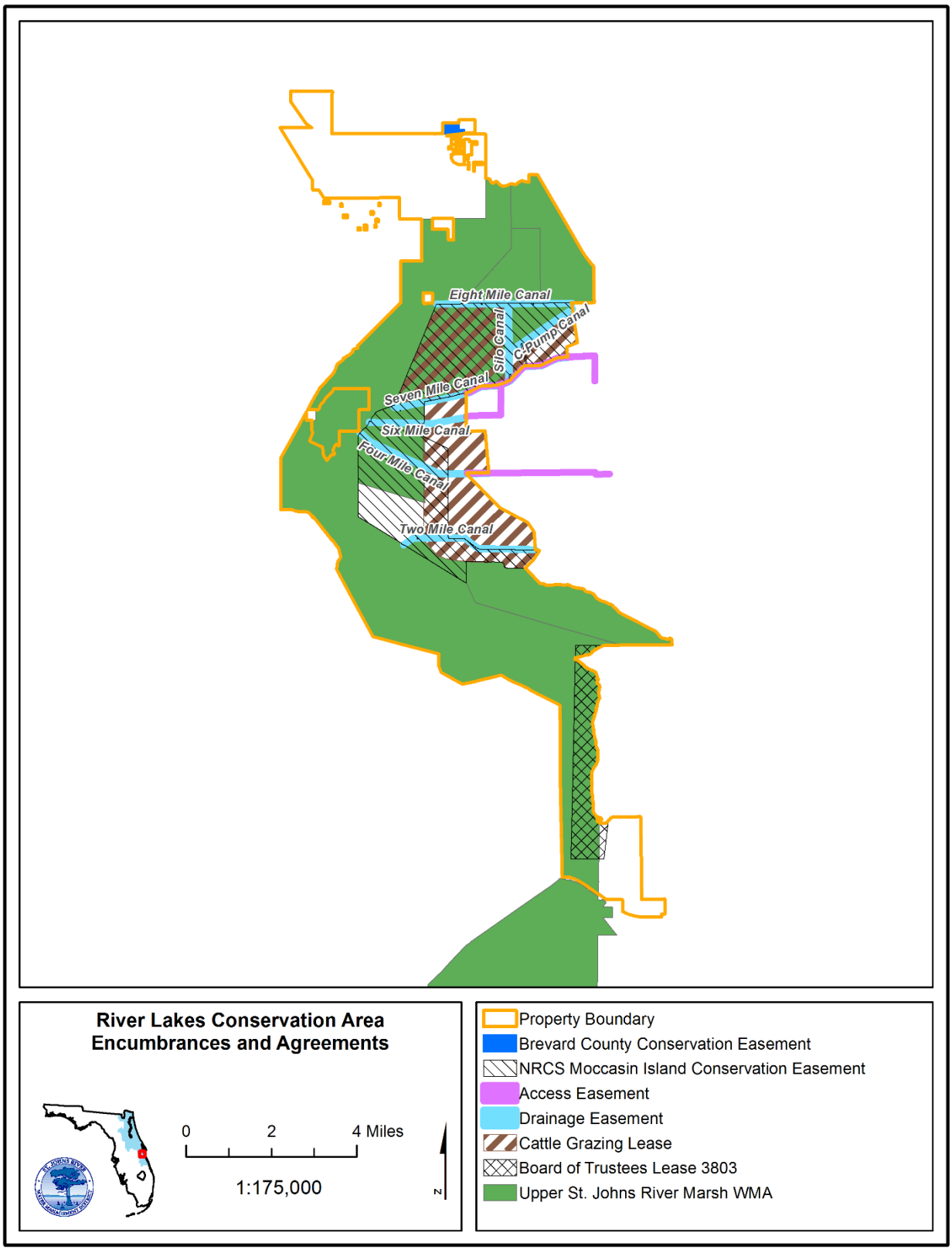


Figure 4: Encumbrances Map

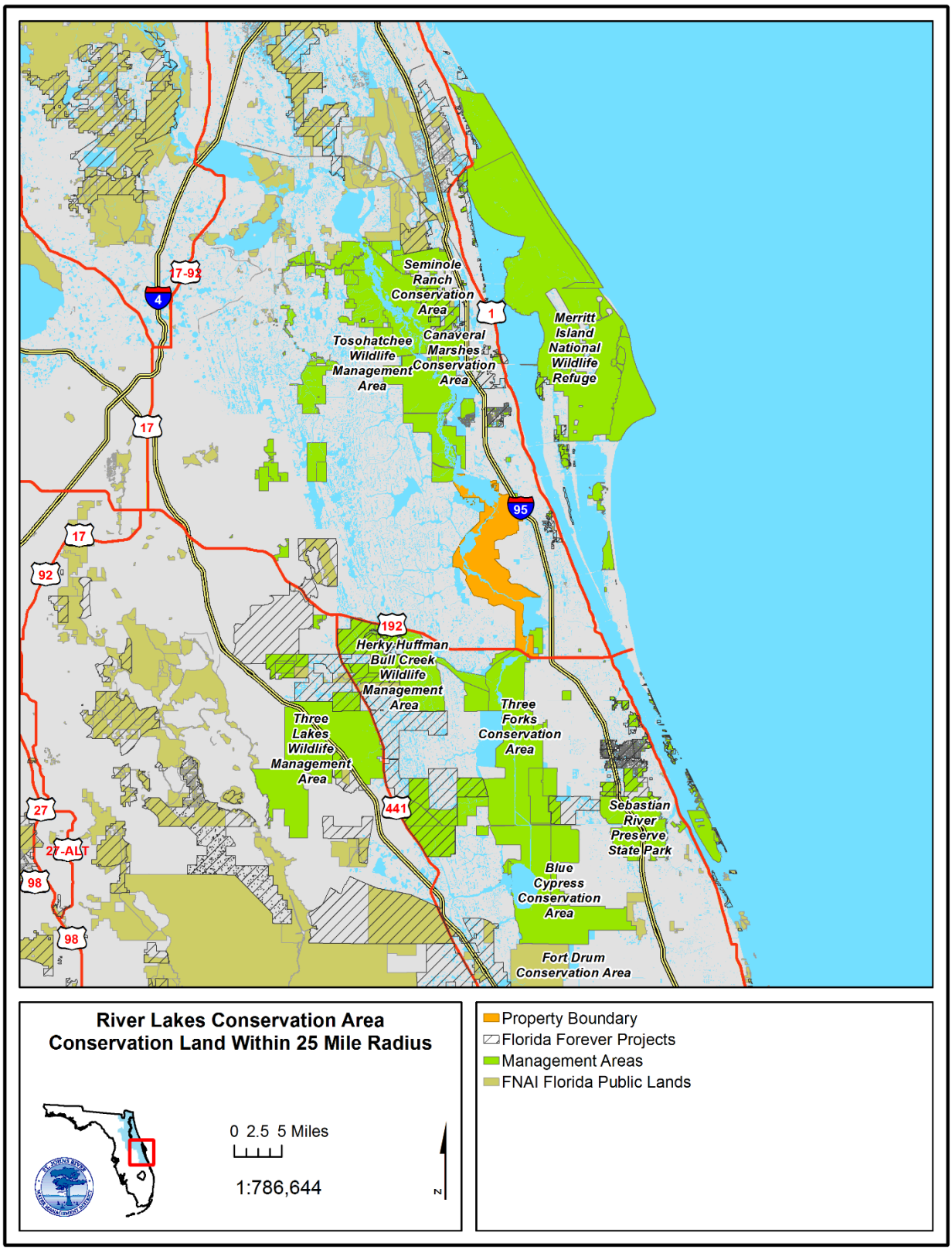


Figure 5: Proximity to Public Land Map

2. Natural and Cultural Resources

2.1 Physiography

a. Physiography/Mineral Resources
River Lakes is located within the Upper St. Johns River Valley Province of the Barrier Island Sequence District (Williams 2022). The Upper St. Johns River Valley Province follows a low elevation drainage system that was an ancient embayment or lagoon between the Atlantic Coastal Complex Province to the east and the strand plain of the eastern Osceola Plain Province to the west. The main stem of the northward flowing drainage system, the Upper St. Johns River, consists of a large wetland complex through which the river meanders. The southern part of the province includes the headwaters of the St. Johns River in extensive wetlands and lakes, whereas the northern part of the province includes a distinct channel and several large lakes.

There are no known outstanding mineral resources on this property.

b. Topography
River Lakes is located in the Eastern Valley created by the Osceola Plain to the west with elevations ranging from approximately 50 to 70 feet NAVD88 and the Atlantic Coastal Ridge to the east with elevations of just a few feet above sea level. The District oversaw collection and processing of a light detection and ranging (LiDAR) based Digital Elevation Model (DEM) in 2018 that covers a majority of River Lakes (Figure 6). Based on this DEM, elevations on the Property are generally between 5 to 20 feet NAVD88, with higher elevations in the eastern portion of the Moccasin Island Marsh Restoration Area and the lowest elevations in Lakes Winder and Poinsett. Most of the floodplain is between the 10-12 ft. NAVD88.

c. Soils
The NRCS soil survey data were used to identify the River Lakes soil series and soil depth to water table (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx). The map units described in the soil survey of the Property are distributed as shown in Figure 7. The NRCS defines a soil map unit as, “a collection of soil areas or non-soil areas (miscellaneous areas) delineated in a soil survey.” Soil map units may contain multiple soil components, which are given names that are unique identifiers.

Soils found within River Lakes are generally level, poorly drained organic soils. The two most common soil type found at the Property are Tomoka muck and Micco mucky peat, both of which make up approximately 19% of the area. Both Everglades mucky peat and Riviera sand make up 10% of the Conservation Area. Other prominent soils include Floridana sand and Terra Ceia muck. Analyses of depth to water table for map units occurring within River Lakes indicate that >99% of the property has a water table within 18 inches of the soil surface (Figure 8). A comprehensive list of soil map unit descriptions can be found in Appendix F.

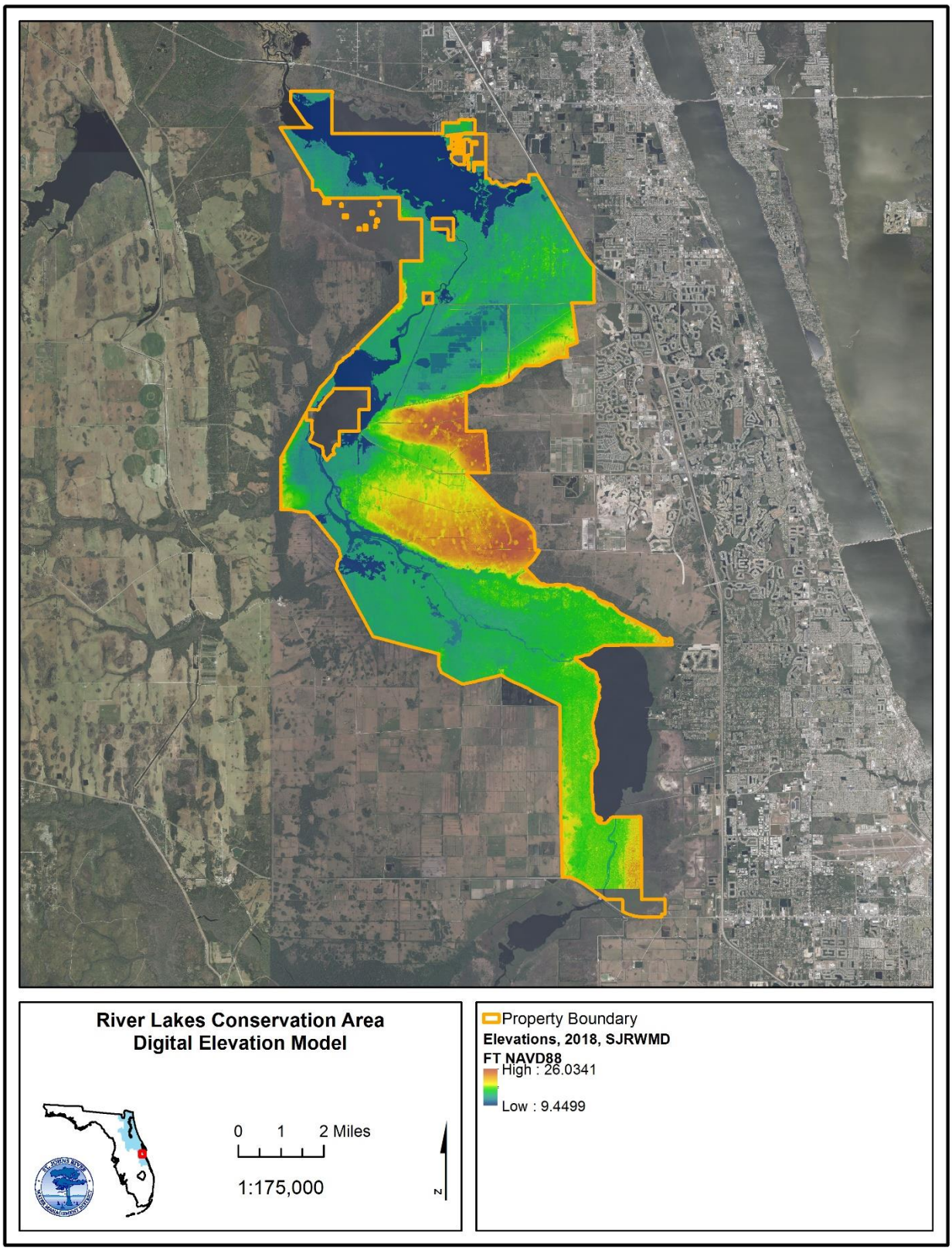


Figure 6: Topography Map

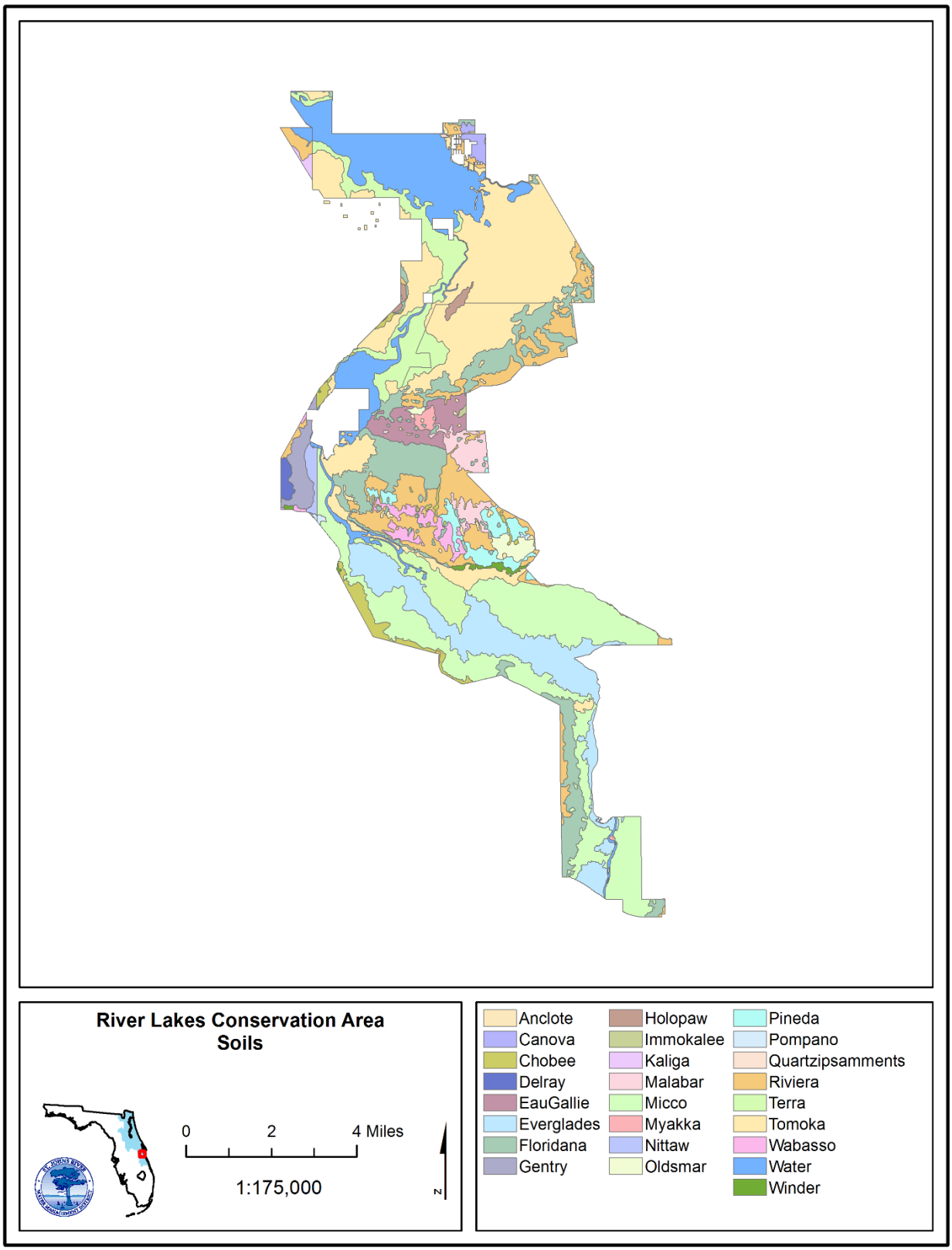


Figure 7: Soils Map

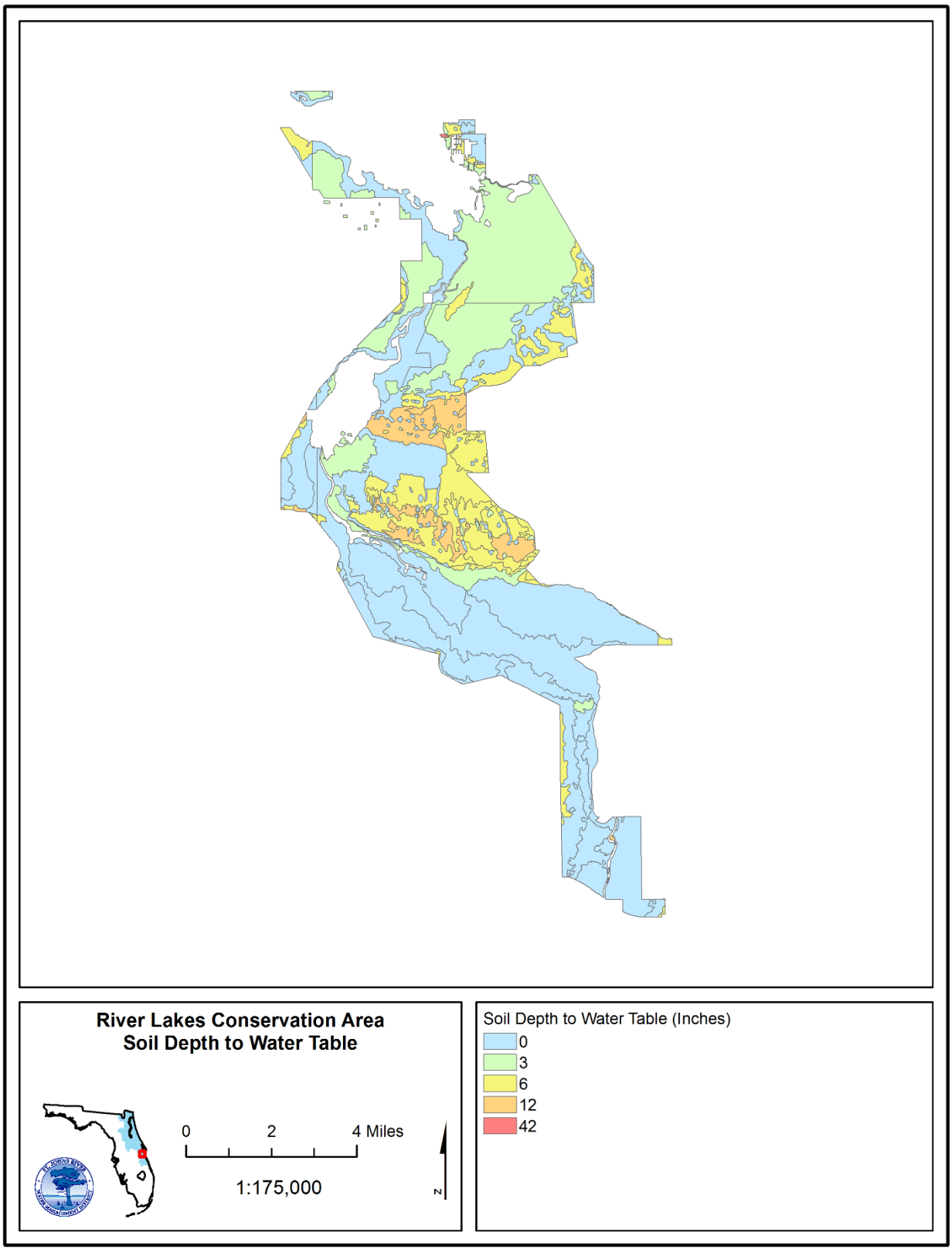


Figure 8: Soil Depth to Water Table Map

2.2 Natural Communities

River Lakes is host to a variety of natural and altered land cover. The plant communities of River Lakes have been mapped under contract by the District three times in the past; in 2001, 2010 and 2017. Plant community designations used by the District have been reclassified to reflect FNAI natural community definitions (Figure 9 and Table 3). The majority of the property is comprised of wetland communities in the form of floodplain marsh, floodplain swamp, and hydric hammock. These wetlands are associated with the St. Johns River floodplain and tributaries. Uplands in the form of mesic flatwoods, mesic hammock and dry prairie account for a mere 3% of the total area. Improved pasture occurs across approximately 7% of the Property. Open water makes up 12% and roads, levees, canals, and ditches make up the remaining approximately 1% of River Lakes.

Decades of altered hydrology and fire regimes, non-native species introductions, vegetation management and impacts to water quality at River Lakes have shaped the wetland communities on site. The expansion and persistence of Carolina willow (Salix caroliniana) in the marshes of River Lakes have led to the District investing significant resources to understanding the impacts and management dynamics for this habitat. In 2017, approximately half of the floodplain marsh at River Lakes was shrub encroached. A majority of this shrub encroachment was attributable to willow dominated habitat. District land managers will continue to improve understanding and management of shrub encroachment within the floodplain wetland habitats of River Lakes.

Fire plays an important role in maintaining species diversity in many of the natural communities of River Lakes. Cabbage palm (*Sabal palmetto*) can withstand most fire and many areas in the mesic flatwoods and mesic hammocks have experienced dense infestations of cabbage palms, often to the exclusion of other species in the understory and ground cover layers. It is suspected that hydrologic changes such as extended dry periods, as well as the resistance of cabbage palm to fire, have favored the species in these areas.

Table 3 – Natural and Altered Communities Found at River Lakes

Community Type	GIS Acres	Percentage
Floodplain Marsh	18,035	44
Floodplain Marsh - Shrub Encroached	10,146	25
Open Water	5,078	12
Improved Pasture	2,786	7
Wet Prairie	1,934	5
Mesic Flatwoods	795	2
Floodplain Swamp	751	2
Mesic Hammock	537	1
Prairie Hydric Hammock	347	1
Levees and Roads	153	<1
Hydric Hammock	69	<1
Dry Prairie	41	<1

Following are descriptions and general management objectives for the natural and altered community types (FNAI, 2010) found at River Lakes.

a. Floodplain Marsh

There are approximately 28,181 acres of floodplain marsh – both herbaceous/graminoid dominant and shrub encroached – within River Lakes. Included in this community type are areas of previous agricultural and pasture lands within the Moccasin Island tract that are being restored to floodplain marsh. Due to restoration, management activities, hydrologic conditions and wildfires – vegetative composition of floodplain marsh is dynamic on the Conservation Area.

Typical floodplain marsh plants include sand cordgrass (*Spartina bakeri*), sawgrass (C*ladium jamaicense*), cattail (*Typha* sp), pickerelweed (*Pontederia cordata*), maidencane (*Panicum hemitomon*), dotted smartweed (*Polygonum punctatum*), pigweed (*Amaranthus australis*), and broadleaf arrowhead, (*Sagittaria latifolia*). Between 2010 and 2017, sawgrass coverage was reduced by about 3,243 acres due to wildfire followed by rapid flooding. Since 2017, sawgrass has once again expanded within its historic footprint. The District anticipates a recovery of much of this acreage during the next cycle of plant community mapping. Another noteworthy transition is an approximately 700-acre reduction of willow dominated habitat between 2010 and 2017, resulting from habitat management projects.

Carolina willow (*Salix caroliniana*), wax myrtle (*Myrica cerifera*), and other shrubs have become pervasive in some areas. Approximately 10,146 acres, accounting for 36% of the floodplain marsh at River Lakes, is identified as being shrub encroached. Management of willow is a high priority due to its negative impact on herbaceous marsh vegetative community, wildlife habitat and water balance (Hall, 2017). Herbicide treatments, mowing, chopping and prescribed burning are being used to help reduce shrub species in some areas. The District plans to maintain stands of willow in specific locations where it stabilizes channel banks, provides water/wading bird roost/rookery habitat and/or where the trajectory to more desirable vegetative composition is unlikely. Suggested fire intervals for floodplain marsh are every three years if composed primarily of sand cordgrass, or as needed to control woody vegetation.

b. Open Water

Approximately 5,078 acres of open water was present on River Lakes in 2017. A majority of this habitat occurred in lakes Poinsett and Winder, at elevations where inundation depths and duration do not support emergent vegetation. Open water was also mapped within the primary and various side channels of the St. Johns River. Historically, much of the open water associated with the Property's waterbodies contained expansive populations of submerged aquatic vegetation (SAV). In recent years SAV populations have been largely

absent from this stretch of the St. Johns River. The District and the FWC have interest in determining drivers of SAV decline and managing for increased native SAV coverage within open water of the basin. Floating plants, including exotic water hyacinth (*Eichhornia crassipes*) and water lettuce (*Pistia stratiotes*), pose a significant management challenge at River Lakes. Floating plants within lakes Washington, Winder and Poinsett are managed cooperatively with the FWC.

In addition to the open water found within the waterbodies of River Lakes, open water was mapped within the restoration area of Moccasin Island. The open water portion of Moccasin Island is low elevation and connected to the St. Johns River channel. It is anticipated that this area will likely remain open water throughout the term of this management plan.

c. Improved Pasture

There are approximately 2,786 acres of improved pasture at River Lakes. Much of the area mapped as improved pasture is transitional with semi-improved pasture. These areas include native groundcover interspersed throughout a matrix this is dominated by planted non-native forage, especially bahiagrass (*Paspalum notatum*); along with Bermudagrass (*Cynodon dactylon*) or pangolagrass (*Digitaria eriantha*). Native groundcover consists of various bluestems (*Andropogon* spp.), yellow-eyed grass (*Xyris* spp.), meadowbeauty (*Rhexia* spp.), dogfennel (*Eupatorium capillifolium*), many species of flatsedge (*Cyperus* spp.), carpetgrasses (*Axonopus* spp.) and crabgrasses (*Digitaria* spp.).

A vast majority of improved pasture acreage at River Lakes occurs within the cattle grazing lease footprint above 16 feet NAVD88. Improved pasture on the property is largely managed by the cattle grazing lessee. Two separate grazing plans provide guidance to cattle management activities at River Lakes (Appendix G).

d. Wet Prairie

There are approximately 1,934 acres that were mapped as wet prairie at River Lakes in 2017. This represents a 634-acre increase in wet prairie on the Property from 2010. Hydrologic restoration of former pasture areas and subsequent vegetative changes account for most of this increase. These wet prairies lack the characteristic coverage of dense wiregrass (*Aristida stricta* var. *beyrichiana*) and occur across vast stretches between the floodplain and adjacent uplands. Wet prairie areas at River Lakes are largely void of shrub or tree cover. Many of the species found in classic wet prairie – blue maidencane (*Amphicarpum muhlenbergianum*), beaksedges (*Rhynchospora* spp.), yellow-eyed grasses, meadowbeauty, nutrushes (*Scleria* spp.), pipeworts (*Eriocaulon* spp.), rosegentians (*Sabatta* spp.) – occur in wet prairie at River Lakes.

Adjacent uplands are primarily improved/semi-improved pasture. Portions of the area mapped as wet prairie are subject to cattle grazing. Former improved pastures that have been reflooded and wet unimproved pasture, that do not currently exhibit the character of a wet prairie, may be confused with wet prairie in some instances. During the next cycle of plant community mapping, special attention should be paid to further refine the delineation of these communities. FNAI recommends managing areas mapped as wet prairie with a targeted fire return interval of 2-3 years. Mechanical and/or herbicide treatments might also be necessary to reduce woody shrub coverage in favor of herbaceous species. Management activities that require equipment entry to wet prairie sites should only be conducted when soil moisture conditions are low enough to prevent rutting.

e. Mesic Flatwoods

Approximately 795 acres of pine flatwoods occur on River Lakes, located on the cattle lease areas of the Moccasin Island tract. This community type consists of slash pine (*Pinus elliottii*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), native grasses including bluestems, and bahiagrass (*Paspalum notatum*) that has invaded from adjacent improved pasture areas. Cabbage palm is prevalent in much of the mesic flatwoods. The recommended fire interval for this plant community type is anywhere from two to four years. Habitat management within the mesic flatwoods is conducted by the cattle grazing lessee. Management objectives within the mesic flatwoods include reduction of shrub and cabbage palm coverage to improve groundcover condition, especially coverage and diversity of herbaceous and graminoid species.

f. Floodplain Swamp

There are approximately 753 acres of floodplain swamp located within River Lakes. Dominant trees include red maple (*Acer rubrum*), bald cypress (*Taxodium distichum*) swamp tupelo (*Nyssa sylvatica* var. *biflora*), water tupelo (*N. aquatica*), titi (*Cyrilla racemiflora*), and various shrubs, ferns, and rushes. This is not considered a fire dependent plant community and is generally too wet to support fire. Floodplain swamps at River Lakes are monitored for non-native invasive plants and animals; occurrences are treated as necessary.

g. Mesic Hammock

Mesic hammock covers approximately 537 acres and is typically composed of live oak (*Quercus virginiana*), cabbage palm, and sugarberry (*Celtis laevigata*) in the canopy and species including southern magnolia (*Magnolia grandiflora*), and pignut hickory (*Carya glabra*) in the subcanopy. The understory may include saw palmetto (*Serenoa repens*), American beautyberry (*Callicarpa Americana*), and gallberry (*Ilex glabra*). The herbaceous layer is often sparse or patchy and may include low panic grasses (*Panicum* spp.), witch grasses (*Dichanthelium* spp.) and sedges (Cyperaceae). Cabbage palm has come to dominate much of this community type on site, nearly eliminating other species in the understory and

groundcover layers in some areas. These areas are not considered fire dependent and rarely burn. Mesic hammocks at River Lakes are monitored for the presence of non-native invasive plant and animals; occurrences are treated as necessary.

h. Hydric Hammock/Prairie Hydric Hammock

Approximately 416 acres are covered by this plant community which consists of cabbage palm, live oak, southern red cedar (*Juniperus virginiana*), wax myrtle, water oak, and marlberry (*Ardisia escallonioides*); groundcover is sparse. This community is not considered fire dependent. Prairie hydric hammock is a variation of hydric hammock usually occurring as a pod of trees within a larger pyrogenic community such as floodplain marsh. These communities burn more frequently than hydric hammock and are often completely dominated by cabbage palm. Hydric hammock/prairie hydric hammock at River Lakes are monitored for non-native invasive plants and animals; occurrences are treated as necessary.

i. Levees and Roads

There are approximately 153 acres delineated as levees and roads at River Lakes. Roads on the Conservation Area are critical to provide access for management activities and public recreation. Many miles of levee have been removed from the Property to meet wetland restoration objectives. Many of the levees that remain on the property are a relic of previous land use. Those levees on the Property associated with the stormwater conveyance canals (e.g., 2, 4, 6 and 8-Mile Canals) do provide a flood protection function for areas upstream. Roads and levees at River Lakes are managed through mowing and other mechanical treatments, as necessary to prevent the establishment of woody trees and shrubs.

j. Dry Prairie

There are approximately 41 acres of dry prairie at River Lakes. Dry prairie on the property can be found in a couple isolated patches that are surrounded by pasture. Common grasses and herbs include wiregrass, bluestem, yellow-eyed grass and meadowbeauty. Common shrubs include saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), fetterbush (*Lyonia* spp.), dwarf live oak (*Quercus minima*), and shiny blueberry (*Vaccinium myrsinites*). Natural fire intervals in dry prairie are very short, on the order of 1 to 2 years. Dry prairie at River Lakes is monitored for non-native invasive plants and animals; occurrences are treated as necessary. Mechanical and/or herbicide treatments might also be necessary to reduce woody shrub coverage in favor of herbaceous species.

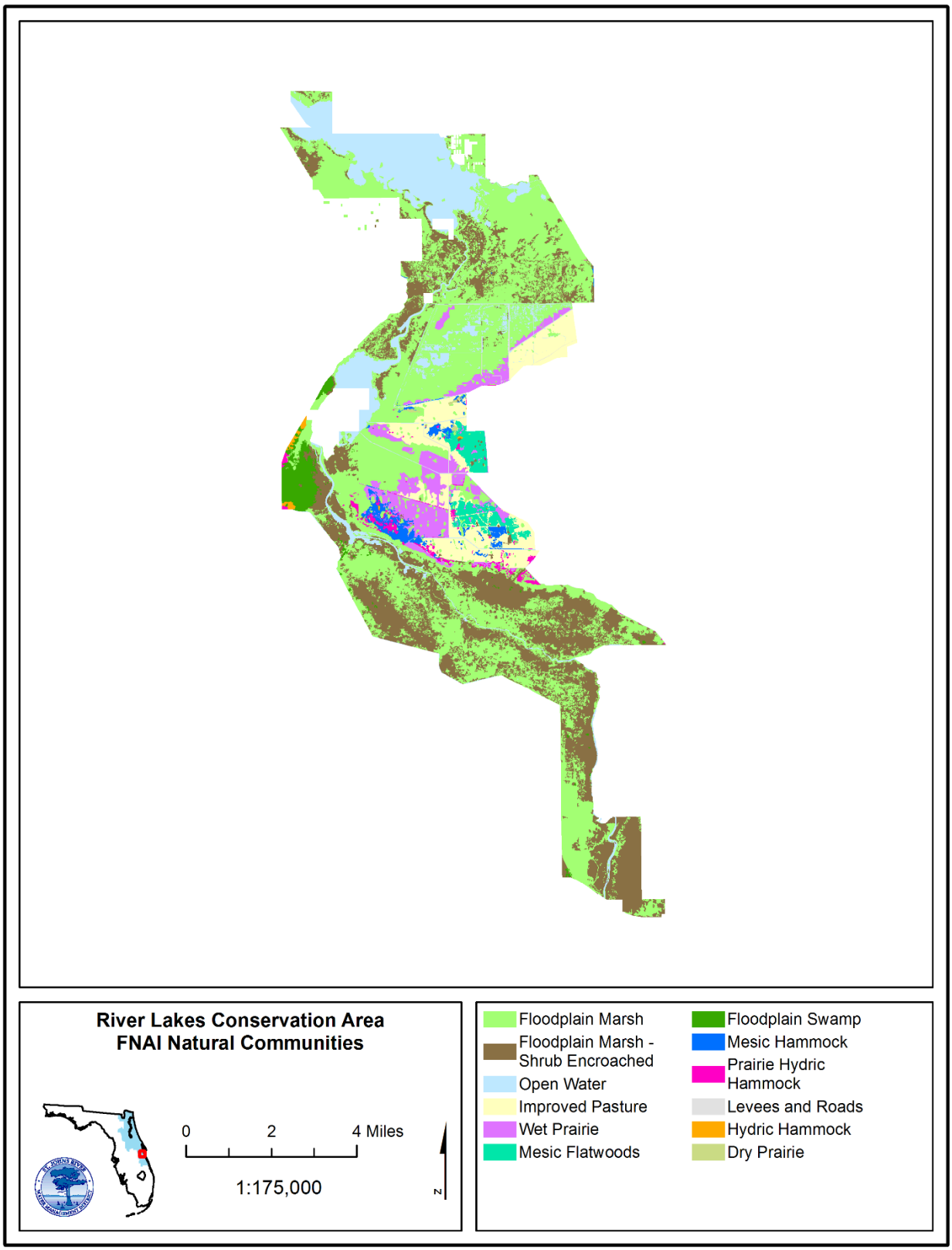


Figure 9: Natural Communities Map

2.3 Plant and Animal Species

River Lakes provides habitat for a variety of plant and animal species. District staff maintain a database of species observations from the Property that are communicated by District staff, contractors, volunteers, researchers, recreationists, and others. In February 2002, the Florida Museum of Natural History (FMNH) conducted a formal survey of vertebrate animals on the Moccasin Island marsh restoration area. One noted outcome was that there were very few reptiles captured during the sampling period. White-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), raccoon (*Procyon lotor*), American alligator (*Alligator mississippiensis*), and numerous waterfowl and wading birds are found on the conservation area. A comprehensive species list is in Appendix H. District staff has included verified observations documented through citizen science crowdsource providers eBird and iNaturalist in the Property species list.

As is common throughout South and Central Florida, a variety – totaling 33 species of non-native invasive plants can be found along canals, ditches, levees and otherwise disturbed areas throughout the Property (Table 4). A majority of non-native invasive plants at River Lakes are graminoid and/or wetland/aquatic taxa. Additionally, considerable acreage of the Property has been dominated by nuisance plant species, especially Carolina willow. Species that are considered invasive are species that (a) are non-native to a specified geographic area; (b) were introduced by humans (intentionally or unintentionally); and (c) do or can cause environmental, economic, or human harm. The District relies on the Florida Invasive Species Council (FISC) for the categorization of invasive plant species.

Table 4: Non-native Invasive Plant Species at River Lakes

Scientific Name	Common Name	FISC Category
Alternanthera philoxeroides	alligatorweed	II
Colocasia esculenta	wild taro	I
Commelina communis	Asiatic dayflower	-
Cuphea carthagenensis	Colombian waxweed	-
Cynodon dactylon	Bermudagrass	-
Cynodon nlemfuensis	African bermudagrass	-
Eichhornia crassipes	water hyacinth	I
Hemarthria altissima	limpograss	II
Hymenachne amplexicaulis	West Indian marshgrass	I
Imperata cylindrica	cogongrass	I
Kyllinga brevifolia	shortleaf spikesedge	-
Lantana strigocamara	lantana	I
Lolium perenne	Italian ryegrass	-
Ludwigia grandiflora	largeflower primrosewillow	-
Ludwigia peruviana	Peruvian primrosewillow	I
Lygodium microphyllum	old world climbing fern	I
Melochia corchorifolia	chocolateweed	-
Panicum repens	torpedograss	I
Paspalum acuminatum	brook crowngrass	-
Paspalum notatum	bahiagrass	-
Paspalum urvillei	vaseygrass	-

Pistia stratiotes	water lettuce	I
Richardia grandiflora	largeflower mexican clover	II
Ricinus communis	castor bean	II
Rumex obovatus	tropical dock	-
Salvinia minima	water spangles	I
Schinus terebinthifolius	Brazilian pepper	I
Setaria pumila	yellow bristlegrass	-
Solanum viarum	tropical soda apple	I
Sporobolus indicus	smutgrass	I
Trifolium repens	white clover	-
Urena lobata	Caesarweed	I
Urochloa mutica	paragrass	I

A total of 10 invasive and non-native wildlife species have been documented at River Lakes (Table 5). The District will continue to document any occurrences of invasive and non-native species found on the Property.

Table 5: Non-native Animal Species at River Lakes

Scientific Name	Common Name
Anolis sagrei	Brown anole
Eleutherodactylus planirostris	Greenhouse frog
Hoplosternum littorale	Brown hoplo
Osteopilus septentrionalis	Cuban tree frog
Pterygoplichthys sp.	Sailfin catfish
Porphyrio poliocephalus	Gray-headed swamphen
Streptopelia decaocto	Eurasian collared-dove
Sturnus vulgaris	European starling
Sus scrofa	Feral pig
Oreochromis spp.	Tilapia

2.4 Listed Species

To date, ten listed species have been documented at the Conservation Area (Table 6). Additionally, numerous Species of Special Concern have been documented at River Lakes. Most of the listed species recorded on the site are avian species, largely wading birds associated with the river floodplain. In addition to the various wading birds, listed species on the Property include gopher tortoise (*Gopherus polyphemus*), Florida sandhill crane (*Grus canadensis pratensis*), roseate spoonbill (*Platalea ajaja*), woodstork (*Mycteria americana*) and Audubon's crested caracara (*Caracara plancus*). There are two known active bald eagle (*Haliaeetus leucocephalus*) nests on site. Several species that are tracked by FNAI are documented to occur at River Lakes. These species are listed in Appendix H. American kestrels (*Flaco sparverius*) are recorded as nesting at River Lakes, it is possible that this observation is in fact the State Threatened southeastern American kestrel (*Falco sparverius paulus).*

Historically, the State Threatened Florida burrowing owl (*Athene cunicularia floridana*) and Federally Endangered whooping crane were documented to occur on the Property. Florida

burrowing owls and whooping cranes have not been observed at River Lakes since 2011 and 2001, respectively.

Table 6: Listed Species Known to Occur at River Lakes

Scientific Name	Common Name	Status
Antigone canadensis pratensis	Florida sandhill crane	ST
Caracara plancus	Crested caracara	FT
Egretta caerulea	Little blue heron	ST
Egretta rufescens	Reddish egret	ST
Egretta tricolor	Tricolored heron	ST
Gopherus polyphemus	Gopher tortoise	ST
Mycteria americana	Wood stork	FT
Platalea ajaja	Roseate spoonbill	ST
Rostrhamus sociabilis plumbeus	Everglade snail kite	FE
Sternula antillarum	Least tern	ST

Acronym	Status
FE	Federally Endangered
FT	Federally Threatened
ST	State Threatened

At its November 2016 Commission meeting, the FWC approved Florida's Imperiled Species Management Plan (http://myfwc.com/wildlifehabitats/imperiled/plan/), which included changes to the listing status for many wildlife species. Subsequent rule changes (68A-27.003 and 68A-27.005 F.A.C.) have come into being since the Imperiled Species Management Plan was approved and those changes have been incorporated into this Management Plan. All federally listed species that occur in Florida are included in Florida's Endangered and Threatened Species list (https://myfwc.com/media/1945/threatened-endangered-species.pdf) as federally designated Endangered or federally-designated Threatened. Species that are not federally listed, but which have been identified by the FWC as being at some level of risk of extinction, are listed as state-designated Threatened. Additionally, the FWC no longer maintains a separate Species of Special Concern category. This category was reviewed as part of Florida's Imperiled Species Management Plan, with all of the species previously contained within the category either being removed from Florida's Endangered and Threatened Species list due to conservation success, or having their status changed to state-designated Threatened.

2.5 Forest Resources

Section 253.036, Florida Statutes, requires the lead agency of state lands to prepare a forest resource analysis, "…which shall contain a component or section…which assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices if

the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel." All forest resource work on the Property is restorative in nature and is designed to aid in the promotion of species diversity and overall natural community health and vigor. The District applies all revenue generated through these forest management activities towards the District's land management budget to offset management costs for the Property.

Forest management activities will include maintaining optimum conditions of spacing and structure within the 796 acres of mesic flatwoods. The management objectives of this Property do not currently require pine management through timber harvest. Some harvesting of cabbage palms may occur within flatwoods, improved pastures, and floodplain marsh, where they have encroached. Roller chopping, mowing and herbicide treatment of Carolina willow has been necessary in some areas to control dense infestations. Planting of upland forest species may be a component of future upland restoration projects. No harvesting is authorized in the forested wetlands.

Forest management projects may include various vegetation management techniques including mechanical treatments such as roller chopping and/or mowing, herbicide applications, and prescribed fire. These techniques may be used singularly or in combination as site conditions warrant. The District will abide by Florida Silviculture Best Management Practices, Florida Forestry Wildlife Best Management Practices for State Imperiled Species, FWC Gopher Tortoise Species Management Plan and target the achievement of appropriate overstory species in proper stand densities as described in the District Forest Management Plan (Appendix I). In addition to planned forest management activities, the District will remove trees as needed in the case of insect infestations, disease, and damage from severe weather, wildfire, or other occurrences that could jeopardize the health of natural communities.

2.6 Native Landscapes

The native landscapes at the Conservation Area include floodplain marsh, floodplain swamp, mesic flatwoods, mesic hammock and hydric hammock. Native landscapes are all described in more detail in the Natural Communities section (Section 2.2).

2.7 Water Resources

This section describes the surface and ground water resources of River Lakes.

a. Water Resource Designations

The entire St. Johns River, including portions within River Lakes, was designated as an American Heritage River by President Clinton in 1998. The St. Johns is the only river in Florida and one of only 14 rivers in the entire United States to receive this prestigious national recognition.

b. Surface Water Features

The Property encompasses a large portion of the St. Johns River floodplain (Figure 10). River Lakes is dominated by floodplain marsh and there are three large, shallow lakes (Lakes Washington, Winder, and Poinsett) that are partially or wholly contained within the Property and connect the northward flowing river channel. Most of Lake Poinsett and Lake Winder are within

River Lakes, while Lake Washington is adjacent to the southeast boundary (Figure 10). Three major blackwater streams, Pennywash Creek, Wolf Creek, and Cox Creek, flow into the floodplain from the western side, while water flow to the river from the east side is delivered primarily by man-made canals. Eight-Mile Canal which runs east to west, conveys stormwater runoff from the city of Rockledge to the St. Johns River. Several other canals are located south of Eight-Mile Canal including Six-Mile, Four-Mile and Two-Mile Canals, that also drain westward toward the river.

c. Surface Water Planning

River Lakes falls within the upper St. Johns River basin which is further divided into surface water basin planning units. Approximately 88% of the Property is in the Lake Poinsett unit, with the remainder near Lake Washington in the St. Johns Marsh unit (Figure 10). These basins and units are important to determine critical restoration and management needs for water resources. The Surface Water Improvement and Management Act (SWIM legislation, Chapter 87-97 Laws of Florida) mandated the water management districts to identify and prioritize water bodies in need of restoration or conservation, as well as to plan, implement and coordinate restoration and conservation strategies. Recognizing the need for continued protection and restoration the District approved the Upper St. Johns River Basin (USJRB) as a priority waterbody in 2005 and a SWIM plan was published in 2007 (https://www.sjrwmd.com/static/plans/2007_USJRB_SWIM_Plan.pdf). The USJRB SWIM plan prioritized two initiatives: 1) water quality, with strategic actions to monitor water quality and implement projects to improve water quality and 2) resource assessment, protection, and restoration with strategic actions to assess and monitor biological conditions to meet the overall biological goal of restoring and preserving the natural attributes of species diversity and abundance, community diversity, and productivity of economically important species (Miller et al., 1998).

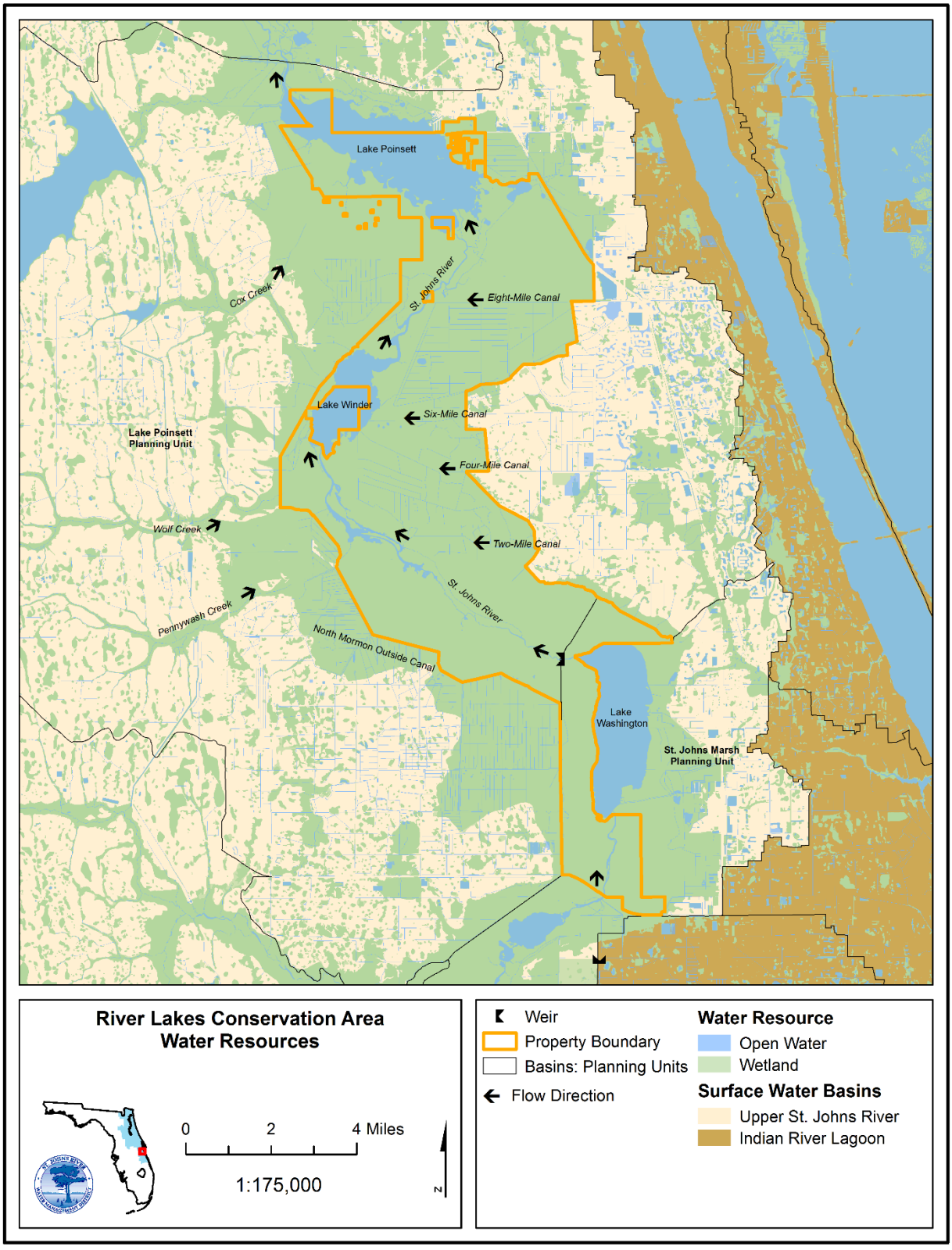


Figure 10: Water Resources Map

d. Hydrologic Monitoring

Hydrologic conditions, including water elevation (stage) and discharge, have been recorded in River Lakes for decades at two USGS stations and since 1996 at one District station (Figure 11). The most upstream station (USGS 02232000) is located along the river channel at US192; the second station (District; SJRAWE) is located at the Lake Washington weir; and the most downstream station (USGS 02232400) is located at SR520 at the outlet of Lake Poinsett. Hydrographs, showing stage and discharge at US192 and SR520, are presented in Figure 12.

e. Hydrologic Modifications

Hydrology in the Property was greatly impacted after natural vegetation jams in the channel, just downstream of the Lake Washington outlet, were removed in 1953. This resulted in a reduction in average water elevation and a flashier system with greater amplitude in the extreme high and low water levels (Figure 12). After a permanent weir was installed in 1977, the amplitude in water elevations was dampened and average water elevations increased, however, stage is still lower than historical. The weir was rebuilt in 1999 (with a crest elevation of 12.1 ft NAVD88) and was redesigned with a low flow structure at the bottom in order to meet the Minimum Flows and Levels established by Hall and Borah (1998) for the portion of the river downstream of Lake Washington. The weir is an important water control structure for maintaining appropriate water elevations in Lake Washington and protection of upstream floodplain wetlands.

The North Mormon canal and levee, that comprise the western border of River Lakes running from Lake Washington to Lake Winder, are the only major hydrologic modifications on the western side of the Property (Figure 10). The North Mormon levee isolated floodplain wetlands in the 1950s which were converted to pasturelands and have operated as agricultural lands since that time.

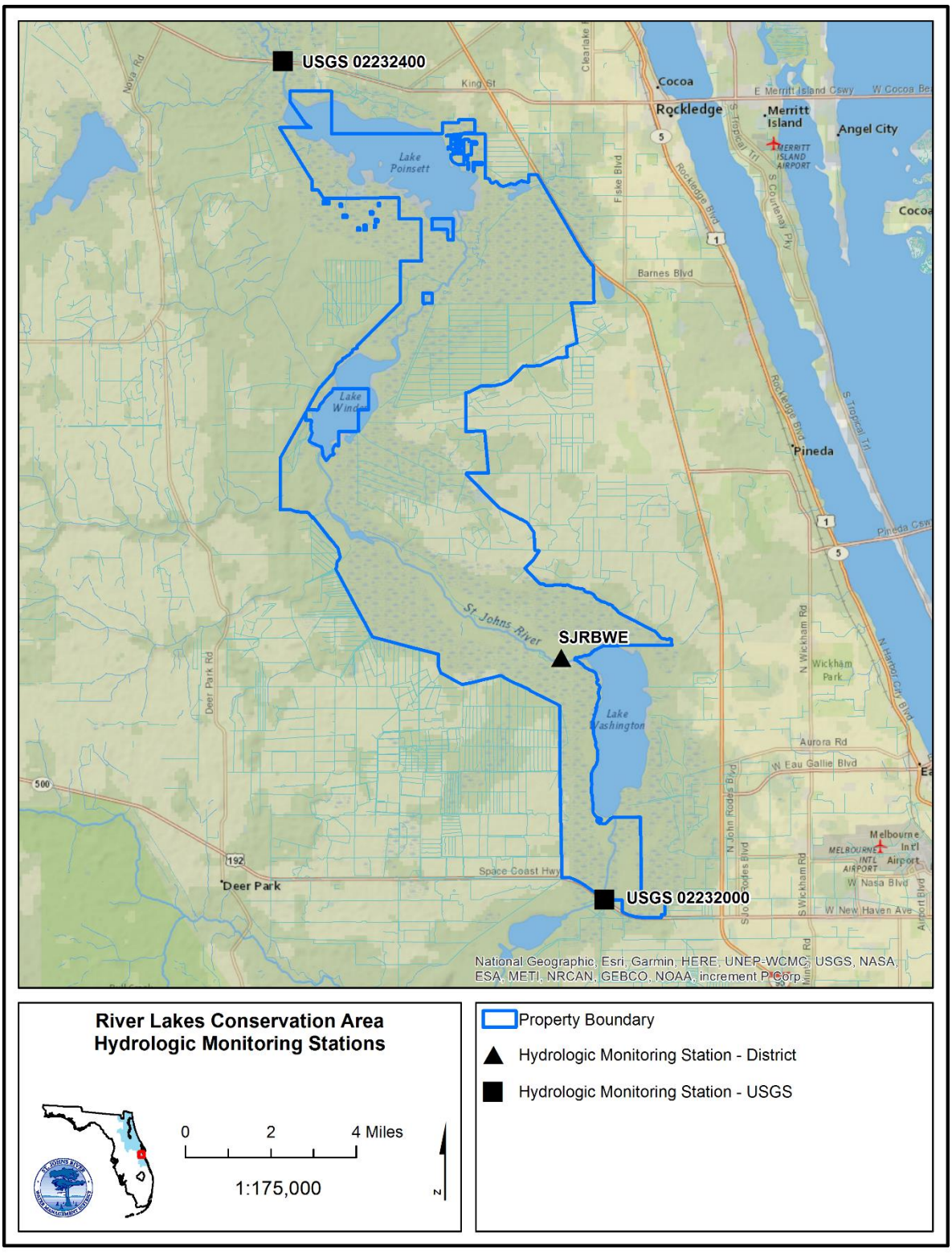


Figure 11: Hydrologic Monitoring Stations Map

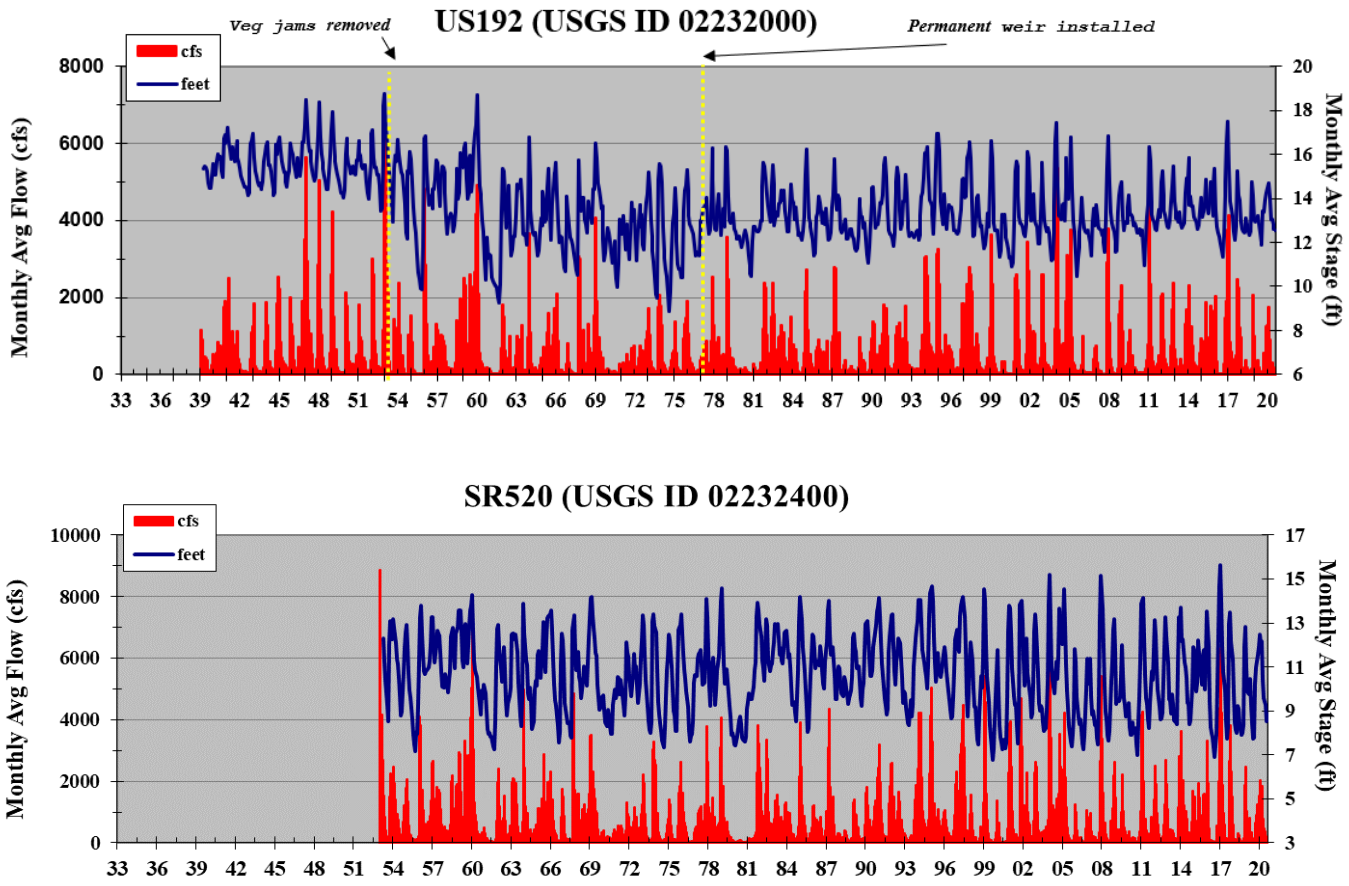


Figure 12: Monthly average stage and flow at US192 and SR520 from 1930s – 2021

On the eastern side of the Conservation Area, the Moccasin Island Marsh Restoration Area (MI) was a part of Duda-Cocoa Ranch which had extensive hydrologic alterations in the form of canals, ditches, and levees from agricultural activities and conversion to use as pasturelands. For restoration purposes, the parcel was divided into three units: MI North, MI Middle, and MI South also called Unit 1, Unit 2, and Unit 3, respectively. Extensive hydrologic restoration has occurred on MI North as part of an agreement with NRCS who provided funding for the restoration in exchange for a 30-year conservation easement which expires in 2029. In Unit 1, a perched reservoir was removed, drainage ditches were plugged in several locations, artesian wells were decommissioned, and portions of the drained reservoir were planted with wetland plants in 2003 (Figure 13). After wetland plants established and water quality improved, the levee forming the western boundary of the unit was removed in 2010. Currently, the area experiences shallow flooding as it fluctuates with the St. Johns River and has reverted to floodplain marsh. Unit 2 was used primarily as pastureland and had a less extensive ditch system. The only hydrologic restoration conducted on Unit 2 were the plugging of ditches and grading of a remnant berm (Figure 14). Unit 3 required no hydrologic restoration as it was the least altered.

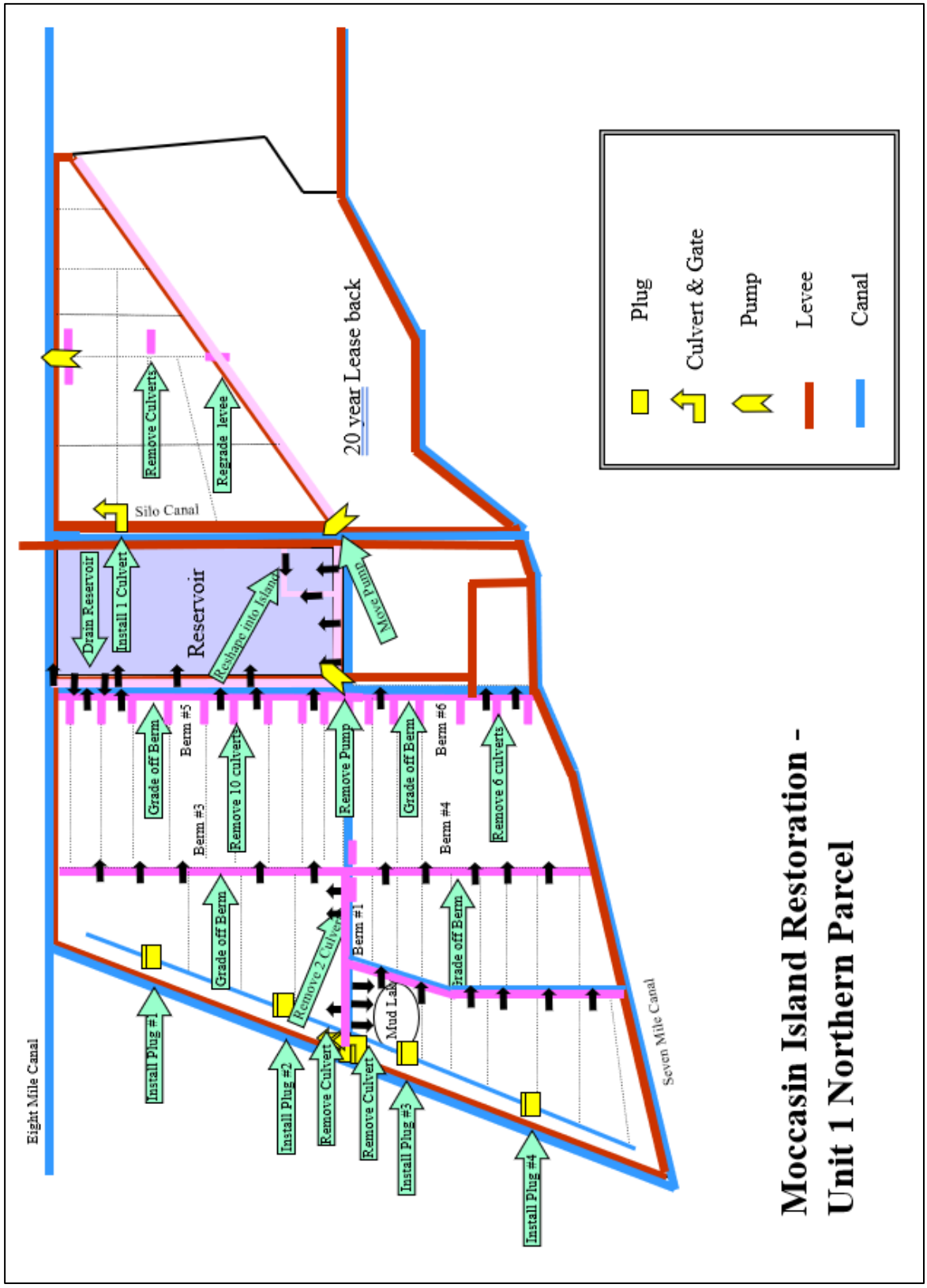


Figure 13: Hydrologic modifications for restoration in Moccasin Island Marsh Restoration Area – Unit 1 from 2000-2003. Not shown is removal of western levee in 2010 map

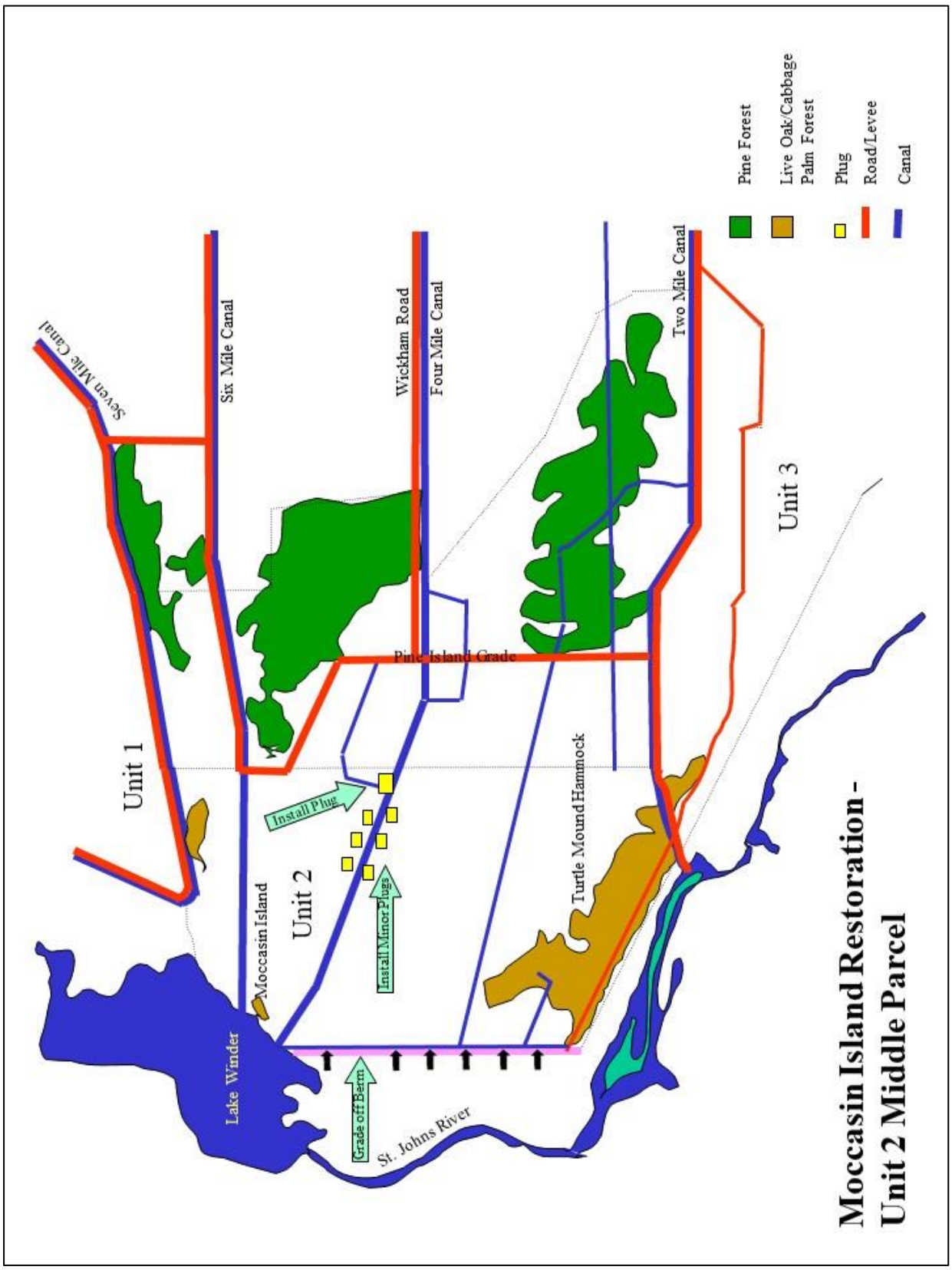


Figure 14: Hydrologic modifications for restoration in Moccasin Island Marsh Restoration Area – Units 2-3 from 2000-2003 map

f. Water Quality Status and Monitoring

Impaired Water Body Designation

Using data from 1992-2001 and 2003, the SJR above Lake Poinsett (SJRALP; Figure 15) was verified as an Impaired Waterbody by the DEP in 2005. The SJRALP was impaired for nutrients and dissolved oxygen (DO) based on the observation that, in two consecutive years (2000 and 2001), the annual average Chlorophyl a concentration of the waterbody exceeded the 5-year average historical minimum of 6.1 µg/L by more than 50% and because 51 out of 93 DO measurements were lower than the 5.0 mg L-1 state water quality criterion. Nutrients were determined to be the causative pollutant for the low observed DO concentrations (DEP 2006). Phosphorus (P) was negatively correlated with the long-term monthly average DO and 44 – 63% of the DO variance was explained by the variance in P concentrations. Conversely, DO-Total Nitrogen correlations for the SJRALP, were not significant.

Listing Lake Poinsett as an Impaired Waterbody necessitated a Total Maximum Daily Load (TMDL) to be developed for SJRALP. The goal of TMDL development was intended to identify the maximum allowable Total Phosphorus (TP) loading to these waterbodies so that they will meet water quality standards and maintain their designated uses as Class I and III waters. Lake Washington, which is along the southeast edge of River Lakes, is a CLASS I water body, and is one of the primary sources of potable water for Melbourne and surrounding communities. Lakes Winder and Poinsett are categorized as Class III water bodies, which are those waters used primarily for Recreation, Propagation, and Maintenance of a Healthy, Well Balanced Population of Fish and Wildlife. To achieve the TMDL target, an average target TP concentration of 0.09 mg L-1 was proposed by the SJRWMD (DEP 2006) as a Pollution Load Reduction Goal (PLRG). This TMDL addresses the nutrient impairments in these waters through controlling the development of blue-green algal blooms.

Water Quality Status and Trends

In order to track water quality, the District monitors surface water quality at 207 long-term sampling stations located on rivers, streams, lakes, canals, and estuaries throughout the 18-county service area. There are several long-term water quality sites along the river and lakes between US 192 and SR 520, including two new additional sites initiated in 2022, which are sampled monthly (Figure 15). Two monthly water quality sites are on major canals draining from areas east of the river: 8-Mile Canal at site MOCC8M and 6-Mile Canal at site CEW (Figure 15). The District also has water quality sites along the major tributaries west of this portion of the river, including Taylor, Wolf, and Pennywash Creeks. The three major water bodies in River Lakes were assessed in the District's 2022 Status and Trends Report, which is a 15-year assessment that uses data from January 1, 2007 to December 31, 2021. Water quality is an indication of the condition of a water body and this report presents the status of several important parameters over a 15-year period. Trends show whether the 5-year median value of the water quality parameter is increasing or decreasing over time (District, 2022 Status and Trends Report).

Basic water chemistry data has been collected at several sites in the River Lakes, three of which have been included in the 2022 Status and Trends Report. From upstream to downstream, these three sites are at LWC in the center of Lake Washington, LWO at the outlet of Lake Winder, and LPO at the outlet of Lake Poinsett. Water chemistry data are typically collected on a bi-monthly basis. Field data including water temperature, pH, specific conductivity, and DO are collected, as well as grab samples analyzed for nutrients, minerals, and metals. Water chemistry parameters discussed in this section include three productivity related parameters, including Total Phosphorus (phosphorus), Total Nitrogen (nitrogen), and Chlorophyll-a (Chl-a), as well as Dissolved Oxygen (DO), and Total Suspended Solids (TSS), a measure of water clarity. These parameters are discussed in relative terms for the past 15-year period as described in the 2022 Status and Trends Report and listed in Table 7.

Lake Washington Center (LWC)
Phosphorus is in the mid-range and has remained relatively stable over the last 15 years. Nitrogen is in the high range but has been decreasing 2.1% per year. Chl-a is in the mid-range and is stable. DO is in the high range and has remained stable over the past 15 years. TSS is in the mid-range and has decreased more than 15% per year which indicates improved water clarity.

Lake Winder Outlet (LWO)
Prior to 2021, phosphorus was in the mid-range, indicating it was between the 25-75 percentiles, in comparison to similar sites being monitored within the District. However, it was classified in the high range in the 2022 report; phosphorus increased 29% between 2020 and 2021. Nitrogen is in the high range but has been decreasing 1.4% per year. Chl-a is in the mid-range and is stable. DO is in the mid-range and has remained stable over the past 15 years, which is a positive indication. TSS is in the mid-range and has decreased more than 9% per year which indicates improved water clarity.

Lake Poinsett Outlet (LPO)
Phosphorus is in the mid-range and has remained stable. Nitrogen is in the high range but has been decreasing 2.1% per year. Chl-a is in the mid-range and is stable. DO is in the mid-range and has remained stable over the past 15 years, which is a positive indication. TSS is in the mid-range and has decreased more than 9% per year which indicates improved water clarity.

Overall monitoring, at these three stations, indicates that median TP was slightly (17-21%) above the 0.09 mg L-1 TMDL target in Lakes Washington and Poinsett, and 42% above the TMDL in Lake Winder (Table 7). Conversely, DO remained above 5.0 mg L-1, meeting or exceeding the state water quality standard. Likewise, TSS declined which indicates an improvement in water clarity. TN was in the high range but the trend has been decreasing in recent years.

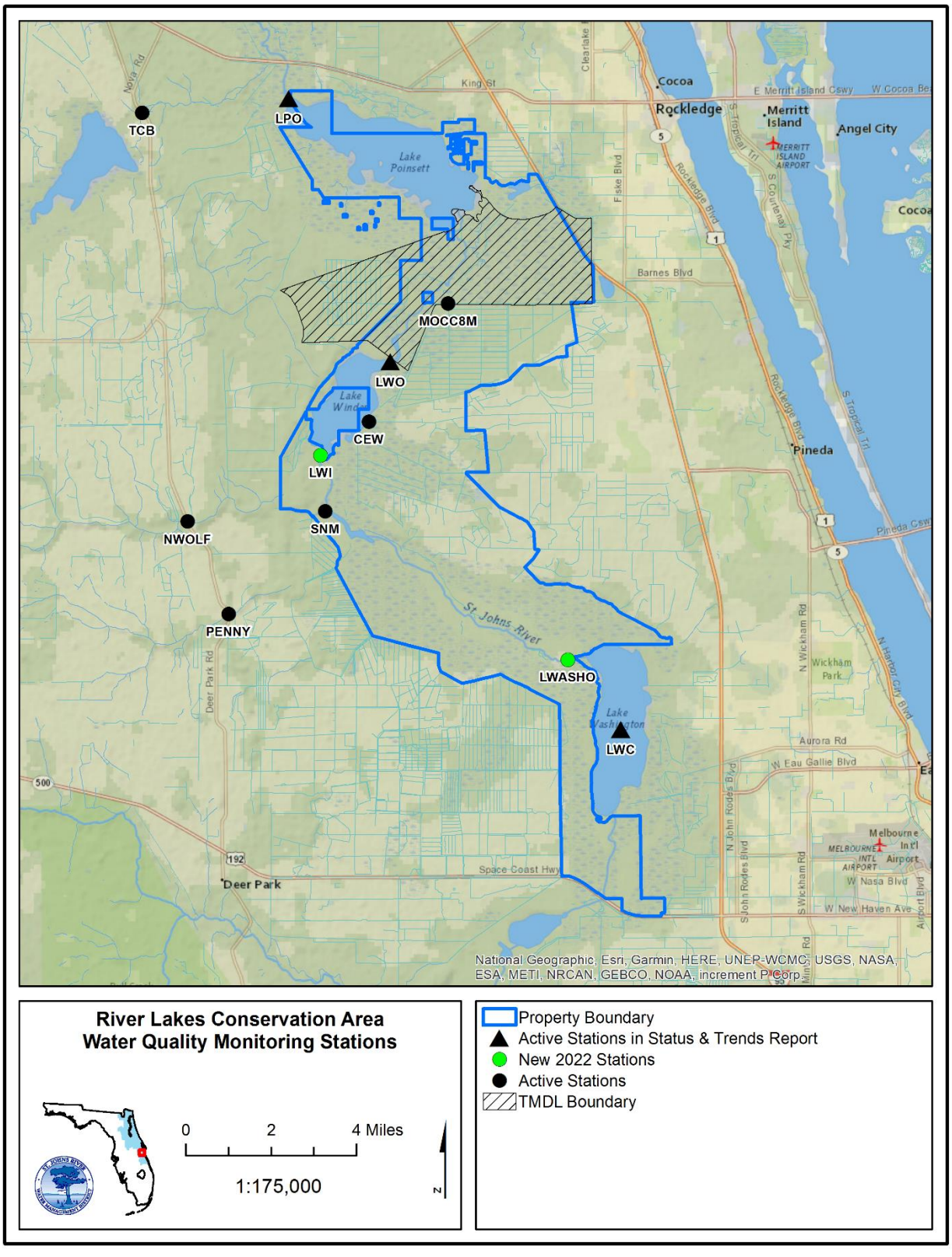


Figure 15: Water Quality Monitoring Station Map

Table 7: Water quality trends in lakes occurring at River Lakes
Arrow color indicates whether median values are low, medium, or high relative to each other and not a specific water quality standard. Light blue = mid-range value and dark blue = high-range value. Arrow direction shows the trend for each parameter as decreasing (⬇), increasing (⬆), or stable (➡).

Station	TP (mg L^{-1})	TN (mg L^{-1})	Chl-a (*ug* L^{-1})	DO	TSS (mg L^{-1})
LWC	0.106 ➡	1.571 ⬇	3.318 ➡	7.58 ➡	2.20 ⬇
LWO	0.128 ➡	1.652 ⬇	7.182 ➡	6.29 ➡	2.80 ⬇
LPO	0.109 ➡	1.686 ⬇	5.834 ➡	7.05 ➡	4.40 ⬇

Biosolids Applications and Continued Monitoring

Pennywash Creek, a tributary entering the river upstream of Lake Winder, was part of an analysis of longer-term (25-year) ambient water quality monitoring data to look at the impacts of the land application of Class B biosolids in the watersheds west of the river. Annual means and maxima for TP exhibited a clear increase after 2013 when land application increased substantially. Baseline conditions in Pennywash Creek from 1995-2012 had lower mean TP (0.0.97 vs 0.133 mg L^{-1}), ortho-phosphate (0.045 vs 0.087 mg L^{-1}) and particulate phosphorus (0.016 vs 0.026 mg L^{-1}) than in more recent years following the initiation of biosolids application in 2013-2020. From this analysis, Canion et al. (2021, 2022) concluded that Class B biosolids applications have led to export of P into the St. Johns River. Increased P enrichment has been linked to recent harmful algal blooms (HABs) occurring in Lake Washington in 2019 and 2022. Seasonally, HABs typically occur in Lake Washington during prolonged periods of warm, dry conditions when the water temperature is high, water elevations drop, and flushing or discharge from the river is low. These HABs can be dominated by cyanobacteria which can produce cyanotoxins harmful to humans, pets, and wildlife. Recognizing these risks and those to Melbourne's public water supply, the District has partnered with DEP to monitor several sites, including Lake Washington, on a biweekly basis during peak bloom season (May-October) for cyanobacteria presence and cyanotoxin concentrations. Results are published on DEP's Algal Bloom Dashboard (https://floridadep.gov/AlgalBloom). Currently, the District has several research efforts aimed at developing ways to prevent movement of nutrients from land application sites into receiving wetlands and streams throughout the USJRB.

Impacts of Invasive Fish on Water Quality and Water Resources

Within the waterbodies of River Lakes, there has been an increase in non-native fish species, especially Tilapia (*Oreochromis* spp.) and Vermiculated Sailfin Catfish (*Pterygoplichthys disjunctivis*). Tilapia disturb the lake bottom, increasing turbidity and resuspending nutrients into the water column. Sailfin Catfish dig burrows along the shoreline, which impacts river morphology, bank stabilization, flow patterns, and increases turbidity. In spring 2022, together with the FWC, a pilot project was implemented on Lake Winder to harvest non-native fish species that dominate the fish community. There were 23,000 lbs of Tilapia harvested, which equates to approximately 100 lbs of P removed from the ecosystem, and 8,880 lbs of Sailfin Catfish were removed. The District is investigating developing a commercial harvest program that would cost-effectively remove phosphorus, reduce internal phosphorus recycling, reduce harm to benthic habitats and aquatic food webs, and potentially help the District maintain the integrity of stream and canal channel morphology and lake shorelines.

g. Water Supply

Lake Washington has been a potable water supply for the City of Melbourne since 1959. Average daily allocations have increased from 4 million gallons per day (mgd) in 1959 to 20 mgd in 2019 and the City of Melbourne now holds a 30-year permit (Permit #50301) and is authorized to use up to 23.54 mgd annual average. This includes up to 12.5 mgd annual average of groundwater from the Upper Floridan aquifer and 18.0 mgd annual average of surface water from Lake Washington to serve a projected population of 233,937 people in 2049. Currently, Lake Washington supplies approximately two-thirds of the water necessary to meet the total demand while groundwater provides the remaining one-third. Additionally, the City of Melbourne is planning to expand its use of alternative sources by doubling the capacity of their Reverse Osmosis Water Treatment Plant using 12.5 mgd of groundwater withdrawals and 10 mgd of finished water (Register and Renish 2021). Lake Washington water elevations and water supplies are enhanced by a 147-foot wide weir across the St. Johns River downstream of the lake outlet. However, Lake Washington is occasionally impacted by low water elevations. The District Governing Board recently approved the Environmental Water Management Plan (EWMP) (Miller et al. 2022) that provides for modifications to hydrologic operations that may be implemented outside of flood protection constraints. This plan allows for supplemental discharges from the Three Forks Marsh Conservation Area upstream to supply water to Lake Washington during low flow or low stage periods, given the appropriate upstream conditions. The most recent low flow augmentations to Lake Washington were implemented in May and August 2022 which helped the City of Melbourne to provide water to the residents of that area. One of the issues that contributed to low water conditions was a bypass channel that was formed around the Lake Washington weir (Figure 10), possibly due to airboats short-circuiting the airboat ramp at the weir. This allowed water to be released more quickly around the weir. The District has completed construction of an extension to the weir that blocks the bypass channel. This demonstrates the importance of communicating with the public to get buy-in on recreational practices and guidelines.

2.8 Beaches and Dunes

There are no beaches or dunes within the Property.

2.9 Cultural Resources

There are currently twenty-six documented Florida Master Sites located on River Lakes. Request for a twenty-seventh site has been submitted to the Florida Department of State, Division of Historical Resources (DHR). Ten of the sites are middens. Three of the sites are designated as eligible for listing in the National Register of Historic Places. The District will consult with the DHR before taking actions that may adversely affect archeological or historical resources.

The District will conduct land management activities in a manner that will provide protection for these sites and serve to reduce the potential for adverse impacts. To meet this end, District staff have been collaborating with archaeological professionals from the Florida Public Archaeology Network to assess known and record previously undocumented sites. If District staff discovers any additional sites, staff will document and report those sites to the DHR.

Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. The locations of the sites are not identified on public maps.

2.10 Scenic Resources

The vast St. Johns River floodplain and its associated lakes and marshes are significant scenic resources at River Lakes. The flat topography and lack of trees provide expansive vistas from numerous locations. Additionally, the forested wetlands on the west side of the property and the large oak hammock on the south end of the Moccasin Island tract provide significant scenic resources.

3. Uses of the Property

3.1 Previous Use and Development

River Lakes has been used by human populations since pre-European colonization, as evidenced by the cultural resource sites documented on the Property. Immediately prior to District acquisition, much of River Lakes was managed as part of a large cattle ranch with grazing and cow-calf operations occurring in large semi-improved to unimproved pasture. Significant hydrologic modifications were made to the floodplain and associated landscape during this era.

3.2 Purpose for Acquisition

A majority of River Lakes was acquired, through various funding mechanisms, to contribute to the Upper Basin Project. The goals of the Upper Basin Project are numerous: to improve water quality, reduce freshwater discharges to the Indian River Lagoon, provide for water supply, and restore or enhance wetland habitat. Average annual global value of ecosystem services (Constanza 1997) provided by the various land covers at River Lakes totals nearly $266 million.

A secondary consideration includes the need to provide public recreation that is compatible with natural resource protection.

The most recent acquisitions at River Lakes support completion of the District's Crane Creek/M-1 Canal Flow Restoration Project. The M-1 Canal is a 100-year-old, man-made flood control feature in Brevard County that cuts through the historic drainage divide between the St. Johns River and the Indian River Lagoon. The M-1 Canal diverts stormwater flow from 5,300 acres of drainage area in Melbourne, West Melbourne, Melbourne Village and portions of unincorporated Brevard County and sends the water east to the Indian River Lagoon via Crane Creek. Nutrients within runoff from this currently diverted watershed degrade water quality in the Indian River Lagoon and provide fuel for algal blooms. The Crane Creek / M-1 Canal Project will substantially reduce nutrient loading to the Indian River Lagoon. Construction of the project will result in restoring the baseflow in the M-1

Canal westward for treatment in a constructed stormwater treatment area prior to discharging to the St. Johns River Basin.

3.3 Single or Multiple-Use Management

The potential of the Property to accommodate multiple uses was analyzed in accordance with Section 253.034(5) F.S. The Conservation Area is managed under the multiple-use concept. Cattle grazing and timber harvesting as part of River Lakes' natural community management and restoration activities can be done in a manner that does not interfere with the primary purpose of natural resource conservation and resource-based outdoor recreation. Extraction of mineral resources is incompatible with conservation land uses.

All of the current uses and activities within the Property are in accordance with the purposes of acquisition, the District's mission, and the Conceptual State Lands Management Plan. During the planning process for this plan, it was determined that no additional uses and activities would be considered at this time.

3.4 Surplus Acreage

In 2006 and in accordance with Section 373.089, Florida Statutes, the District entered into a sale agreement with Mark Wadsworth for 573.67 acres of the Greenbaum East parcel (LA 2006-025-P1). This parcel was originally purchased by the District for inclusion within River Lakes, however, it was separated from the Conservation Area by construction of Interstate 95. This separation resulted in limited ecological value and access difficulty for land management activities. Prior to surplus of the parcel, the District Governing Board determined that the parcel was no longer needed for conservation purposes. The District holds a perpetual conservation easement over this parcel that limits the development rights on Greenbaum East.

Pursuant to Section 373.139, Florida Statutes, occasionally the District may explore and pursue the surplus of portions of its land ownership. The District's interest in surplusing land may arise from a variety of considerations, including but not limited to:

- Property purchased as part of a larger acquisition and surplus portion is not needed for District purposes but was required to complete the larger acquisition.
- Original project for which the property was purchased was ultimately not built.
- Property is part of a broader patchwork of conservation ownership, managed by another agency or local government and the surplus is to transfer the ownership to the entity managing the adjacent property. The conservation purposes are maintained.
- Actions by adjacent owners which lower the property's conservation values or increase management costs.

As with all decisions associated with land ownership, any surplus of District property requires the approval of the District's Governing Board. If the property in question was

originally purchased for conservation purposes, the Governing Board shall determine that the land is no longer needed for conservation purposes and may then dispose of the land by two thirds vote (§ 373.089, F.S.).

There are no surplus lands identified, nor has any surplus action take place, on land owned by the Board of Trustees.

4. Management Activities and Intent

The following section describes how the District has managed and plans to continue managing the diverse natural and cultural resources at the Preserve. The general goals guiding management of the Preserve include:

- Maintain water quality, natural hydrological regimes, and flood protection by preserving important, especially floodplain wetland areas.
- Restore, maintain, and protect native natural communities and diversity.
- Maintain and protect cultural resources.
- Provide opportunities for resource-based recreation where compatible with the above listed goals.

4.1 Land Management Review (Management Review Team)

The District has conducted two Management Review Team (MRT) meetings since the 2011 land management plan – one in March 2015 and one in November 2022. The consensus for both MRTs was that the Conservation Area is being managed for the purposes for which it was acquired, it is being managed in accordance with its approved management plan, and the current management plan provides sufficient protection to the property's natural and cultural resources.

4.2 Habitat Restoration and Improvement

At acquisition in 1999, the Moccasin Island tract was a working cattle ranch. Much of the parcel had been converted from floodplain marsh to pasture through the construction of various levees, drainage features and water control structures. Extensive wetland restoration activities were completed on the Property prior to 2011. As a result of these efforts, approximately 6,000 acres of floodplain marsh have been reconnected to the St. Johns River. Hydrologic restoration at River Lakes provides significant ecosystem services: wildlife habitat, water quality improvement and flood attenuation.

The District continues to conduct habitat restoration and improvement actions at River Lakes. The primary focus of these actions in recent years has been improvement of vegetative composition and structure within the floodplain marsh natural community. The goal of habitat management is to maintain the floodplain marsh in a condition that is dominated by herbaceous and graminoid species. Habitat restoration and improvement is conducted through invasive plant and fire management after hydrologic restoration activities are completed.

A majority of plant management activities on the Property have targeted Carolina willow and other shrub species. Expansion of willow and other shrub communities within the floodplain marsh of the Conservation Area is well documented through the District's vegetation mapping efforts (Hall 2017). Continued expansion of shrub communities threatens the habitat and water resource benefits provided by herbaceous and graminoid marshes. Treatment of shrub communities has been achieved through mechanical (mowing and roller chopping), chemical (herbicide), biological (agent releases) and cultural (prescribed fire) techniques. As a result of management actions, between 2010 and 2017, District vegetation mapping documented a 700-acre reduction in Carolina willow coverage at River Lakes.

District willow and shrub management will focus on reducing coverage in relatively shallow marsh that has historically been documented as herbaceous or graminoid dominant. That said, native shrub species, including willow, do have their place on the landscape at River Lakes. Willow colonies provide stabilization benefits to the banks of river channels and along lake shorelines. Populations of shrub vegetation that are inundated during breeding season also provide valuable potential substrate for wading and water bird nesting. Shrub communities that are inundated during nesting season will not be targeted for treatment. Prior to wading bird breeding season shrub treatments, targeted shrubs will be surveyed for presence of wading bird nesting. Shrub treatments will be avoided if wading bird nesting is occurring.

4.3 Prescribed Fire and Fire Management

Fire is a vital factor in managing the character and composition of vegetation in many of the natural communities in Florida. The District's primary use of fire is to mimic natural fire regimes to encourage the native pyric natural communities and dependent wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires. Most of the natural communities within the Property are (or historically were) fire adapted, making prescribed fire an important tool for use in the restoration and maintenance of natural communities within the conservation area. The regular application of fire within prescribed intervals keeps successional shrubs in check thus increasing water availability as shrubs such as willow have higher evapotranspiration rates than herbaceous communities.

River Lakes has an active prescribed fire program. Since 2011, District staff have conducted 17 prescribed fires and applied prescribed fire to 43,627 acres within the Conservation Area. Figure 16 depicts the fire management units (FMU) and Table 8 illustrates the prescribed fire history at the Property since 2011.

There are approximately 32,859 acres (80%) of fire-maintained natural communities within the Conservation Area. Most of the floodplain marshes have received at least one prescribed fire since 2011. The portions of River Lakes that have not received prescribed burning since 2011 are either managed as part of the cattle grazing lease or have very limited access with limited firebreaks on the west side of the St. Johns River.

Historically, most fires occurring on the Property were ignited by lightning during the growing season. The District intends to utilize growing season fires when possible, understanding that constraints in some areas such as organic soils and proximity to smoke sensitive areas may require the use of dormant season burning. While prescribed fire is the preferred tool for restoration and maintenance within River Lakes, it may be necessary to implement alternative methods. The District utilizes vegetation management techniques such as mowing and roller chopping in combination with fire as part of an integrated approach to create and maintain desired conditions.

A system of condition class measures was originally developed by The Nature Conservancy and the U.S. Forest Service in 2003 as an effort to assess ecosystem health. It was designed as a Fire Regime Condition Class (FRCC) and it is based on a relative measure describing the degree of departure from the historical natural fire regime of a given system. This departure results in changes to one (or more) of the following ecological components: species composition, structural stages, stand age, canopy closure, or mosaic pattern. The District adapted the system in 2008 to measure ecosystem health and therefore land management effectiveness.

Annually, each FMU is assigned a condition class score based upon the most recent disturbance and the fire frequency recommended for that natural community by FNAI. If FNAI recommends a fire return interval of three to five years, a natural community that has benefited from disturbance in the past five years is in condition class 1. If it has been more than five years but less than ten years, or two cycles, the zone is in condition class 2. If it has been more than two times the fire return interval, but can still be recovered by fire, it would fall into condition class 3. If the natural community has gone without disturbance so long that fire alone can no longer restore the area, it is in condition class 4. The District staff will make annual condition class assessments and incorporate them into annual burn planning and work planning processes. In 2022, the condition class distribution of the Conservation Area's habitats was 69% Condition Class 1; 9% Condition Class 2; 22% Condition Class 3, and 0% Condition Class 4 (Figure 17).

All implementation of prescribed fire within the Property will be conducted in accordance with the District's Fire Management Plan, the Conservation Area Fire Management Plan (Appendix J), and the annual burn plan for River Lakes.

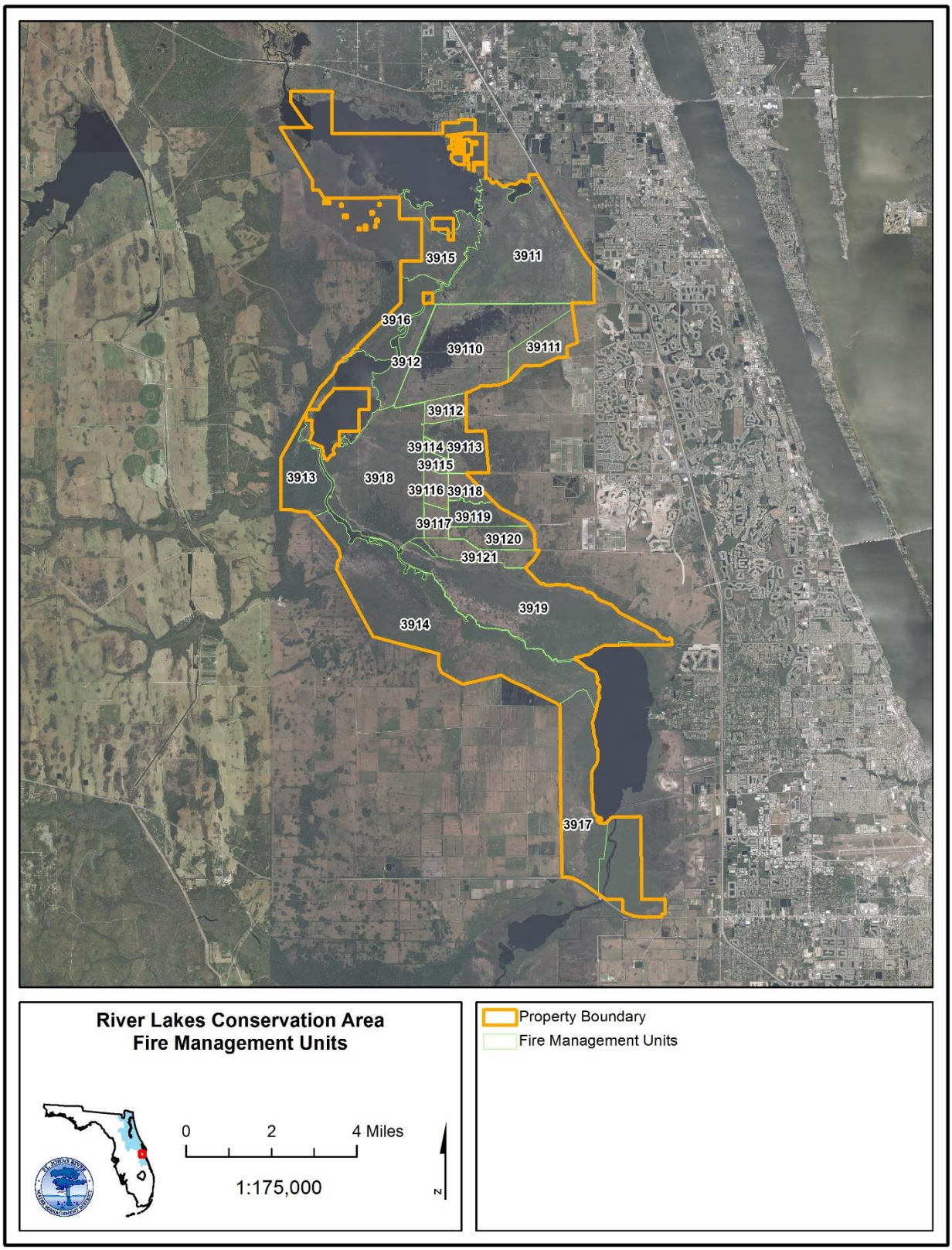


Figure 16: Fire Management Units Map

Table 8: Prescribed Fire History Since October 2011

FMU #	Acreage	Burn Dates
3911	4,505	None
3912	682	None
3913	1,082	None
3914	5,630	None
3915	1,220	March 2014, May 2020
3916	870	February 2014, June 2019
3917	2,367	February 2013
3918	3,779	February 2013, November 2015, February 2017, January 2018, June 2019
3919	4,412	March 2012, March 2013, April 2019
39110	3,495	March 2013
39111	780	None
39112	340	None
39113	807	None
39114	99	None
39115	142	None
39116	299	None
39117	271	None
39118	304	None
39119	549	None
39120	605	None
39121	623	February 2014, November 2015, June 2019

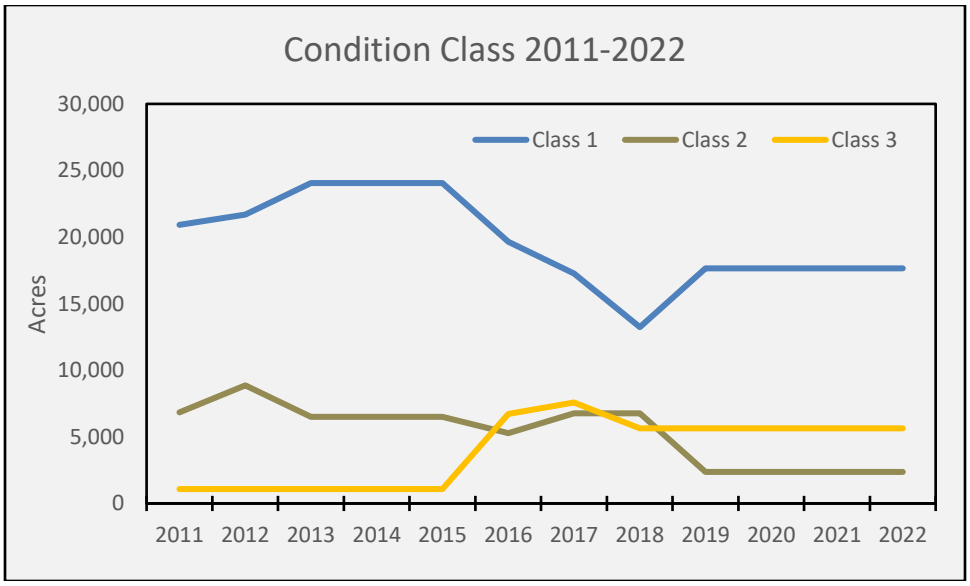


Figure 17: River Lakes condition classes from 2011 to 2022

4.4 Listed Species

To date, ten listed species have been recorded at River Lakes. Most of the listed animal species recorded on the site are wading birds associated with the floodplain marsh and swamps, and the ephemeral wetlands. A brief discussion follows for the notable listed species documented on the Property. Table 6 contains a record of listed species documented within the Conservation Area. The District will utilize FWC Species Action Plan management guidelines when conducting activities that may impact listed species.

Crested Caracara

The crested caracara (*Caracara plancus*) is a Federally Threatened species that occurs within River Lakes. Crested caracaras inhabit wet prairies with cabbage palms. They may also be found in wooded areas with saw palmetto, cypress, scrub oaks and pastures. In 2007, two crested caracara nests were documented at River Lakes within pastures of the Moccasin Island.

Everglade Snail Kite

The Everglade snail kite (*Rostrhamus sociabilis plumbeus*) is a Federally Endangered species known to forage within River Lakes. In recent years kites have been documented nesting in a wider variety of habitats than previously recorded; including a variety of Upper St. Johns River Basin floodplain wetland sites. Given the limited predictability with which this species nests, snail kites should be considered as a possible factor when planning and implementing management activities within the floodplain marsh of River Lakes.

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*), a State Threatened species, occurs within River Lakes. This species is typically found in dry upland habitats, such as sandhill, scrub, and pine flatwoods. Gopher tortoises excavate deep burrows and are considered a keystone species because their burrows provide refuge for more than 300 animal species. Management

activities within the pine flatwood communities of the Property will focus on restoring species composition which will benefit the gopher tortoise.

River Lakes is not suitable as a gopher tortoise recipient site. While not in conflict with the conservation management purpose of the Property, the Conservation Area's poorly drained soils do not provide adequate habitat following FWC's Gopher Tortoise Permitting Guidelines (FWC 2020).

Wood Stork

The wood stork (*Mycteria americana*) is a State and Federally Threatened species that occurs within River Lakes. This large wading bird forages in the wetlands found on the Property. The conservation of these wetlands through acquisition, hydrologic restoration efforts and water quality improvement provide opportunities for the wood stork to continue to recover. Several nesting colonies are documented near the Conservation Area. Currently, there are no wood stork nesting colonies found on River Lakes, however the Property is within a core foraging area.

4.5 Exotic and Invasive Species Management and Control

District staff survey, map, and monitor significant acreage of both non-native and native invasive plant populations at River Lakes. Vegetation management at River Lakes is conducted cooperatively and collaboratively by both the District and the FWC. The FWC manages non-native invasive plant populations within the St. Johns River and associated sovereign waters, including those of River Lakes, through the Aquatic Plant Management program.

The District implements two types of vegetation management programs, recurring and restoration. Recurring activities are those implemented to maintain hydrologic conveyance through waterways and structures or levees where an accumulation of vegetation would harm the District's ability to carry out a core mission. Restoration management is associated with limited activities aimed at converting one plant community to another and then ultimately maintaining the new community with fire.

The District utilizes a GIS database to track and monitor invasive plant occurrences. Non-native invasive plant populations identified include cogongrass (*Imperata cylindrica*), old-world climbing fern (*Lygodium microphyllum*) and paragrass (*Urochloa mutica*). A complete list of non-native invasive plants at River Lakes can be found in Table 5. A variety of integrated pest management techniques – including chemical, mechanical and cultural – are employed in management of invasive plants. The District's Invasive Plant Management Program staff have developed and implemented a treatment schedule for all documented occurrences. All known occurrences of FISP Category I and II invasive plants at the Property will continue to be monitored and treated as necessary.

Feral hogs (*Sus scrofa*) and their ground disturbing activity continue to pose a threat to the natural and cultural resources of River Lakes. The cattle grazing lease holder maintains a hog control agent that effectively reduces impacts to the grazing lease footprint. Outside of the

grazing lease area all feral hog control is conducted through public hunting, managed by the FWC.

At River Lakes there has been an increase in the presence of non-native fish species, especially tilapia and sailfin catfish. Tilapia disturb the lake bottom, increasing turbidity and resuspending nutrients into the water column. Sailfin catfish dig burrows along the shoreline, which impacts river morphology, bank stabilization, flow patterns, and increases turbidity. In spring 2022, the District, together with the FWC, implemented a pilot project on Lake Winder to harvest invasive fish species that dominate the fish community. There were 23,000 lbs of tilapia harvested, which equates to approximately 100 lbs of P removed from the ecosystem, and 8,880 lbs of sailfin catfish removed. The District is investigating developing a commercial harvest program that would cost-effectively remove phosphorus, reduce internal P recycling, reduce harm to benthic habitats and aquatic food webs, and potentially help the District maintain the integrity of channel morphology and lake shorelines.

4.6 Public Access and Recreational Opportunities

River Lakes is managed under a low intensity, multiple-use concept that includes providing areas for fish and wildlife-based public outdoor recreation compatible with the protection of the area's natural resources. The recreational activities offered on the Property include hiking, biking, horseback riding, wildlife viewing, primitive camping, fishing, boating, and hunting.

A parking area is available at the end of Wickham Road. Access from Wickham Road is provided through an agreement with the adjacent landowner. Due to terms of this agreement, vehicular access is prohibited between the hours of 7 p.m. and 7 a.m., daily. The Property is accessible at various points from the water. Brevard County's Leroy Wright Recreation Area provides parking and a boat launch on the south side of State Road 520, just north of the Property. There is also a boat launch site near the south end of River Lakes on US 192. Brevard County's Lake Washington Park, located on the east side of the lake, provides opportunities for boating, air boating, picnicking and fishing. There is a canoe launch on the east side of Lake Poinsett.

Airboat access to the Property from the south is maintained via an airboat crossing at the Lake Washington weir, located just downstream of Lake Washington in the St. Johns River channel. Maintaining contiguous marsh adjacent to the weir is critical to maintaining water elevations in Lake Washington. Restricting airboat traffic to the crossing is essential to preventing damage to the adjacent marsh and threatening Melbourne's use of Lake Washington as a potable water supply.

As a condition of the NRCS agreement, the public is prohibited from using any motorized vehicles or vessels within the Moccasin Island conservation easement footprint.

Most of River Lakes is within FWC's Upper St. Johns River Marsh Wildlife Management Area (WMA), including the parcel on the western side of Lake Washington that is owned by the State and managed by the District (Figure 18). All hunting within the WMA is managed

by the FWC. The District will work with FWC to add new parcels, as well as areas currently excluded from the WMA, to the WMA – as deemed appropriate.

A total of 11 campsites and four inclement weather shelters have been established at River Lakes. Most campsites have tent platforms. FWC's WMA rules address camping on the Property. Additionally, the District maintains rules that apply to camping (https://www.sjrwmd.com/static/permitting/40C-9.pdf), Rule 40C-9.300, Florida Administrative Code (F.A.C.). Maintaining camping areas has proven challenging in the past due to the number of sites, remoteness and intensity of use. To improve the resources available to maintain campsites, the District seeks increased cooperative management of these areas. As part of increased cooperative management, establishment and enforcement of additional camping rules might be necessary.

The District maintains approximately seven miles of non-motorized use trail on the Property. Wildlife viewing opportunities are also available from an observation platform along the trail.

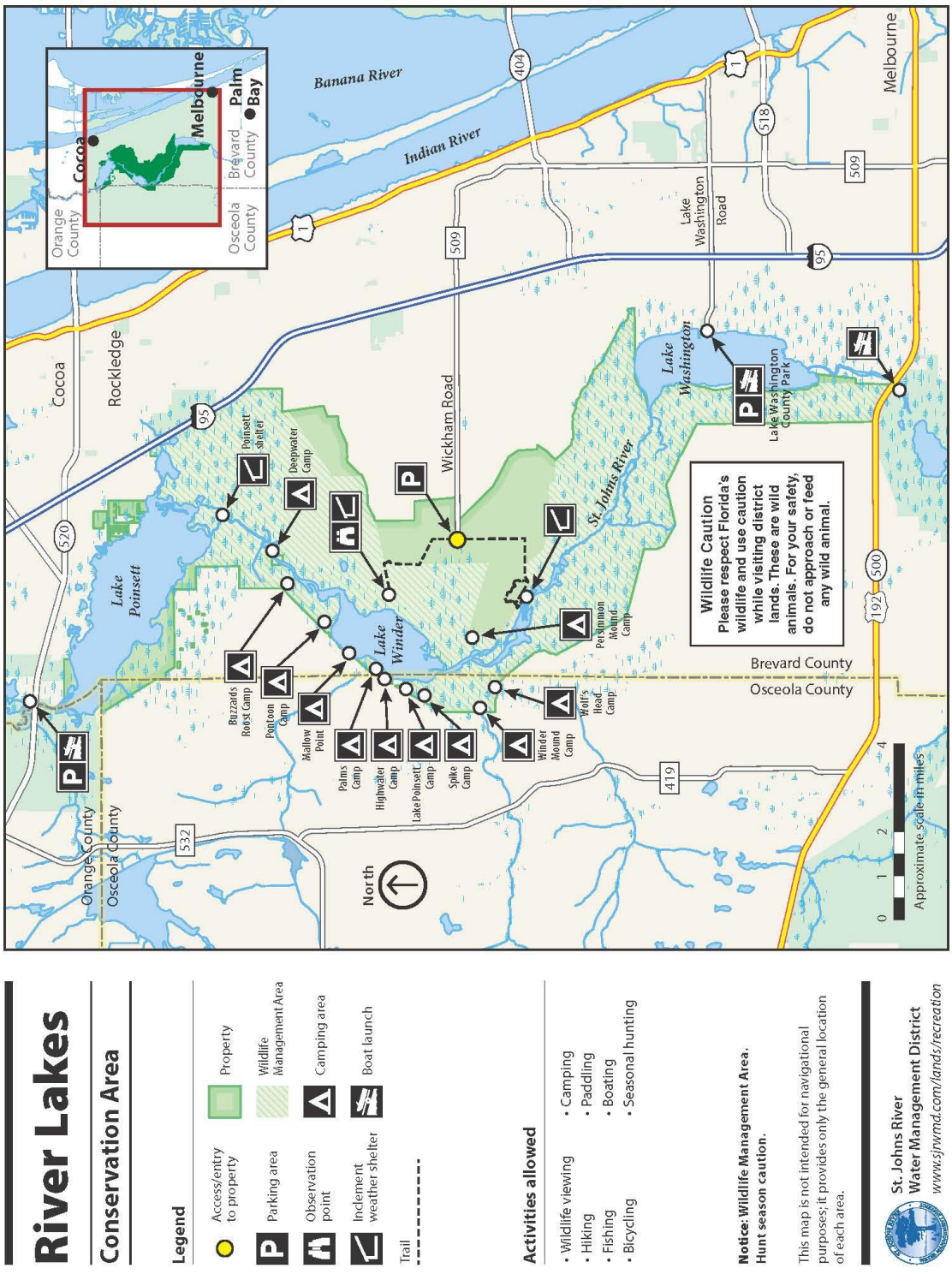


Figure 18: Recreation Map

4.7 Hydrological Preservation and Restoration

All wetland restoration activities planned for Moccasin Island North have been completed. These included backfilling ditches, removing levees surrounding a perched reservoir, creating a wildlife island and re-vegetating the reservoir with native wetland species. The western levee separating Moccasin Island North from the St. Johns River was removed in 2008 after the above activities were complete. On Moccasin Island Middle, ditches were strategically plugged to increase the hydroperiod in that area. No restoration was required on the south parcel.

In the future, projects to improve the resiliency of both the St. Johns River floodplain and adjacent human built environments could be considered, primarily on land adjacent to River Lakes. Potential benefits of resiliency projects could include: reducing nutrients within discharges to the St. Johns through various tributaries (both natural and manmade), attenuating flow rates to river, providing flood protection to nearby communities. Future water resource management systems including, but not limited to, reservoirs and treatment areas should be located on sites that minimize impact to existing natural systems – to the maximum degree feasible.

4.8 Forest Resource Management

The uplands within River Lakes have not had a forest inventory completed. It is unlikely that timber harvest will occur at River Lakes during the term of this plan. This is due to the limited acreage of forested uplands on the Property and lack of nearby markets for forest products. Changes that may occur over time within the forested uplands resulting from growth, natural disturbances, and management activities might necessitate alternative forest management actions. Any forest management actions conducted on the property will follow relevant Best Management Practices and the District's Forest Management Plan (Appendix I).

4.9 Cultural Resources

There are twenty-six documented cultural sites on the property according to the DHR Florida Master Site Files. The District will conduct land management activities in a manner that will provide protection for these sites and serve to reduce the potential for adverse impacts. If District staff discovers any additional sites, staff will document and report those sites to the DHR. Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. The location of the sites is not identified on public maps. The District will follow the management procedures outlined in "Management Procedures of Archaeological and Historical Sites and Properties on State-owned or Controlled Lands" (Appendix K). The Division of Historical Resources will be contacted regarding any significant ground-disturbing activity or any new sites.

4.10 Capital Facilities and Infrastructure

The infrastructure present on the Property include seven miles of boundary fencing, 38 culverts, two bridges, 25.25 miles of road and 7.8 miles of fireline. Significant recreation facilities and infrastructure are present at River Lakes, including a non-paved parking

area/trailhead, an informational kiosk, three inclement weather shelters and 11 campsites. Infrastructure in place at campsites include fire rings, picnic tables and tent platforms. An assessment of campsite infrastructure was completed in January 2023.

Significant infrastructure is present within the cattle grazing lease footprint, including 53 gates and approximately 39 miles of fencing. The cattle grazing lease holder is responsible for management and maintenance of all infrastructure in the lease area.

4.11 Optimal Boundary

If adjacent parcels become available that provide additional protection to the St. Johns River or associated tributaries, support water resource projects, increase conservation value, improve manageability of Property boundary, and/or allow for restoration of impacted land, they will be evaluated for acquisition by District staff. To contribute to this effort, the District has developed an optimal boundary for River Lakes (Figure 19). Within the optimal boundary, approximately 15,660 acres have been identified as potential acquisition through the District's Five-year Acquisition Plan. The District will continue to cooperate with other governmental, along with non-governmental organizations in any potential acquisitions, stewardship partnerships, and conservation management of lands in the vicinity of the Property.

4.12 Research Opportunities

The District has in place a Special Use Authorization (SUA) process (Rule 40C-9.360 F.A.C.) for research projects and other uses. The applicant must provide reasonable assurance that the proposed use is consistent with the Land Management Plan and will not harm the natural or cultural resources of the property.

4.13 Soil Conservation

River Lakes provides tremendous water resource protection benefits. These include flood protection to the surrounding area and water quality protection for the St. Johns River.

The District will follow all soil erosion and forestry best management practices at the Preserve.

4.14 Cooperating Agencies

Section 373.1391, Florida Statutes, authorizes and encourages the District to enter into cooperative land management agreements with state agencies or local governments to provide for the coordinated and cost-effective management of lands to which the water management districts, the Board of Trustees, or local governments hold title. District Policy #820 promotes the District entering into agreements with other agencies and private parties for cooperation and coordination of management of the District's lands. In addition, the District is authorized to enter into Cooperative Agreements, Cooperative Management

Leases, Leases, Easements and Special Use Authorizations to protect the District's water management interests and to enhance the management and public value of the land. Leases can be a useful tool to accomplish land management objectives and will be evaluated and implemented where appropriate. Common examples include cattle grazing and apiaries, and the District remains open to considering other types of leases which help achieve management goals.

The District is the primary agency responsible for the Property's natural and cultural resource management. Various aspects of management are conducted through cooperative agreements with other governmental and non-governmental organizations. A portion of River Lakes on the west side of Lake Washington is titled to the Board of Trustees and managed by the District through a cooperative lease agreement (Lease Number 3803). A majority of the Property is included in the WMA, hunting, public access and law enforcement within the WMA is managed by the FWC. The FWC is also a partner in invasive species management – both plant and animal – on the Property. Vegetation management at River Lakes is conducted cooperatively and collaboratively by both the District and the FWC. The FWC manages non-native invasive plant populations within the St. Johns River and associated sovereign waters, including those of River Lakes, through its Aquatic Plant Management program.

The NRCS provided funding for acquisition and hydrologic restoration activities within a portion of the Moccasin Island tract. Terms of the Moccasin Island conservation easement require the District receive compatible use authorization for management actions conducted within the easement footprint.

The District cooperatively manages public access to the Property with the adjacent landowner through an access easement for River Lakes. Maintenance of the primary drainage canals on the east side of the Property is managed through drainage easements. A portion of the Property is also managed cooperatively through a cattle grazing lease agreement.

The District cooperates with the DHR regarding the management of cultural resources.

4.15 Arthropod Control Plan

An Arthropod Control Plan has not been developed with the respective mosquito control district(s). The Brevard County Mosquito Control Department has been provided with a draft of this land management plan (Appendix M).

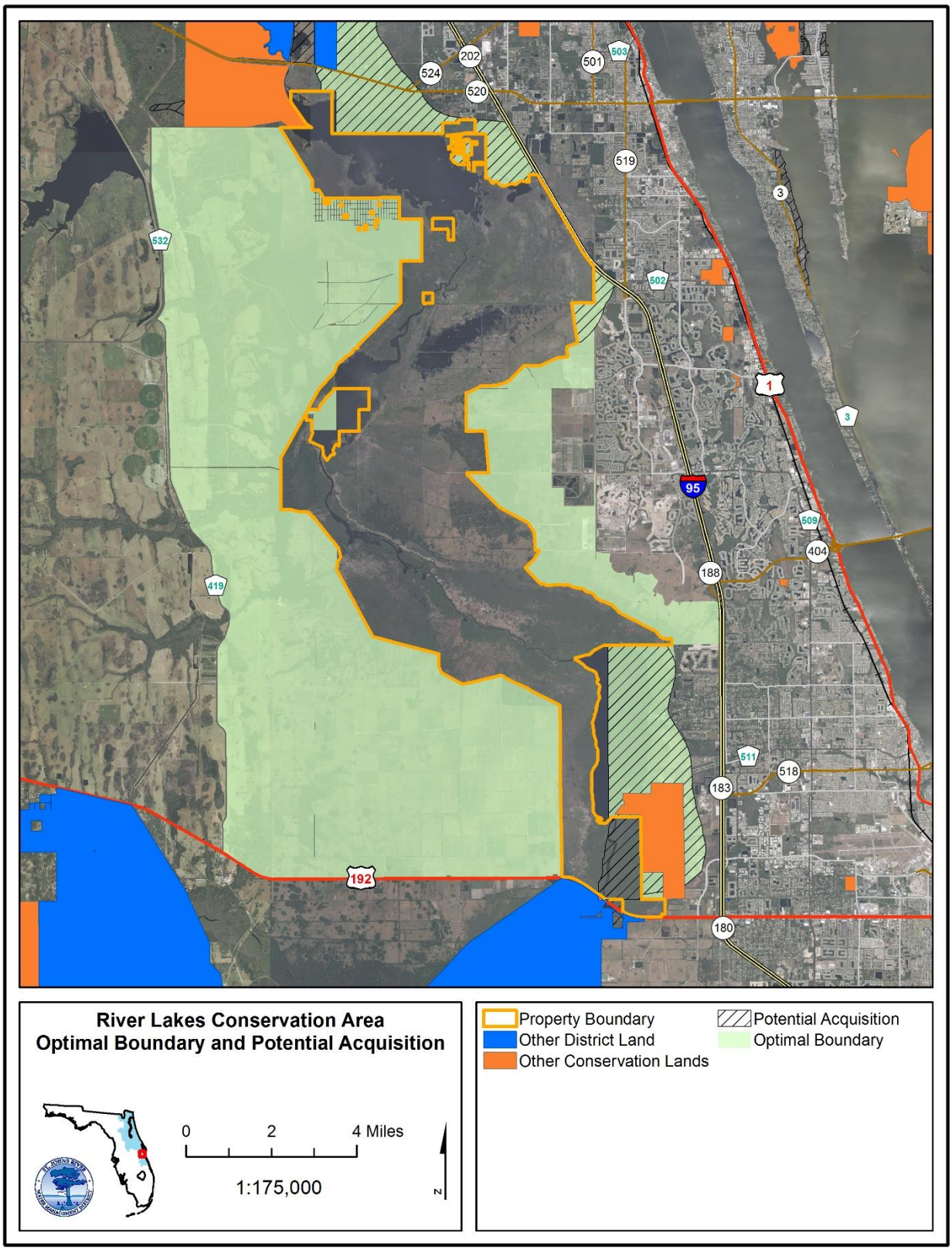


Figure 19: Optimal Boundary Map

5. Resource Management Goals and Objectives

The resource management goals and objectives described below are meant to be broad statements aimed at achieving desired future outcomes at River Lakes. The stated time period for short term (ST) objectives is less than two years and for long term (LT) objectives is up to ten years. There are both short- and long-term goals in this plan.

5.1 Habitat Restoration and Improvement

Goal: Maintain, improve or restore natural communities

Long-term

A. Maintain fire-adapted natural communities with appropriate burn return interval.
B. Conduct habitat/natural community improvement in floodplain marsh to increase the number of acres maintained by prescribed fire.

Short-term

C. Evaluate need to manage cabbage palm encroachment, implement control if necessary.
D. Consider the need to apply tree density reduction techniques within upland communities, as necessary.

5.2 Listed Species Management

Goal: Maintain, improve, or restore listed species populations and habitats.

Long-term

A. Continue to make management decisions that support populations of listed species.
B. Monitor the presence of listed species and adjust management actions appropriately.
C. Conduct plant and wildlife surveys and update species lists.

5.3 Public Access and Recreational Opportunities

Goal: Provide public access and recreational opportunities.

Long-term

A. Continue to maintain public access and recreational opportunities.
B. Retain the ability to close roads as necessary for a variety of reasons including, but not limited to, hydrologic conditions.
C. Continue to coordinate with FWC for management of WMA.

Short-term

D. Coordinate with FWC to ensure WMA camping rules provide protection to District recreational infrastructure and facilities.

5.4 Hydrological Preservation and Restoration

Goal: Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition.

Long-term

A. Continue water quality monitoring on site.
B. Continue working with DEP in establishing and meeting TMDLs and improving impaired waterbodies.
C. Inspect and maintain roads, bridges, culverts, low water crossings, water control structures and trails for damage.
D. As necessary, rehabilitate wildfire suppression lines in order to restore hydrology.
E. Continue hydrologic monitoring and implement EWMP.

Short-term

F. Ensure wells are being maintained/capped if needed.

5.5 Exotic and Invasive Species Maintenance and Control

Goal: Manage invasive plants and animals at maintenance control levels.

Long-term

A. Maintain a database on any locations of non-native invasive plant species.
B. Treat invasive plant species and prevent further infestations.
C. Continue to monitor the feral hog population and institute control measures, where needed.

Short-term

D. Evaluate, and if appropriate, continue or expand non-native fish harvest program.

5.6 Capital Facilities and Infrastructure

Goal: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

Long-term

A. Maintain parking area, boat ramp, signs, gates, fences, trails, roads, kiosks, and other facilities/infrastructure.
B. Control airboat traffic at the Lake Washington weir, by maintaining the airboat ramp associated with the weir and continue to discourage boaters to create or use bypass channels around the weir.
C. Continue coordinating with cattle lessee, Brevard County Sheriff's Office, FWC and other local law enforcement as necessary.

Short-term

D. Pursue public access and recreation related capital facilities and infrastructure improvements.
E. Develop partnership to maintain existing campsites or reduce number of campsites available.
F. Increase coordination with adjacent landowner on Property's western boundary to improve access and management capabilities.

5.7 Cultural Resources

Goal: Protect, preserve, and maintain the cultural resources of the Property.

Long-term

A. Continue to monitor, protect, and preserve the documented Master Sites in accordance with DHR procedures.
B. Ensure all known sites are recorded in the Florida Department of State's Florida Master Site file.
C. Identify and report undocumented sites to the Florida DHR.

5.8 Research Opportunities

Goal: Explore and pursue cooperative research opportunities.

Long-term

A. Continue to cooperate with researchers and universities as appropriate.
B. Continue to assess the need for and pursue research and environmental education partnership opportunities, as appropriate.

5.9 Outreach

Goal: Provide information to the public regarding management activities.

Long-term

A. Continue to work closely with constituents regarding education of management activities, particularly prescribed burning and other vegetation management.
B. Convene an MRT every five years to ensure land management plan is being followed.

6. Ten-year Implementation Schedule, Measures, and Cost Estimates

GOAL 6.1	Maintain, improve or restore natural communities	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Maintain fire-adapted natural communities with appropriate burn return interval.	Acres burned	LT	$57,000	$570,000
Objective B	Conduct habitat/natural community improvement in floodplain marsh to increase the number of acres maintained by prescribed fire.	Acres improved	LT	$37,000	$370,000
Objective C	Evaluate need to manage cabbage palm encroachment, implement control if necessary.	Acres of acceptable cabbage palm coverage	ST	-	-
Objective D	Consider the need to apply tree density reduction techniques within upland communities, as necessary.	Tree density within upland communities acceptable	ST	-	-
GOAL 6.2	Maintain, improve, or restore listed species populations and habitats.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Continue to make management decisions that support listed species populations	Acres of suitable habitat	LT	-	-
Objective B	Monitor the presence of listed species and adjust management actions appropriately.	Listed species monitoring conducted	LT	-	-
Objective C	Conduct plant and wildlife surveys and update species lists.	Species lists updated	LT	-	-
GOAL 6.3	Provide public access and recreational opportunities.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Continue to maintain public access and recreational opportunities.	Sites maintained	LT	-	-
Objective B	Retain the ability to close roads as necessary for a variety of reasons including, but not limited to, hydrologic conditions	Ability to close roads retained	LT	-	-
Objective C	Continue to coordinate with FWC for management of WMA.	WMA cooperatively managed	LT	-	-
Objective D	Coordinate with FWC to ensure WMA camping rules provide protection to District recreational infrastructure and facilities.	WMA rules protect District facilities and infrastructure	ST	-	-
GOAL 6.4	Protect water quality and quantity, restore hydrology, and maintain the restored condition.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Continue water quality monitoring on site.	Water quality monitored	LT	-	-
Objective B	Continue working with DEP in establishing and meeting TMDLs and improving impaired waterbodies.	Water quality improved	LT	-	-
Objective C	Inspect and maintain roads, bridges, culverts, low water crossings, water control structures and trails for damage.	Infrastructure inspected and maintained	LT	-	-
Objective D	As necessary, rehabilitate wildfire suppression lines in order to restore hydrology.	Wildfire suppression lines rehabilitated	LT	-	-
Objective E	Continue hydrologic monitoring and implement EWMP.	Hydrology monitored and EWMP implemented	LT	-	-
Objective F	Ensure wells are being maintained/capped if needed.	Well condition acceptable	ST	-	-

GOAL 6.5	Manage invasive plants and animals at maintenance control levels.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Maintain a database on any locations of non-native invasive plant species.	Database maintained	LT	-	-
Objective B	Treat non-native invasive plant species and prevent further infestations.	Acres treated	LT	$14,000	$140,000
Objective C	Continue to monitor the hog population and institute control measures, where needed.	Number of hogs removed	LT	-	-
Objective D	Evaluate and if appropriate continue or expand invasive fish harvest program.	Pounds of fish removed	ST	-	-
GOAL 6.6	Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Maintain parking area, boat ramp, signs, gates, fences, trails, roads, kiosks, and other facilities/infrastructure.	Facilities maintained	LT	$13,300	$133,000
Objective B	Control airboat traffic at the Lake Washington weir, by maintaining the airboat ramp associated with the weir and continue to discourage boaters to create or use bypass channels around the weir.	Traffic restricted to designated crossing	LT	-	-
Objective C	Continue coordinating with cattle lessee, Brevard County Sheriff's Office, FWC and other law enforcement as necessary.	Secure property	LT	$2,600	$26,000
Objective D	Pursue public access and recreation related capital facilities and infrastructure improvements.	Capital facilities and infrastructure improvements pursued	ST	-	-
Objective E	Develop partnership to maintain existing campsites or reduce number of campsites available.	Campsites maintained	ST	-	-
Objective F	Increase coordination with adjacent landowner on property's western boundary to improve access and management capabilities.	Coordination increased	ST	-	-
GOAL 6.7	Protect, preserve, and maintain the cultural resources of the Property.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Continue to monitor, protect, and preserve the documented Master Sites in accordance with DHR procedures.	Sites protected	LT	-	-
Objective B	Ensure all known sites are recorded in the Florida Department of State's DHR Master Site file.	All sites recorded	LT	-	-
Objective C	Identify and report undocumented sites to the Florida DHR.	Site protected	LT	-	-
GOAL 6.8	Explore and pursue cooperative research opportunities.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Continue to cooperate with researchers and universities as appropriate.	Issue appropriate authorization	LT	-	-
Objective B	Continue to assess the need for and pursue research and environmental education partnership opportunities, as appropriate.	Partnerships created	LT	-	-
GOAL 6.9	Provide information to the public regarding management activities.	**MEASURE**	**PLANNING PERIOD**	**ESTIMATED COST (per year)**	**ESTIMATED COST (10 year)**
Objective A	Continue to work closely with constituents regarding education of management activities, particularly prescribed burning and other vegetation management.	Number of outreach programs completed	LT	-	-
Objective B	Convene an MRT every 5 years to ensure land management plan is being followed.	Number of MRT meetings completed	LT		
ESTIMATED COST TOTALS				$123,900	$1,239,000

7. Resource Management Challenges and Strategies

The greatest resource management challenge at River Lakes is the logistics of managing a 40,000-acre Conservation Area that is dominated by floodplain and divided by the St. Johns River. In the past, the District has had very limited terrestrial access to the Property west of the River channel. As a result, maintaining facilities and infrastructure – including the 11 intensively used campsites and many miles of boundary – on this portion of the Property has been challenging. Potential strategies to address this challenge, as outlined in the resource management goals and objectives (Section 4) include: coordinating with FWC to improve rules and enforcement for camping within the WMA, establish a partnership to maintain existing campsites, reduce the number of campsites, increase coordination with adjacent landowner on property's western boundary to improve access and management capabilities.

8. Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.

The FWC is responsible for the management and maintenance of the lands and any facilities supporting public recreational hunting and fishing with the WMA portion of River Lakes. This includes the establishment and enforcement of rules and regulations as well as posting of boundary signs.

Within the footprint of cattle grazing lease area, the lessee is responsible for stewardship and maintenance of the land and wildlife. This includes non-native and/or invasive species, maintaining fences, fire lines, access and trail roads and gates used by the lessee. The lease area is subject to two separate Grazing Management Plans, which outline the practices generally acceptable. Additionally, the lessee is required to follow Best Management Practices (BMP) for cattle grazing operations as published by the Florida Department of Agriculture and Consumer Services (FDACS, https://www.fdacs.gov/ezs3download/download/25408/516287/Bmp_FloridaCowCalf2008.pdf). The Lessee is required to allow public access to the Property.

In the past, the District has entered into agreements with both the Indian River County and Brevard County Airboat Associations, with the intent of providing access to the airboat associations for maintenance of camping infrastructure at various sites. During the planning period established by this Land Management Plan, the District does seek collaborative partnership with a party(s) to facilitate the management and maintenance of the River Lakes campsites.

9. Management Accomplishments

The following section outlines progress and accomplishments, as related to land management strategies established in the 2011 River Lakes Land Management Plan.

RESOURCE PROTECTION and MANAGEMENT

Water Resource Protection

Strategy: Continue water quality monitoring on site.

- Progress: 100% -Ongoing: The District has several long-term water quality sites along the river and lakes between US 192 and SR 520, including two new additional sites started in 2022, which are all sampled monthly. Two monthly water quality sites are on major canals draining from areas east of the river: 8-mile and 6-mile. The District also has water quality sites along the major western tributaries to this portion of the river, including Taylor, Wolf and Pennywash Creeks.

Strategy: Continue working with DEP in establishing and meeting TMDLs and improving impaired waterbodies.

- Progress: 75%, ongoing: DEP established one TMDL in 2006 on this portion of the river, specifically between Lakes Winder and Poinsett for TP. The District continues to cooperate with DEP on evaluating impairments and determining the sources of the nutrient loading to these lakes and waterbodies throughout the Upper Basin. More information on water quality status and trends in the District can be found at https://www.sjrwmd.com/data/water-quality/#status-trends.

Strategy: Work on achieving a 30% reduction in nutrient loading to Lakes Washington, Winder and Poinsett.

- Progress: N/A, TMDL targets supersede objective: This goal was set prior to the development of the TMDL for this part of the river. The District's focus has shifted to evaluating the effects of biosolids application in the watersheds surrounding and upstream of these lakes. The District currently has several research contracts aimed at developing ways to prevent movement of the nutrients from upland areas throughout the Upper Basin where biosolids are applied into receiving wetlands and streams. The 30% reduction number is based on the 2003 Pollutant Load Reduction Goal (PLRG) loading targets for the lakes. TMDLs in the Upper Basin have comparable reduction targets to the PLRG. Maintaining healthy floodplain wetlands supports water quality goals.

Forest Management

Strategy: Evaluate need to harvest cabbage palms from natural communities.

- Progress: 100%, ongoing: Need for cabbage palm harvest has been evaluated. No cabbage palm harvest has been pursued. Primary acreage suitable for cabbage

palm harvest is within grazing lease. Interest has been expressed by grazing lease holder to pursue cabbage palm harvest.

Strategy: Evaluate need to harvest pines as part of a restoration thinning operation on a portion of the cattle lease-back area.

- Progress: 100%, ongoing: Need for pine harvest has been evaluated. No harvests have been conducted. Limited market for pine, with mills located more than 100 miles from River Lakes.

Strategy: Continue to mow or roller chop willows as needed, as part of marsh restoration efforts.

- Progress: 100%, ongoing: A total of 1,118 acres willow mowed/roller chopped (mechanically treated) by cattle grazing lease holder as in-kind services.

Fire Management

Strategy: Maintain the schedule of prescribed burning established in the annual Fire Management Plans.

- Progress: 100%, ongoing: Burn unit prioritization is developed annually utilizing FNAI return intervals and District Condition Class. Since October 2011, District land managers have applied prescribed fire to 43,627 acres of River Lakes.

Strategy: Continue mechanical treatment of invasive shrub species, where appropriate, to aid prescribed fire and encourage herbaceous plant growth.

- Progress: 100%, ongoing: 1,118 acres willow mechanically treated (mowed/roller chopped) by cattle grazing lease holder as in-kind services.

Flora and Fauna

Strategy: Continue to add new species to the species list as encountered

- Progress: 100%, ongoing: New species observations are recorded as reported. Additionally, District staff has incorporated verified citizen science data – accessed through digital applications including iNaturalist and eBird – into Property species list.

Strategy: Identify special protection areas and management strategies for threatened, endangered, or imperiled species and communities if necessary

- Progress: 100%, ongoing: District staff follows all relevant FWC and USFWS species guidelines.

Exotic Species

Strategy: Continue coordinating with Vegetation Management staff for monitoring and treatment of exotic and/or nuisance plants.

- Progress: 100%, ongoing: The District has conducted, at a minimum, annual invasive plant monitoring across River Lakes. Detailed vegetation community map produced in 2017, adding to vegetation mapping efforts of 2001 and 2010. Nearly 9,500 acres of vegetation, dominated by invasive aquatic plants, has been treated. In addition to the primary target species identified in Table 9, herbicide treatments include those conducted to support infrastructure maintenance and fire management goals. Importantly, minor acreage of high priority FISP Category I or early detection and rapid response species – such as cogongrass (*Imperata cylindrica*), largeflower primrose (*Ludwigia hexapetala*), torpedograss (Panicum repens), paragrass (*Urochloa mutica*).

Strategy: Continue to coordinate with hog removal agreement holder

- Progress: 100%- on-going: A total of 962 feral hogs have been removed by grazing lease hog control agents. Feral hogs are controlled across the remainder of the Property through public hunting. Allowing year-round harvest of feral hogs across Property has potential to improve control of population.

Table 9: River Lakes Herbicide Treatment Summary for Primary Target Species

Scientific Name	Common Name	Acres
Salix caroliniana	Carolina willow	6,909.4
Eichornia crassipes/Pistia stratiotes	water hyacinth/water lettuce	1,712.8
Lygodium microphyllum	old world climbing fern	540.0
Schinus terebinthifolius	Brazilian pepper	120.6
Phragmites australis	common reed	103.1

Cultural Resources

Strategy: Identify and report any new sites encountered.

- Progress: 100%, ongoing: One new site, occurring in a complex with several other sites at the property has been submitted to the DHR for addition to the list of documented cultural resources.

Strategy: Protect known sites as required.

- Progress: 100%, ongoing: Sites are monitored regularly and when needed, District staff will consult with DHR on protection and mitigation measures that may be needed to protect sites.

LAND USE MANAGEMENT

Access

Strategy: Maintain public parking area, entrance sign and kiosk.

- Progress: 100%, ongoing: Access related infrastructure is assessed and maintained as regular part of management.

Recreation

Strategy: Blaze trail system, shelter, campsites

- Progress: 100% - ongoing: Trail system is maintained quarterly and as needed by contractor. Shelters receive annual pressure washing and repairs as needed. The Oak Tree shelter was replaced in 2018. Campsites are visited periodically and maintained as needed. Campsites are frequently used for long periods during hunting season. Individuals using campsites often abandon large volumes of equipment and garbage at campsites. Up until 2015, District staff completed annual debris removal at campsites. Thousands of pounds of abandoned material have been removed from these sites. Given these sites are only accessible by boat and the persistent dumping issues, the continued management of these campsites will be evaluated.

Strategy: Maintain WMA boundary signs

- Progress: 100% - ongoing: Boundary signs are maintained as a part of regular management. Special emphasis is placed upon checking and replacing signs as needed prior to hunting season.

Security

Strategy: Continue coordinating with cattle lessee, Brevard County Sheriff's Office, and FWC as necessary.

- Progress: 100% - ongoing: River Lakes is patrolled periodically by Brevard County Sheriff's Office and FWC law enforcement officers as part of their WMA responsibilities.

Strategy: Maintain boundary signs

- Progress: 100% -ongoing: Boundary signs are maintained as a part of regular management. In addition to WMA and general District property boundary signs, River Lakes also has NRCS conservation easement boundary signs posted that restrict motorized vessels from entering the easement from the river. Special emphasis is placed upon checking and replacing signs as needed prior to hunting season.

ADMINISTRATION

Acquisition

Strategy: Continue to pursue potential acquisitions in the area as resources and need allow.

- Progress: 100%, ongoing: Since 2011, four parcels totaling roughly 1,610 acres have been acquired by the District. One parcel was acquired specifically to provide stormwater treatment for the Crane Creek/M-1 Flow Restoration Project. The remainder of parcels were also purchased to support this project and/or are within the District's identified potential acquisition footprint.

Cooperative Agreements, Leases, Easements and Concessions

Strategy: Continue cooperating with NRCS, FWC and Board of Trustees for management of the property.

- Progress: 100% - ongoing: Annual meetings are held with FWC to review new and proposed WMA rule changes. Additional meetings are held as needed. Conservation easement tours are held with NRCS when requested. Board of Trustees has been contacted regarding update of this management plan.

Strategy: Maintain agreements to assist with the management, maintenance and access to, River Lakes Conservation Area.

- Progress: 100% - ongoing: At time of writing, 19 separate agreements are maintained at River Lakes.

10. Compliance with Federal, State, and Local Government Requirements

Management of the Property under the multiple-use concept complies with the State Lands Management Plan. This plan also conforms with the Brevard and Osceola County Comprehensive Plans (Appendix L). Brevard County Mosquito Control has been notified of this management plan (Appendix M).

11. Revenue and Expenses

In an average year, the revenue generated by this Property is approximately $145,200 and the expenses are approximately $135,400. Table 10 summarizes the projected expenses and revenue over the next ten years incurred by the District and the FWC.

Table 10: Projected Expenses and Revenue at River Lakes 2023-2033

PROJECTED EXPENSES

Activity	Unit	Total Expense Over 10 Years	Agency Responsibility
Habitat Improvement	6,900 acres	$370,000	District
Invasive Plant management	2,591 acres	$140,000	District
Prescribed Fire	103,167 acres	$570,000	District
Road Maintenance	25 miles	$55,000	District
Mowing (roads, trails, and parking area)	154 acres	$27,000	District
Trail Maintenance	7 miles	$16,000	District
Fence Maintenance	7 miles	$7,000	District
Fireline Maintenance	7.8 miles	$28,000	District
Security	520 hours	$26,000	FWC
Staff time	4,000 hours	$115,000	District
Total		**$1,354,000**	

PROJECTED REVENUE

Activity	Unit	Total Revenue Over 10 Years	Receiving Agency
Cattle Grazing Lease	968 animal units	$1,452,000	District
Total		**$1,452,000**	

Page intentionally left blank

12. References

Canion, A., Hoge, V., Hendrickson, J., Jobes, T. and Dobberfuhl, D. (2022) Trends in phosphorus fluxes are driven by intensification of biosolids applications in the Upper St. Johns River Basin (Florida, United States), Lake and Reservoir Management, 38:3, 215-227

Canion, A., V. Hoge, J. Hendrickson, T. Jobes, and D. Dobberfuhl. 2021. Phosphorus and nitrogen export associated with biosolids applications in tributary watersheds of the St. Johns River. Technical Publication SJ2021-03. St. Johns River Water Management District, Palatka, FL. 60 pp. https://static.sjrwmd.com/sjrwmd/technical-reports/technical-publications/SJ2021-03.pdf

Costanza, R., et al. 1997. The value of the world's ecosystem services and natural capital. Nature. Vol. 387. 253 pp.

Florida Natural Areas Inventory. (2010). *Guide to the Natural Communities of Florida.* Tallahassee, FL.

Gao, X. 2006. TMDL Report, Nutrient and DO TMDLs for the St. Johns River above Lake Poinsett (WBID 2893L), Lake Hell n' Blazes (WBID 2893Q), and St. Johns River above Sawgrass Lake (WBID 2893X). Florida Department of Environmental Protection, Tallahassee, FL. 43 pp. http://publicfiles.dep.state.fl.us/DEAR/DEARweb/TMDL/Final_TMDL/gp3/usjr_tmdl-060425_01.pdf

Hall, G.B. and A. Borah. 1998. Minimum surface water levels determined for the Greater Lake Washington Basin, Brevard County. Technical Memorandum July 22, 1998. St. Johns River Water Management District, Palatka, FL. 59 pp. http://intraweb/comm/library/files/pro/LakeWashington_MFLs_July22_1998.pdf

Hall, D.L., K.J. Ponzio, J.B. Miller, P.J. Bowen, and D.L. Curtis. 2017. Ecology and Management of Carolina Willow (Salix caroliniana): A Compendium of Knowledge. Technical Publication SJ2017-1. St. Johns River Water Management District, Palatka, FL. 122 pp. https://static.sjrwmd.com/sjrwmd/secure/technicalreports/TP/SJ2017-1.pdf.

Miller, S.J., M.A. Lee, and E.F. Lowe. 1998. The Upper St. Johns River Basin Project: Merging Flood Control with Aquatic Ecosystem Restoration and Preservation. Trans. 63rd No. Am. Wildl. And Natur. Resour. Conf. Pp. 156-170.

Miller, S.J., T. Jobes, and K.J. Ponzio. 2022. Upper St. Johns River Basin Project Interim Environmental Water Management Plan. Technical Publication SJ2022-01. St. Johns River Water Management District, Palatka, FL. 67 pp. https://static.sjrwmd.com/sjrwmd/technical-reports/technical-publications/SJ2022-01.pdf

Register, C. and P. Renish. 2021. Consumptive Use Technical Staff Report 16-Dec-2021 Application #50301-10. St. Johns River Water Management District, Palatka, FL. 12 pp.

Williams, C.P., T.M. Scott, and S.B. Upchurch. 2022. Florida Geomorphology Atlas. Special Publication No. 59. Florida Geological Survey, Florida Department of Environmental Protection, Tallahassee, FL. https://publicfiles.dep.state.fl.us/FGS/Geological_Investigations/Geomorphology/SpecialPublication59/FloridaGeomorphologyAtlas_SP59.pdf#page=179

APPENDIX A – BOARD OF TRUSTEES LEASE

State of Florida
Department of Natural Resources
Division of State Lands

Document Conversion

FILE HEADER SHEET

FILE #: 3803-(1)

JJH:05/16/91:Alpha Systems

(1) 3803 ✓

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

OF THE STATE OF FLORIDA

LEASE AGREEMENT

Lease No. 3803

THIS LEASE AGREEMENT, made and entered into this 19th day of September, 1989, by and between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT FUND OF THE STATE OF FLORIDA hereinafter referred to as "LESSOR", and the GOVERNING BOARD OF THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT, hereinafter referred to as "LESSEE."

LESSOR, for and in consideration of mutual covenants and agreements hereinafter contained, does hereby lease to said LESSEE, the lands described in paragraph 2 below, together with the improvements thereon, and subject to the following terms and conditions:

1. DELEGATIONS OF AUTHORITY: LESSOR'S responsibilities and obligations herein shall be exercised by the Division of State Lands, Department of Natural Resources.

2. DESCRIPTION OF PREMISES: The property subject to this lease, is situated in the County of Brevard, State of Florida and is more particularly described in Exhibit A attached hereto and hereinafter called the "leased premises".

3. TERM: The term of this lease shall be for a period of 50 years commencing on Sept. 19, 1989 and ending on Sept. 18, 2039, unless sooner terminated pursuant to the provisions of this lease.

4. PURPOSE: LESSEE shall manage the leased premises only for the conservation and protection of natural and historical resources and for resource based public outdoor recreation which is compatible with the conservation and protection of these public lands, as set forth in subsection 253.023(11), Florida Statutes, and for the purpose of adding the leased premises to an existing Type II Wildlife Management Area Agreement with the Florida Game and Fresh Water Fish Commission along with other related uses necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 8 of this lease.

5. QUIET ENJOYMENT AND RIGHT OF USE: LESSEE shall have the right of ingress and egress to, from and upon the leased premises for all purposes necessary to the full quiet enjoyment by said LESSEE of the rights conveyed herein.

6. UNAUTHORIZED USE: LESSEE shall, through its agents and employees, prevent the unauthorized use of the leased premises or any use thereof not in conformity with this lease.

7. ASSIGNMENTS AND SUBLEASES: This lease shall not be assigned in whole or in part without the prior written consent of LESSOR. Any assignment made either in whole or in part without the prior written consent of LESSOR shall be void and without legal effect. However, notwithstanding the foregoing, nothing herein shall be construed to prevent LESSEE from adding the leased premises to the existing Type II Wildlife Management Area Agreement with the Game and Fish Commission.

8. MANAGEMENT PLAN: LESSEE shall prepare and submit a Management Plan for the leased premises in accordance with Chapters 18-2 and 18-4, Florida Administrative Code, within 12 months of the effective date of this lease. The Management Plan shall be submitted to LESSOR for approval through the Division of State Lands. The leased premises shall not be developed or physically altered in any way other than what is necessary for security and maintenance of the leased premises without the prior written approval of LESSOR until the Management Plan is approved. LESSEE shall provide LESSOR with an opportunity to participate in all phases of preparing and developing the Management Plan for the leased premises. The Management Plan shall be submitted to LESSOR in draft form for review and comments within ten months of the effective date of this lease. LESSEE shall give LESSOR reasonable notice of the application for and receipt of any state, federal or local permits as well as any public hearings or meetings relating to the development or use of the leased premises. LESSEE shall not proceed with development of said leased premises including, but not limited to, funding, permit applications, design or building contracts until the Management Plan required herein has been submitted and approved. Any financial commitments made by LESSEE which are not in compliance with the terms of this lease shall be done at LESSEE'S own risk. The Management Plan shall emphasize the original management concept as approved by LESSOR at the time of acquisition which established the primary public purpose for which the leased premises were

acquired. The approved Management Plan shall provide the basic guidance for all management activities and shall be reviewed jointly by LESSEE and LESSOR at least every five (5) years. LESSEE shall not use or alter the leased premises except as provided for in the approved Management Plan without the prior written approval of LESSOR. The Management Plan prepared under this lease shall identify management strategies for exotic species, if present. The introduction of exotic species is prohibited, except when specifically authorized by the approved Management Plan.

9. EASEMENTS: All easements including, but not limited to, utility easements are expressly prohibited without the prior written approval of LESSOR. Any easement not approved in writing by LESSOR shall be void and without legal effect.

10. RIGHT OF INSPECTION: LESSOR or its duly authorized agents, representatives or employees shall have the right at any and all times to inspect the leased premises and the works and operations of LESSEE in any matter pertaining to this lease.

11. PLACEMENT AND REMOVAL OF IMPROVEMENTS: All buildings, structures, improvements, and signs shall be constructed at the expense of LESSEE in accordance with plans prepared by professional designers and shall require the prior written approval of LESSOR as to purpose, location, and design. Further, no trees, other than non-native species, shall be removed or major land alterations done without the prior written approval of LESSOR. Removable equipment and removable improvements placed on the leased premises by LESSEE which do not become a permanent part of the leased premises will remain the property of LESSEE and may be removed by LESSEE upon termination of this lease.

12. INSURANCE REQUIREMENTS: During the term of this lease LESSEE shall procure and maintain policies of fire, extended risk, and liability insurance coverage. The extended risk and fire insurance coverage shall be in an amount equal to the full insurable replacement value of any improvements or fixtures located on the leased premises. The liability insurance coverage shall be in amounts not less than $100,000.00 per occurrence and $200,000.00 per accident for personal injury, death, and property damage on the leased premises. Such policies of insurance shall name LESSOR, the State of Florida and LESSEE as co-insureds. LESSOR shall submit written evidence of having procured all insurance policies required herein prior to the effective date of this lease and

shall submit annually thereafter, written evidence of maintaining such insurance to the Bureau of Uplands Management, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399. LESSEE shall purchase all policies of insurance from a financially-responsible insurer duly authorized to do business in the State of Florida. Any certificate of self-insurance shall be issued or approved by the Insurance Commissioner, State of Florida. The certificate of self-insurance shall provide for casualty and liability coverage. LESSEE shall immediately notify LESSOR and the insurer of any erection or removal of any building or other improvement on the leased premises and any changes affecting the value of any improvements and shall request the insurer to make adequate changes in the coverage to reflect the change in value. LESSEE shall be financially responsible for any loss due to failure to obtain adequate insurance coverage, and the failure to maintain such policies or certificate in the amounts set forth shall constitute a breach of this lease.

13. INDEMNITY: LESSEE hereby covenants and agrees to investigate all claims of every nature at its own expense, and to indemnify, protect, defend, hold and save harmless the State of Florida and LESSOR from any and all claims, actions, lawsuits and demands of any kind or nature arising out of this lease to the extent provided by law.

14. PAYMENT OF TAXES AND ASSESSMENTS: LESSEE shall assume full responsibility for and shall pay all liabilities that accrue to the leased premises or to the improvements thereon, including any and all ad valorem taxes and drainage and special assessments or taxes of every kind an all mechanic's or materialman's liens which may be hereafter lawfully assessed and levied against the leased premises if any.

15. NO WAIVER OF BREACH: The failure of LESSOR to insist in any one or more instances upon strict performance of any one or more of the covenants, terms and conditions of this lease shall not be construed as a waiver of such covenants, terms or conditions, but the same shall continue in full force and effect, and no waiver of LESSOR of any of the provisions hereof shall in any event be deemed to have been made unless the waiver is set forth in writing, signed by LESSOR.

16. TIME: Time is expressly declared to be of the essence of this lease.

17. NON DISCRIMINATION: LESSEE shall not discriminate against any individual because of that individual's race, color, religion, sex, national origin, age, handicap, or marital status with respect to any activity occurring within the leased premises or upon lands adjacent to and used as an adjunct of the leased premises.

18. UTILITY FEES: LESSEE shall be responsible for the payment of all charges for the furnishing of gas, electricity, water and other public utilities if any to the leased premises and for having the utilities turned off when the leased premises are surrendered.

19. MINERAL RIGHTS: This lease does not cover petroleum or petroleum products or minerals and does not give the right to LESSEE to drill for or develop the same.

20. RIGHT OF AUDIT: LESSEE shall make available to LESSOR all financial and other records relating to this lease, and LESSOR shall have the right to audit such records at any reasonable time during the term of the lease. This right shall be continuous until this lease expires or is terminated. This lease may be terminated by LESSOR should LESSEE fail to allow public access to all documents, papers, letters or other materials made or received in conjunction with this lease, pursuant to the provisions of Chapter 119, Florida Statutes.

21. CONDITION OF PREMISES: LESSOR assumes no liability or obligation to LESSEE with reference to the conditions of the leased premises. The leased premises herein are leased by LESSOR to LESSEE in an "as is" condition, with LESSOR assuming no responsibility for the care, repair, maintenance or improvement of the leased premises for the benefit of LESSEE.

22. COMPLIANCE WITH LAWS: LESSOR agrees that this lease is contingent upon and subject to LESSEE obtaining all applicable permits and complying with all applicable permits, regulations, ordinances, rules, and laws of the State of Florida or the United States or of any political subdivision or agency of either.

23. NOTICE: All notices given under this lease shall be in writing and shall be served by certified mail including, but not limited to, notice of any violation served pursuant to 253.04, Florida Statutes, to the last address of the party to whom notice is to be given, as designated by such party in writing. LESSOR and LESSEE hereby designate their address as follows:

LESSOR: Department of Natural Resources
Division of State Lands
Bureau of Uplands Management
3900 Commonwealth Boulevard
Tallahassee, FL 32399

LESSEE: St. Johns River Water Management District
Director, Division of Land Acquisition
Highway 100 West
P. O. Box 1429
Palatka, FL 32178-1429

24. BREACH OF COVENANTS, TERMS, OR CONDITIONS: Should LESSEE breach any of the covenants, terms, or conditions of this lease, LESSOR shall give written notice to LESSEE to remedy such breach within sixty (60) days of such notice. In the event LESSEE fails to remedy the breach to the satisfaction of LESSOR within sixty (60) days of receipt of written notice, LESSOR may either terminate this lease and recover from LESSEE all damages LESSOR may incur by reason of the breach including, but not limited to, the cost of recovering the leased premises and attorneys' fees or maintain this lease in full force and effect and exercise all rights and remedies herein conferred upon LESSOR.

25. DAMAGE TO THE PREMISES: LESSEE agrees that it will not do, or suffer to be done, in, on or upon the leased premises or as affecting said leased premises, any act which may result in damage or depreciation of value to the leased premises, or any part thereof. LESSEE shall not dispose of any contaminants including, but not limited to, hazardous or toxic substances, chemicals or other agents used or produced in LESSEE'S operations, on the leased premises or on any adjacent state land or in any manner not permitted by law.

26. SURRENDER OF PREMISES: Upon termination or expiration of this lease, LESSEE shall surrender the leased premises to LESSOR. In the event no further use of the leased premises or any part thereof is needed, LESSEE shall give written notification to the Bureau of Uplands Management, Division of State Lands, Department of Natural Resources, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399 at least six (6) months prior to the release of any or all of the leased premises. Notification shall include a legal description, this lease number, and an explanation of the release. The release shall only be valid if approved by LESSOR through the execution of a release of lease instrument with the same formality as this lease. Upon release of all or any part of the leased premises or upon termination or expiration of this lease, all improvements, including both physical structures and modifications to the leased premises, shall become the property of LESSOR, unless LESSOR gives written

notice to LESSEE to remove any or all such improvements at the expense of LESSEE. The decision to retain any improvements upon termination of this lease shall be at LESSOR'S sole discretion. Prior to surrender of all or any part of the leased premises, a representative of the Division of State Lands shall perform an on-site inspection and the keys to any building on the leased premises shall be turned over to the Division. If the improvements do not meet all conditions as set forth in paragraphs 19 and 36 herein, LESSEE shall pay all costs necessary to meet the prescribed conditions.

27. BEST MANAGEMENT PRACTICES: LESSEE shall implement applicable Best Management Practices for all activities conducted under this lease in compliance with paragraph 18-2.004(1)(d), Florida Administrative Code, which have been selected, developed, or approved by LESSOR or other land managing agencies for the protection and enhancement of the leased premises.

28. PUBLIC LANDS ARTHROPOD CONTROL PLAN: LESSEE shall identify and subsequently designate to the respective arthropod control district or districts within one year of the effective date of this lease all of the environmentally sensitive and biologically highly productive lands contained within the leased premises, in accordance with Section 388.4111, Florida Statutes and Chapter 10D-54, Florida Administrative Code, for the purpose of obtaining a public lands arthropod control plan for such lands.

29. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the leased premises is held by LESSOR. LESSEE shall not do or permit anything to be done with purports to create a lien or encumbrance of any nature against the real property contained in the leased premises including, but not limited to, mortgages or construction liens against the leased premises or against any interest of LESSOR therein.

30. PARTIAL INVALIDITY: If any term, covenant, condition or provision of this lease shall be ruled by a court of competent jurisdiction, to be invalid, void, or unenforceable, the remainder of the provisions shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

31. ARCHAEOLOGICAL AND HISTORIC SITES: Execution of this lease in no way affects any of the parties' obligations pursuant to Chapter 267, Florida Statutes. The collection of artifacts or the disturbance of archaeological and historic sites on state-owned lands is prohibited unless prior authorization has been obtained from the Department of State, Division of Historical Resources.

The Management Plan prepared pursuant to Chapters 18-2 and 18-4, Florida Administrative Code, shall be reviewed by the Division of Historical Resources to insure that adequate measures have been planned to locate, identify, protect and preserve the archeological and historic sites and properties on the leased premises.

32. SOVEREIGNTY SUBMERGED LANDS: This lease does not authorize the use of any lands located waterward of the mean or ordinary high water line of any lake; river, stream, creek, bay, estuary, or other water body or the waters or the air space thereabove.

33. DUPLICATE ORIGINALS: This lease is executed in duplicate originals each of which shall be considered an original for all purposes.

34. ENTIRE UNDERSTANDING: This lease sets for the entire understanding between the parties and shall only be amended with the prior written approval of LESSOR.

35. MAINTENANCE OF IMPROVEMENTS: LESSEE shall maintain the real property contained within the leased premises and the improvements located thereon, in a state of good condition, working order and repair including, but not limited to, keeping the leased premises free of trash or litter, meeting all building and safety codes in the location situated, maintaining the planned improvements as set forth in the approved Management Plan and maintaining any and all existing roads, canals, ditches, culverts, risers and the like in as good condition as the same may be on the effective date of this lease provided, however, that any removal, closure, etc., of the above improvements shall be acceptable when the proposed activity is consistent with the goals of conservation, protection and enhancement of the natural and historical resources within the leased premises and with the approved Management Plan.

36. GOVERNING LAW: This lease shall be governed by and interpreted according to the laws of the State of Florida.

37. SECTION CAPTIONS: Articles, subsections and other captions contained in this lease are for reference purposes only and are in no way intended to describe, interpret, define or limit the scope, extent or intent of this lease or any provisions thereof.

IN WITNESS WHEREOF, the parties have caused this lease to be executed on the day and year first above written.

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

Virginia A. Curry
Witness

By: _____ (SEAL)
Director, Division of State Lands, Department of Natural Resources

Daniel T. Crabb
Witness

"LESSOR"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 19th day of September, 1989, by Percy W. Mallison, Jr., as Director, Division of State Lands, Department of Natural Resources.

_____ (SEAL)
NOTARY PUBLIC

My Commission Expires:

Notary Public, State of Florida
My Commission Expires July 25, 1993
Bonded Thru Troy Fain - Insurance Inc.

Approved as to Form and Legality

By: _____
DNR Attorney

GOVERNING BOARD OF THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

_____ (SEAL)
JOHN L. MINTON, Chairman

ATTEST:

_____ (SEAL)
HENRY DEAN, Assistant Secretary

"LESSEE"

STATE OF FLORIDA
COUNTY OF PUTNAM

The foregoing instrument was acknowledged before me this 15th day of August, 1989, by John L. Minton and Henry Dean, Chairman and Assistant Secretary, respectively, of the Governing Board of the St. Johns River Water Management District.

_____ (SEAL)
NOTARY PUBLIC

My Commission Expires:

Notary Public, State of Florida
My Commission Expires May 5, 1991
Bonded Thru Troy Fain - Insurance Inc.

APPROVED AS TO FORM:

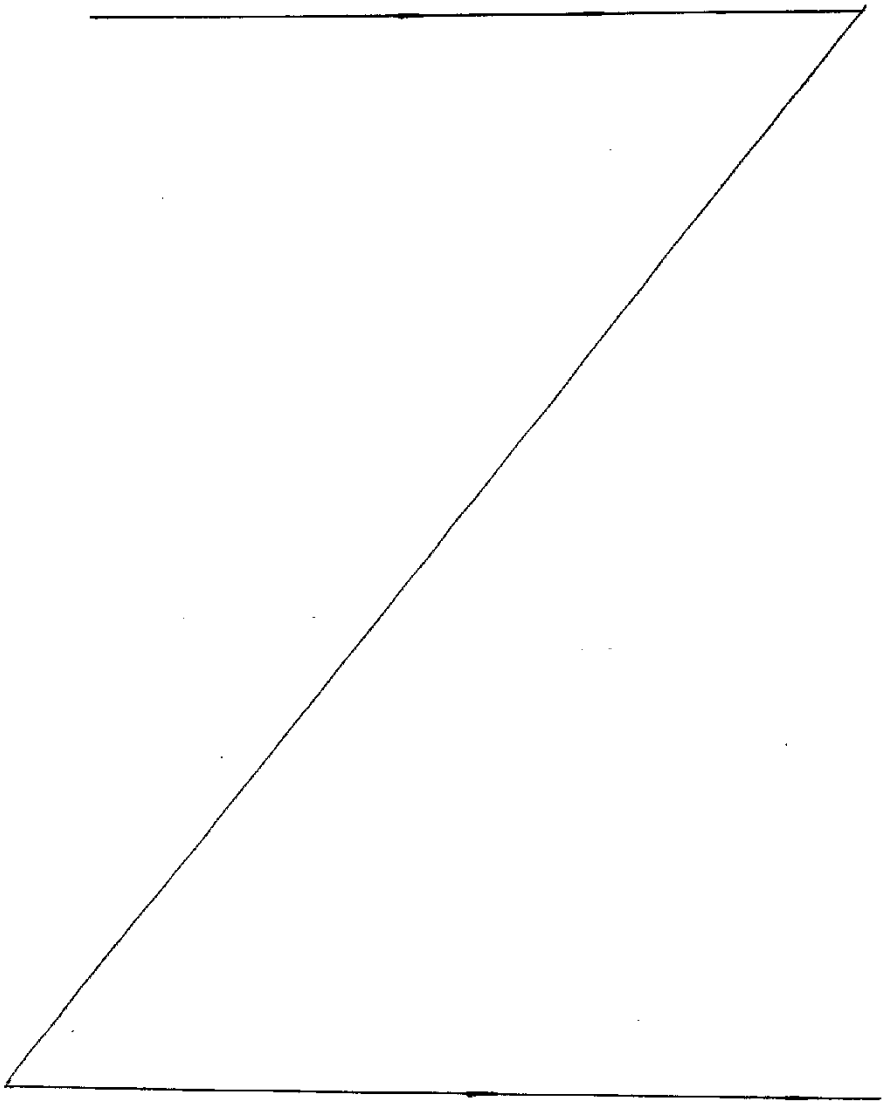
_____
JOHN W. WILLIAMS, Attorney
Office of Legal Services
S.J.R.W.M.D.

EXHIBIT A

LEGAL DESCRIPTION OF THE LEASED PREMISES

All those lands lying in Sections 6, 7, 18, 19 and 30, Township 27 South, Range 36 East, Brevard County, Florida.

Excepting therefrom any land lying below the ordinary high water line of Lake Washington.



APPENDIX B –COOPERATIVE AGREEMENT BETWEEN DISTRICT AND FWC

District Agreement FWC Contract No. 13461

COOPERATIVE AGREEMENT
BETWEEN THE
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
AND THE
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

This Cooperative Agreement (Agreement) is entered into on May 6, 2014, between the St. Johns River Water Management District, a public body existing under Chapter 373, Florida Statutes, whose mailing address is P.O. Box 1429, Palatka, Florida 32176-1429 (District) and the Florida Fish and Wildlife Conservation Commission, an agency of the State of Florida, whose mailing address is 620 South Meridian Street, Tallahassee, FL 32399-1600 (Commission) (collectively "the Parties," each singularly a "Party").

The District is charged in section 373.1391(1)(b), Florida Statutes, whenever practicable, with making its lands open to the general public for recreational uses, including hunting and fishing.

The District is authorized by sections 373.1391 and 373.1401, Florida Statutes, to enter into contracts with state agencies and other entities to provide for the coordinated and cost-effective management of District lands; and

The Commission is an agency of the State of Florida responsible for the regulation, management, protection, and conservation of Florida's fish and wildlife resources; and

The Commission and the District have several individual agreements on certain District lands enabling the Commission to conduct hunting programs, manage wildlife resources, or establish those lands as Wildlife Management Areas (WMAs) or Public Small Game Hunting Areas (PSGHAs); and

The Parties wish to establish a comprehensive agreement regarding management of specified District lands for the protection of wildlife and the operation and regulation of compatible public uses related thereto in cooperation with the District.

Accordingly, the parties, in consideration of the premises above and the mutual benefits flowing from each to the other, agree as follows:

1. **PURPOSE.** The purpose of this Agreement is to provide for public outdoor recreational hunting and fishing opportunities on specified District lands. The Commission shall manage the lands to protect fish and wildlife, and shall administer programs for public recreational hunting and fishing consistent with this Agreement and Commission rules.

2. **TERM.** The initial term of this Agreement shall commence on the date the last of the Parties has signed this Agreement and continue for five years. Thereafter, this Agreement shall automatically renew for three additional five-year terms unless earlier terminated by either Party as provided for below. Extension of this Agreement beyond 20 years from the commencement date shall require both parties written agreement to do so.

3. **MANAGED AREAS.** The areas initially covered by this Agreement are listed in the attached Exhibit "A" and mapped in the attached Exhibit "B", incorporated herein by this reference. Lands may be added or removed from existing managed areas upon written request and approval by the Parties. New management areas or removal of a management area in its entirety may only be made by written amendment to this Agreement signed by both Parties. Exhibit "A" shall be amended to the list of the managed areas covered by the amendment and Exhibit "B" shall be amended to include the map location of the areas.

4. **COMMISSION RESPONSIBILITIES.** Consistent with the applicable District Land Management Plan, the Commission will, to the best of its ability and to the extent of its lawful authority, help manage and maintain the lands and any facilities supporting public recreational hunting and fishing use in an environmentally acceptable manner and in accordance with good management practices, which shall include, but not be limited to:

   4.1 Establishment of rules and regulations for the purposes of protecting and taking fish and wildlife;
   4.2 Enforcement of applicable laws and regulations, including periodic patrol and investigation, when necessary;
   4.3 Provision of personnel and signs for boundary posting;
   4.4 Repair of structures placed on the property by the Commission;
   4.5 Provision of public information on hunting and fishing and assistance to recreational hunters and anglers; and
   4.6 The Commission shall convene an annual meeting with the District to discuss cooperative efforts on each area listed in Exhibit "A".

5. **DISTRICT RESPONSIBILITIES.** The District is authorized and mandated, pursuant to chapter 373, Florida Statutes, and other legal authorities, to provide for overall management of the lands under this Agreement, including all management not provided by the Commission under this Agreement. Commission management of the lands under this Agreement shall not interfere with or be inconsistent with the District's overall management activities.

6. **ACCESS TO LANDS AND CLOSURE.** The Commission shall have full and free access to the lands under this Agreement for the purposes set forth herein. The District shall take all steps reasonably necessary to provide for such access. The District may close parts or all

of the lands under this Agreement during drought, extreme weather, flood, fire, construction or land management activities, or other hazardous condition, or when necessary to protect species or habitat and will provide reasonable notice of such closure to the Commission.

7. **ARCHAEOLOGICAL SITES**. Nothing contained herein affects any of the Parties' obligations pursuant to Chapter 267, Florida Statutes, regarding archaeological and historical sites. The collection of artifacts or the disturbance of archaeological and historical sites on state-owned lands is prohibited unless prior authorization has been obtained from the State of Florida Department of State, Division of Historical Resources.

8. **DISTRICT RESERVATIONS**. The District reserves and exempts from this Agreement:
   - 8.1 All other existing uses of the property;
   - 8.2 All other recreational uses outside Commission-established hunting and fishing;
   - 8.3 All land management and maintenance activities exclusive of those related to Commission-established hunting and fishing;
   - 8.4 Management of wild hogs with approval from the Commission;
   - 8.5 All water management uses. Water management uses take priority over all other uses, including Commission activities.

9. **PROJECT MANAGERS**. The Project Manager for the District is Steve Miller, at SJRWMD, 4049 Reid Street, Palatka, Florida 32178, telephone (386) 329-4399. The Project Manager for the Commission is Mike Brooks, at FFWCC, 620 South Meridian Street, Tallahassee, Florida 32399-1600, telephone (850) 488-3831. The Parties shall direct all matters arising in connection with the performance of this Agreement, other than notices, to the attention of the Project Managers for attempted resolution or action. The Project Managers shall be responsible for overall coordination and oversight relating to the performance of this Agreement.

10. **NOTICES.** All notices, demands, or other communications to the Commission under this Agreement shall be in writing and shall be deemed received if sent by certified mail to:

Rosa Torres
Florida Fish and Wildlife
Conservation Commission
620 South Meridian Street
Tallahassee, FL 32399-1600

All notices to the District under this Agreement shall be in writing and shall be deemed received if sent by certified mail to:

Steven R. Miller
Director, Bureau of Land Management

St. Johns River Water Management District
4049 Reid Street
P. O. Box 1429
Palatka, FL 32178-1429

All notices required by this Agreement shall be considered delivered upon receipt. Should either Party change its address, written notice of such new address shall promptly be sent to the other Party.

11. **TERMINATION FOR CAUSE.** If either Party fails to fulfill its obligations under this Agreement in a timely and proper manner, the other Party shall have the right to terminate this Agreement by giving written notice of any deficiency. The Party in default shall then have 60 calendar days from receipt of notice to correct the deficiency. If the defaulting Party fails to correct the deficiency within this time, the noticing Party may terminate this Agreement at the expiration of the 60 day time period.

12. **TERMINATION FOR CONVENIENCE.** Either Party may terminate this Agreement, either in its entirety or as to a specific area, at any time for convenience upon 90 calendar days prior written notice to the other Party. Any such termination shall be effected by delivery to the other Party of a Notice of Termination specifying the extent to which performance of work under the Agreement is terminated, and the date upon which such termination becomes effective.

13. **AUTHORITIES.** It is understood and agreed that each party operates under its own legal authorities, policies and administration, and each party's obligations under this Agreement are thereby limited. It shall be the responsibility of each party to interpret its own authorities and policies, and make decisions as required under law and policies applicable to each. This Agreement is hereby entered into under the following authorities, and other applicable law:
    a. SJRWMD, Chapter 373, Florida Statutes.
    b. FWC: Article IV, Section 9, Florida Constitution.
    c. FWC: Chapter 379, Florida Statutes.

14. **NON-WAIVER OF REGULATORY AUTHORITY.** Nothing contained herein shall be construed as a waiver of or contract with respect to the regulatory or permitting authority of the District as it now or hereafter exists under applicable laws, rules and regulations.

15. **RECREATIONAL IMMUNITY.** The Parties agree that nothing contained herein shall be construed or interpreted as a waiver of limitations of liability provided in sections 375.251 and 373.1395, Florida Statutes.

16. **ALLOCATION OF RISK.** Each Party assumes any and all risks of personal injury, bodily injury and property damage attributable to the negligent acts or omissions of its officers, employees, servants, and agents thereof. The Commission, as a state agency, warrants and represents that it is self-funded for liability insurance with the State of Florida Risk Management System. The Commission shall provide to the District evidence of such insurance upon request. The Commission and the District further agree that nothing contained herein shall be construed or interpreted as (1) denying to either Party any remedy or defense available to such Party under the laws of the State of Florida; (2) the consent of the State of Florida or its agents and agencies to be sued; (3) the consent of the District to be sued; or (4) a waiver of sovereign immunity of either Party beyond the waiver provided in section 768.28, Florida Statutes. In the event the Commission subcontracts any part or all of the work hereunder to a third Party, the Commission shall require each and every subcontractor to identify the District as an additional insured on all insurance policies required by the Commission. Any contract awarded by the Commission shall include a provision whereby the Commission's subcontractor agrees to indemnify, pay on behalf, and hold the District harmless from all damages arising in connection with the Commission's subcontract.

17. **THIRD-PARTY BENEFICIARIES.** This Agreement has no third-party beneficiaries (intended or incidental), who may enforce obligations of either Party at any time, including after this Agreement expires or is terminated.

18. **DISPUTE RESOLUTION.** In the event a dispute arises that the project managers cannot resolve between themselves, the Parties shall have the option to submit to nonbinding mediation. The mediator or mediators shall be impartial, shall be selected by the Parties, and the cost of the mediation shall be borne equally by the Parties. The mediation process shall be confidential to the extent permitted by law.

19. **PUBLIC RECORDS.** The Parties shall allow public access to all project documents and materials in accordance with the provisions of Chapter 119, Florida Statutes. Should either Party assert an exemption to the requirements of Chapter 119 and related statutes, the burden of establishing such exemption, by way of injunctive or other relief as provided by law, shall be upon that Party.

20. **AUDIT**. The Commission shall maintain all financial and non-financial records and reports directly or indirectly related to the negotiation or performance of this Agreement, including supporting documentation for any service rates, expenses, research or reports. Such records shall be maintained and made available for inspection for a period of five years from completing performance under this Agreement. The District or its designated agent shall have the right to examine in accordance with generally accepted governmental auditing standards all records directly or indirectly related to this Agreement. Such examination may

be made only within five years from the date of completing performance under this Agreement and upon reasonable notice, time and place.

21. **WAIVER.** No waiver of any of the provisions of this Agreement shall be binding unless it is in writing and signed by both parties. The failure of either party to insist on the strict enforcement of any provision of this Agreement shall not constitute a waiver of any provision.

22. **CIVIL RIGHTS.** The Commission hereby assures that no person shall be excluded on the grounds of race, color, creed, national origin, handicap, age, or sex, from participation in, denied the benefits of, or be otherwise subjected to discrimination in any activity under this Agreement. The Commission shall take all measures necessary to effect these assurances.

23. **ASSIGNMENT.** The Commission shall not assign, delegate, or otherwise transfer its rights and obligations as set forth in this Agreement without the District's prior written consent. Any attempted assignment in violation of this provision shall be void.

24. **SEVERABILITY.** This Agreement has been delivered in the State of Florida and shall be construed in accordance with the laws of Florida. Wherever possible, each provision of this Agreement shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement shall be prohibited or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Agreement. Any action in connection herewith, in law or equity, shall be brought in Leon County, Florida, to the exclusion of all other lawful venues.

25. **WAIVER OF JURY TRIAL**. As part of the consideration for this Agreement , the Parties hereby waive trial by jury in any action or proceeding brought by any Party against any other Party pertaining to any matter whatsoever arising out of or in any way connected with this Agreement, or with the products or services provided under this Agreement; including but not limited to any claim of quantum meruit.

26. **ENTIRE AGREEMENT; AMENDMENT.** This Agreement with all incorporated attachments and exhibits represents the entire agreement of the parties. This Agreement may only be amended by mutual written agreement of the parties. All other WMA and PSGHA agreements between the parties will be void upon execution of this Agreement.

[signatures on following page]

The parties or their duly authorized representatives have signed this Agreement on the dates below each signature, the last date of which shall be inserted into the first paragraph.

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Hans G. Tanzler III, Executive Director

Date: 5-6-14

Approved as to form and legality:

William Abrams,
Office of General Counsel
SJRWMD

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

for Nick Wiley, Executive Director

Date: 29 April 14

Approved as to form and legality:

FWC Attorney

EXHIBIT "A"

District-managed lands to be established as Wildlife Management Areas or Public Small Game Hunting Areas

1. Bayard Wildlife Management Area
2. Buck Lake Wildlife Management Area
3. Dunns Creek Wildlife Management Area
4. Emeralda Marsh Public Small Game Hunting Area
5. Fellsmere Area 1 Public Small Game Hunting Area
6. Fort Drum Wildlife Management Area
7. Hatchet Creek Wildlife Management Area
8. Lake George Wildlife Management Area – Lake George Conservation Area & Heart Island Conservation Area portions
9. Lake Monroe Wildlife Management Area
10. Lochloosa Wildlife Management Area
11. Ocklawaha Prairie Public Small Game Hunting Area
12. Orange Creek Public Small Game Hunting Area
13. Salt Lake Wildlife Management Area – Seminole Ranch Conservation Area portion
14. Seminole Ranch Wildlife Management Area
15. Thomas Creek Wildlife Management Area – Kings Road Unit portion
16. Tiger Bay Wildlife Management Area – Clark Bay Conservation Area portion
17. Upper St. Johns River Marsh Wildlife Management Area

EXHIBIT "B"

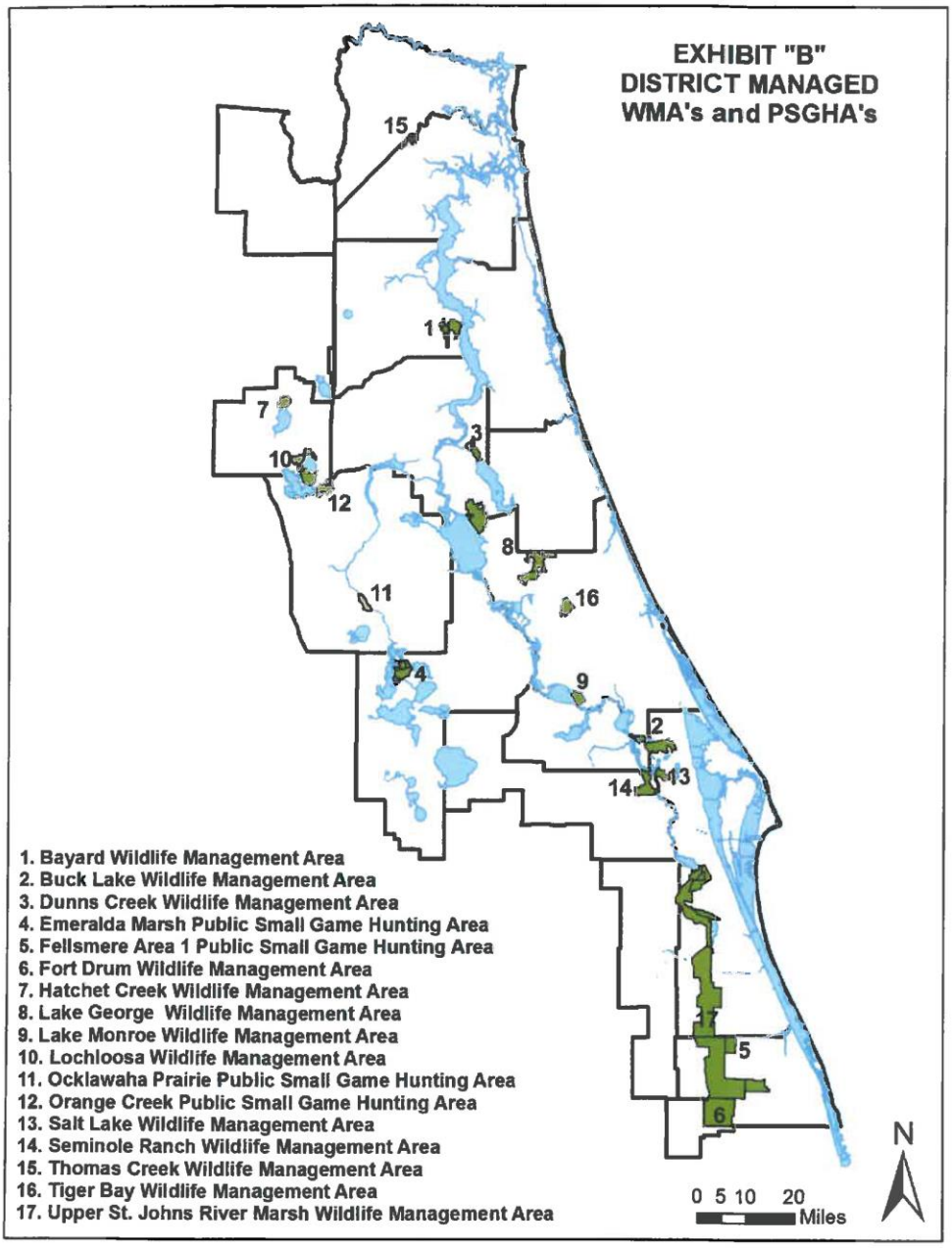


EXHIBIT "B"
DISTRICT MANAGED
WMA's and PSGHA's
15
1
7
3
10
12
8
11
16
4
9
2
14
13
17
5
6
N
0 5 10 20
Miles
1. Bayard Wildlife Management Area
2. Buck Lake Wildlife Management Area
3. Dunns Creek Wildlife Management Area
4. Emeralda Marsh Public Small Game Hunting Area
5. Fellsmere Area 1 Public Small Game Hunting Area
6. Fort Drum Wildlife Management Area
7. Hatchet Creek Wildlife Management Area
8. Lake George Wildlife Management Area
9. Lake Monroe Wildlife Management Area
10. Lochloosa Wildlife Management Area
11. Ocklawaha Prairie Public Small Game Hunting Area
12. Orange Creek Public Small Game Hunting Area
13. Salt Lake Wildlife Management Area
14. Seminole Ranch Wildlife Management Area
15. Thomas Creek Wildlife Management Area
16. Tiger Bay Wildlife Management Area
17. Upper St. Johns River Marsh Wildlife Management Area

APPENDIX C – NRCS Conservation Easement

Prepared by and return to:
Dykes C. Everett, Esquire
Winderweedle, Haines, Ward &
Woodman, P.A.
Post Office Box 880
Winter Park, Florida 32790

THIRTY-YEAR EASEMENT DEED

THIS THIRTY-YEAR EASEMENT DEED (hereinafter "Easement") is made as of the 28th day of July, 1999, by and between ST. JOHNS RIVER WATER MANAGEMENT DISTRICT (hereinafter "GRANTOR"), a public body existing under Chapter 373 of the Florida Statutes, whose mailing address is Post Office Box 1429, Palatka, Florida 32178, and the UNITED STATES OF AMERICA (hereinafter "GRANTEE"), acting by and through the Commodity Credit Corporation, U.S. Department of Agriculture, c/o Natural Resources Conservation Service, Post Office Box 141510, Gainesville, Florida 32614-1510. The GRANTOR and GRANTEE are jointly referred to as the "PARTIES."

WITNESSETH

Purposes and Intent. The purpose of this easement is to restore, protect, manage, maintain, and enhance the functional values of wetlands and other lands, and for the conservation of natural values including fish and wildlife habitat, water quality improvement, flood water retention, groundwater recharge, open space, aesthetic values, and environmental education. It is the intent of GRANTEE to give the GRANTOR the opportunity to participate in the restoration and management activities on the Easement Area.

Authority. This easement deed acquisition is authorized by Title XII of the Food Security Act of 1985, as amended (16 U.S.C. § 3837), for the Wetlands Reserve Program.

NOW, THEREFORE, for and in consideration of the sum of TEN MILLION DOLLARS ($10,000,000.00), the GRANTOR hereby grants and conveys to the UNITED STATES OF AMERICA, GRANTEE, and its assigns, for thirty (30) years, all its rights, title and interest in the lands comprising the Easement Area described in Part I and appurtenant rights of access to the Easement Area, but reserving to the GRANTOR only those rights, title and interest expressly enumerated in Part II. It is the intention of the GRANTOR to convey and relinquish any and all other property rights not so reserved. This Easement shall

constitute a servitude upon the land so encumbered, shall run with the land for thirty (30) years and shall bind the GRANTOR, its heirs, successors, assigns, lessees, and any other person claiming under them.

SUBJECT, however, to all valid rights of record and rights of the State of Florida to sovereign lands, if any.

PART I. Description of the Easement Area. The lands encumbered by this Easement, referred to hereafter as the "Easement Area", are located in Brevard County, Florida and are described on EXHIBIT "A" which is appended to and made a part of this Easement.

TOGETHER with a right of reasonable access for ingress and egress to the Easement Area as described in Section B, Part V, herein.

PART II. Reservations in the GRANTOR on the Easement Area. Subject to the rights, title, and interest conveyed by this Easement to the GRANTEE, the GRANTOR reserves:

A. Title. Record fee title, along with the GRANTOR'S right to convey, transfer, and otherwise alienate title to these reserved rights.

B. Quiet Enjoyment. The right of quiet enjoyment of the rights reserved on the Easement Area.

C. Control of Access. The right to prevent trespass and control access by the general public.

D. Recreational Uses. The right to undeveloped recreational uses, including hunting and fishing, and including leasing of such rights for economic gain, pursuant to applicable State and Federal regulations that may be in effect at the time.

E. Subsurface Resources. The right to oil, gas, minerals, and geothermal resources underlying the Easement Area, provided that any drilling or mining activities are to be located outside the boundaries of the Easement Area. Any drilling or mining activities within the boundaries of the Easement Area must be approved in writing by the GRANTEE prior to being undertaken by the GRANTOR.

PART III. Obligation of the GRANTOR. The GRANTOR shall comply with all terms and conditions of this Easement, including the following:

A. Prohibitions. Unless authorized as a Compatible Use under Part IV, it is expressly understood that the rights to the following activities and uses have been acquired by the GRANTEE and are prohibited of the GRANTOR on the Easement Area:

1. haying, mowing or seed harvesting for any reason;
2. altering of grassland, woodland, wildlife habitat or other natural features by burning, digging, plowing, diking, cutting or otherwise destroying the vegetative cover;
3. dumping refuse, wastes, sewage or other debris;
4. harvesting wood products;

5. draining, dredging, channeling, filling, leveling, pumping, diking, impounding or related activities, as well as altering or tampering with water control structures or devices;
6. diverting or causing or permitting the diversion of surface or underground water into, within or out of the Easement Area by any means;
7. building or placing buildings or structures on the Easement Area;
8. planting or harvesting any crop; and
9. grazing or allowing livestock on the Easement Area.

B. Noxious plants and pests. The GRANTOR is responsible for noxious weed control and emergency control of pests as required by all Federal, State and local laws. A plan to control noxious weeds and pests must be approved in writing by the GRANTEE prior to implementation by the GRANTOR.

C. Fences. Except for establishment cost incurred by the GRANTEE and replacement cost not due to the GRANTOR'S negligence or malfeasance, all other costs involved in maintenance of fences and similar facilities to exclude livestock shall be the responsibility of the GRANTOR.

D. Taxes. The GRANTOR shall pay any and all real property and other taxes and assessments, if any, which may be levied against the land.

E. Reporting. The GRANTOR shall report to the GRANTEE any conditions or events which may adversely affect the wetland, wildlife, and other natural values of the Easement Area.

PART IV. Allowance of Compatible Uses by the GRANTOR.

A. General. The GRANTEE may authorize, in writing and subject to such terms and conditions the GRANTEE may prescribe at its discretion, the use of the Easement Area for compatible economic uses, including, but not limited to, managed timber harvest, periodic haying, or cattle grazing (the "Compatible Economic Uses" or "Compatible Use").

B. Limitations. Compatible Use authorizations shall only be made if such use is consistent with the long-term protection and enhancement of the wetland and other natural values of the Easement Area. The GRANTEE shall prescribe the amount, method, timing, intensity, and duration of the Compatible Use.

C. Restoration Plan. The GRANTEE authorizes GRANTOR to use the Easement Area for all Compatible Uses as set forth in the Restoration Plan prepared by GRANTOR and approved by GRANTEE, which have been determined by GRANTEE to be consistent with the long-term protection and enhancement of the wetland and other natural values of the Easement Area.

PART V. Rights of the GRANTEE. The rights of the GRANTEE include:

A. Management Activities. The GRANTEE shall have the right to enter unto the Easement Area to undertake, at its own expense or on a cost share basis with the GRANTOR or other entity, any activities to restore, protect, manage, maintain, enhance, and monitor the wetland and other natural values of the Easement Area. The GRANTEE, at its own cost, may apply to or impound additional waters on the Easement Area in order to maintain or improve wetland and other natural values.

B. Access. At all times, the GRANTOR shall provide the GRANTEE with reasonable ingress and egress to the Easement Area for the exercise of any of the rights of the GRANTEE under this Easement. The authorized representatives of the GRANTEE may utilize vehicles and other reasonable modes of transportation for access purposes.

C. Easement Management. The GRANTEE may delegate all or part of the management, monitoring or enforcement responsibilities under this Easement to any entity authorized by law that the GRANTEE determines to have the appropriate authority, expertise and resources necessary to carry out such delegated responsibilities. state or federal agencies may utilize their general statutory authorities in the administration of any delegated management, monitoring or enforcement responsibilities for this Easement. The authority to modify or terminate this Easement (16 U.S.C. S 3837e(b)) is reserved to the GRANTEE in accordance with applicable law.

D. Violations and Remedies - Enforcement. The PARTIES agree that this Easement may be introduced in any enforcement proceeding as the stipulation of the PARTIES hereto. If there is any failure of the GRANTOR comply with any of the provisions of this Easement, the GRANTEE or other delegated authority shall have any legal or equitable remedy provided by law and the right:

1. To enter upon the Easement Area to perform necessary work for prevention of or remediation of damage to wetland or other natural values; and

2. To assess all expenses incurred by the GRANTEE (including any legal fees or attorney fees) against the GRANTOR, to be owed immediately to the GRANTEE.

PART VI. General Provisions.

A. Successors in Interest. The rights granted to the GRANTEE shall accrue to any of its agents, successors, or assigns. All obligations of the GRANTOR under this Easement shall also bind the GRANTOR'S heirs, successors, agents, assigns, lessees, and any other person claiming under them. All the GRANTORS who are parties to this Easement shall be jointly and severally liable for compliance with its terms.

B. Rules of Construction and Special Provisions. All rights in the Easement Area not reserved by the GRANTOR shall be deemed acquired by the GRANTEE. Any ambiguities in this Easement shall be construed in favor of the GRANTEE to effect the wetland and conservation purposes for which this Easement is being acquired. The property rights of the GRANTEE acquired under this Easement shall be unaffected by any subsequent amendments or repeal of the Wetlands Reserve Program. If the GRANTOR receives the consideration for this Easement in installments, the PARTIES agree that the conveyance of this Easement shall be totally effective upon the payment of the first installment.

PART VII. Special Provisions.

A. The Easement Area was acquired by the GRANTOR from A. Duda & Sons, Inc., a Florida corporation ("Duda"), under threat of condemnation. At and prior to the date of such acquisition, Duda conducted upon the Easement Area cattle grazing activities (the "Existing Use"). In order to provide for an

orderly phase-out of the Existing Use upon the Easement Area, consistent with the Restoration Plan prepared by GRANTOR and approved by the GRANTEE, GRANTOR authorized Duda to continue the Existing Use of the Easement Area during a holdover period terminating one year from the date of this Easement Deed (the "Holdover Period"). GRANTEE further acknowledges that its acquisition of the Easement and rights granted under this instrument are subject and subordinate to the rights of Duda during the Holdover Period. GRANTEE further acknowledges that the Existing Use shall be deemed in all respects "Compatible Economic Uses" under Part IV of this instrument.

B. GRANTEE acknowledges that GRANTOR and Duda have entered into Leases (the "Leases") contemporaneously herewith for Duda to occupy portions of the Easement Area, referred to as Lease Parcel One and Lease Parcel Three on that certain survey of the Easement Area prepared by Allen Engineering, Inc., dated May 3, 1999, as revised. GRANTEE further acknowledges that its acquisition of the Easement and rights granted under this instrument are subject and subordinate to the rights of Duda under the Leases. GRANTEE further acknowledges that the activities permitted under the Leases shall be deemed in all respects "Compatible Economic Uses" under Part IV of this instrument.

C. Environmental Indemnification. The PARTIES further agree that GRANTOR will be exclusively responsible to pay for or perform all claims, costs, expenses, fines, penalties, fees, actions, or sanctions arising out of or relating to any condition or circumstance which requires or may in the future require investigation, cleanup, removal, remedial action, or other response under any Environmental Laws which are now or may in the future become applicable to or affect the Easement Area, except that the GRANTEE shall be responsible for any solid waste, hazardous substances, hazardous waste, toxic or hazardous material, pollutants or contaminants contributed after this date to the Lands by the GRANTEE. For purposes of THIS THIRTY-YEAR EASEMENT, the term "Environmental Laws" shall mean all Federal, state, and local laws including statutes, regulations, ordinances, codes, rules and other governmental restrictions and requirements relating to the environment or solid waste, hazardous substances, hazardous waste, toxic or hazardous material, pollutants or contaminants including, but not limited to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601, et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251, et seq., the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, et seq., Florida Statutes, rules and regulations of the United States Environmental Protection Agency or other Federal agency, the rules and regulations of the Florida Department of Environmental Protection, and the rules and regulations of the St. Johns River Water Management District, now or at any time hereafter in effect.

The PARTIES further agree that all responsibility for environmental investigation, cleanup, removal, remedial action, or other response in connection with the Land, as that term is defined in the Agreement, including the Easement Area, shall be assumed by the GRANTOR and that the GRANTOR releases GRANTEE from all such responsibility except that the GRANTEE shall be responsible for any solid waste, hazardous substances, hazardous waste, toxic or hazardous material, pollutants or contaminants contributed after this date to the Land by the GRANTEE.

Nothing in this THIRTY-YEAR EASEMENT shall be construed to alter or affect the rights of the GRANTOR under the terms of the Environmental Affidavit executed contemporaneously herewith by Duda for the benefit of GRANTOR and GRANTEE.

Nothing in this THIRTY-YEAR EASEMENT shall be construed to create any rights, remedies or causes of action for any persons other than GRANTOR or GRANTEE.

The Special Provision, contained in Part VII, Paragraphs "B", shall survive beyond the thirty-year term of the Easement.

THE FOREGOING SPECIAL PROVISIONS, CONTAINED IN PART VII, PARAGRAPHS "A" AND "B", SHALL SUPERSEDE AND CONTROL ANY CONTRARY OR CONFLICTING PROVISIONS CONTAINED IN THIS INSTRUMENT.

TO HAVE AND TO HOLD this THIRTY-YEAR EASEMENT is granted to the UNITED STATES OF AMERICA, GRANTEE, and its successors and assigns for thirty (30) years. ST. JOHNS RIVER WATER MANAGEMENT DISTRICT, GRANTOR, covenants to comply with the terms and conditions enumerated in this document for the use of the Easement Area and adjacent lands for access, and to refrain from any activity not specifically allowed or that is inconsistent with the purposes of this Easement.

IN WITNESS WHEREOF, the GRANTOR has caused this instrument to be executed as of the day and year first above written

Signed, sealed and delivered
in the presence of:

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Print Name: Leonard D Franson

Print Name: SHARON G. CARLIN

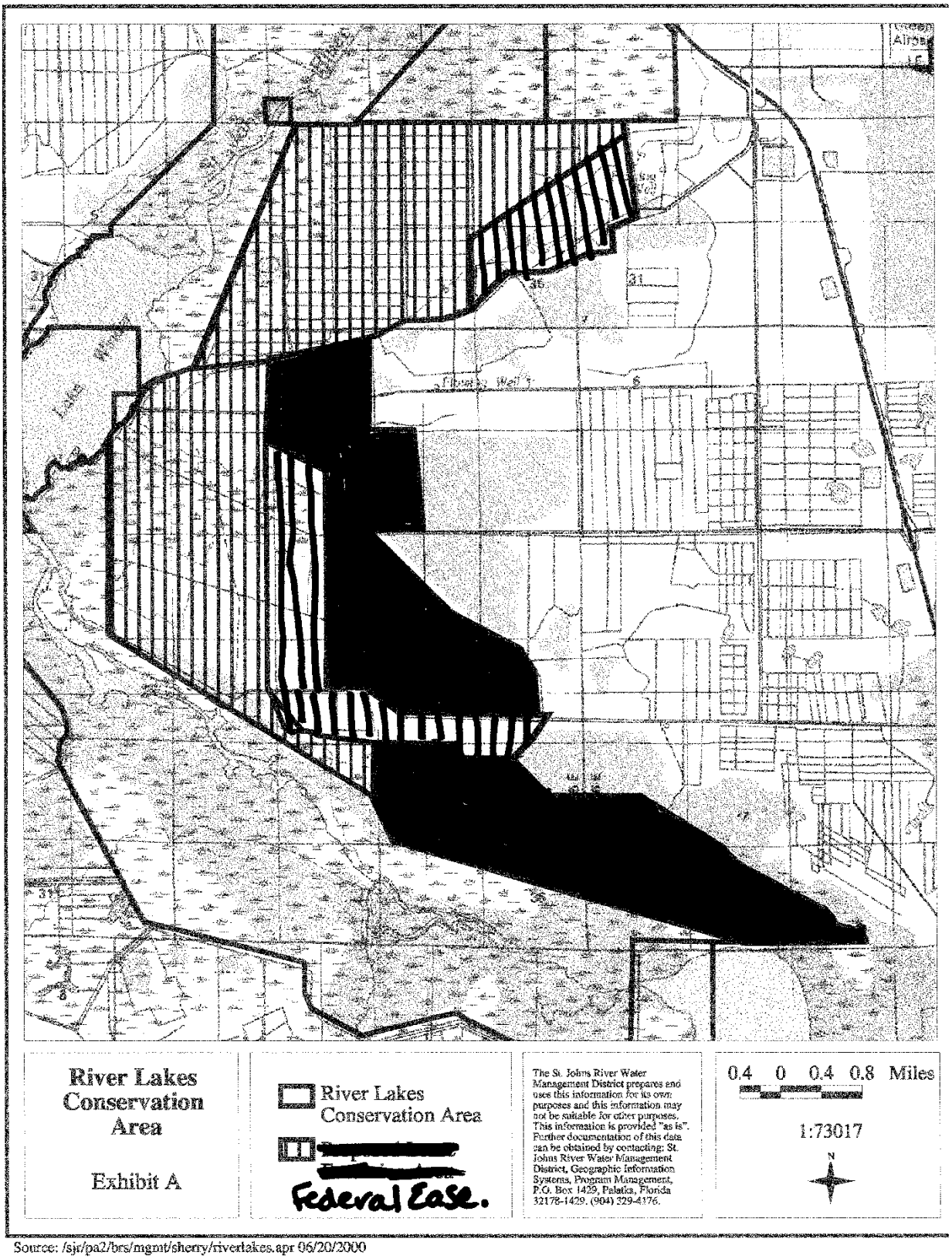
By: _____
J. Daniel Roach, Chairman

ATTEST: _____
Otis A. Mason, Secretary

For use and reliance only by St. Johns
River Water Management District,
Legal Form and Content approved
this 28 day of July, 1999.

Winderweedle, Haines, Ward & Woodman, P.A.

By: _____
Dykes C. Everett



Source: /sjr/pa2/brs/mgmt/sherry/rivertakes.apr 06/20/2000

APPENDIX D – PUBLIC HEARING

RECORD

PUBLIC HEARING
RIVER LAKES CONSERVATION AREA
MANAGEMENT ADVISORY GROUP
2023 LAND MANAGEMENT PLAN UPDATE

On February 8, 2023, a public hearing was held from 9:00 A.M. to 11:30 A.M. at Brevard County's Viera Regional Park Community Center, 2300 Judge Fran Jamieson Way, Viera, FL 32940. The hearing was hosted by the Management Advisory Group (MAG) for River Lakes Conservation Area's Land Management Plan, and the purpose was to solicit input as well as provide a question-and-answer session regarding the 2023 Land Management Plan update. Seven members of the MAG, 14 members of the public and seven District staff participated in the meeting. This record includes an outline of the hearing agenda.

The hearing was noticed through various sources, as shown in Exhibit A. The notices requested written public comment be submitted via email. No written comments were received prior to the deadline established in the hearing notice. A summary of the questions, answers and comments are provided below.

PUBLIC HEARING AGENDA

1. Call to Order, Introductions and Remarks
2. Summary of Materials Developed for Draft Ten-Year Land Management Plan
3. Question & Answer
4. Break
5. Public Comment
6. Process Summation and Adjournment

HEARING PARTICIPANTS

MANAGEMENT ADVISORY GROUP

Present: Joel Andreas (FWC), Rob Feltner (Brevard County Commissioner, District 4), Pete Henn (District), Mike Knight (Brevard County Environmentally Endangered Lands Program), Keith Rathburn (A. Duda and Sons, Inc.), Clark Taylor (Brevard County Airboat Association), Chris Vandello (Florida Park Service)

Invited, Not Present: Andrea Boliek (Florida Fish and Wildlife Conservation Commission), David Cox (Audubon), Crenel Francis (USDA, Natural Resources Conservation Service), Tommie Suggs (Florida Forest Service)

PUBLIC

Bruce Kmoch (Brevard County Airboat Association), Jon Clendenin V (Brevard County Airboat Association), RG Masterson (Brevard County Airboat Association), Tommy Back (Diamondback Airboats), Wade Hamant (Hamant Airboats), Thomas Williams (Brevard County Airboat Association), Mike Baker (Panther Airboat Corp.), Debbie Crusan (Resident and Airboater), Robert Wright (Resident and Airboater), Sandra Sullivan (Wavesaction), Jan Bell (Panther Airboats), Lt. Darrin Riley (Law Enforcement, FWC), David Phares (City of Melbourne), Waylon Locklear (City of Melbourne)

DISTRICT STAFF

Brent Bachelder (Planner, Bureau of Land Resources), James Cannon (Intergovernmental Coordinator), Brian Emanuel (Chief, Bureau of Land Resources), Pete Henn (Program Manager, Bureau of Land Resources), Laura La Beur (Public Communications Coordinator), Randy Snyder (Invasive Plant Program Supervisor, Bureau of Land Resources), Graham Williams (Land Manager, Bureau of Land Resources)

HEARING MINUTES/NOTES

CALLED TO ORDER – 9:05 A.M.

Introduction from *Brent Bachelder* – Provided a presentation outlining the purpose of the meeting, introducing the MAG and summarizing the management plan materials that have been developed.

QUESTION AND ANSWER – 9:30 A.M.

Introduction from *Brent Bachelder* – Explained that the purpose of the question and answer session is to provide further detail to the public regarding content of the management plan. Mr. Bachelder requested that participants save comments for the Public Comment portion of agenda.

Question from *Sandra Sullivan* – Asked what water quality parameters the District is testing for regarding biosolid applications and dredged material disposal sites (specifically related to the Grand Canal dredging) in the Upper Basin? Is the District testing water for heavy metals (especially arsenic) or PFAS?

> *Brent Bachelder* – The primary water quality monitoring parameters being regularly tested are nutrients, dissolved oxygen, among many others. Although the District does have responsibility for water quality management within the Upper St. Johns River Basin and the River Lakes, water quality management is typically addressed through impaired water testing and listing, total maximum daily load (TMDL) determinations and Basin Management Action Plans (BMAPS). The final River Lakes management plan will outline resource management activities that contribute to water quality improvement on the property – encouraging vegetation that improves water quality and maintaining restored floodplain wetland habitat. Managing pollutants discharging into public water from sites outside River Lakes is not within the scope of a 10-year land management plan. Water quality monitoring will continue at River Lakes.

Brian Emanuel – Confirmed through correspondence with Erich Marzolf that additional parameters are used as markers to identify nutrient sources.

Question from *Debbie Crusan* – Asked what the plan is for addressing the various campsites at River Lakes? Is the District considering reducing the number of camps?

Brent Bachelder – Responded that the management plan identifies a goal of establishing a partnership through which the District would receive logistical and labor support for maintaining the campsites at River Lakes. This would most likely be accomplished through a Special Use Authorization agreement that would allow an organization, most likely a group of airboaters, to conduct construction and maintenance activities within the campsites.

Clark Taylor – Provided insight on the working relationship held between the District and the Brevard County Airboat Association for maintenance of campsites with the Three Forks Conservation Area.

Question from *Sandra Sullivan* – Asked if camping rules are adequately posted at campsites.

Keith Rathburn – Pointed out that managing signage is a constant challenge. The District and Duda and Sons replace signs on a regular basis.

Brent Bachelder – Indicated that additional cooperation between the District and FWC is needed to ensure there is clarity on the rules and regulations for camping within River Lakes. If improving coordination with FWC and cooperatively managing the campsites does not lead to improved conditions at campsites, the District will consider reducing the number of sites available and/or increasing enforcement of camping rules.

Question from *Bruce Kmoch* – What is the status of the proposed highway that may be crossing the River Lakes Conservation Area? And can I receive a copy of the route alternatives?

Pete Henn – It is in the study phase by the CFXway. There are a few alternatives that have been proposed in the study area by the CFX. Some of the alternatives include along US192, US520 and another that crosses just north of lake Washington. I will send you what I have of the study document that shows the alternatives and contact information for the CFXway.

Question from *Sandra Sullivan* – Is the District pursuing resiliency funding through the State? Has the District pursued acquisition of the Tucker Ranch property that has been proposed for development?

Brian Emanuel – The District has a Resiliency Officer, Tom Frick, who has been working closely with the State and local municipalities on resiliency projects.

Brent Bachelder – Through the work of the District's Resiliency Officer and project managers, the District has secured millions of dollars in resiliency funding – including multiple projects in Brevard County. The Tucker Ranch property on Lake Florence is included in the District's Five-year Land Acquisition Plan. The District's Real Estate Services staff has approached the Tucker family regarding the District's interest in acquiring the ranch property.

Question from *Sandra Sullivan* – What is the District doing to reduce herbicide use? Are water, soil or biological (fish) samples being monitored for herbicides? Has a cost and benefit analysis been conducted for chemical vs. mechanical vegetation control?

Randy Snyder – UF/IFAS has quality information regarding chemical herbicide research. The District utilizes a balance of various forms of vegetation management tools: mechanical (harvesting), hydrologic (water management), cultural (prescribed fire),

biological (insect releases) and chemical (herbicide). The District does utilize mechanical harvesting and has invested in a small harvester that is primarily used to maintain the boat basin and a portion of the S-Canal at Fellsmere Water Management Area.

Pete Henn – All herbicides utilized by the District have undergone years of research. The District only uses US Environmental Protection Agency approved herbicides, applied following instructions on product label. Soil and water samples have been processed for a wide range of chemicals.

Brent Bachelder – In addition to the research conducted to approve the environmental health of herbicides, significant research has also been conducted supporting the benefits of using herbicides to manage disturbance-oriented natural systems, such as the River Lakes floodplain marsh. Reducing coverage of monotypic stand forming habitat (Coastal Plain willow), has been shown to sustain more biologically productive habitat (herbaceous/grassy marsh). Although the District has invested significantly.

Question from *David Phares* – Can you please clarify what is meant by maintaining natural communities on appropriate fire return interval and increasing the acreage that can be maintained by fire?

Brent Bachelder – The Florida Natural Areas Inventory recommends appropriate fire return intervals for the natural communities within Florida, based on research that has been conducted by various academics and natural resource managers over a long period of time. A majority of River Lakes is floodplain marsh. As such those areas should be subject to a prescribed burn every three years. Floodplain marsh that has been encroached by willow and other shrubs and is no longer a fire-maintained system. The District has the goal of reducing coverage of shrub dominated communities and increasing the acreage of higher diversity fire-maintained herbaceous/graminoid marsh.

Question from *Clark Taylor* – What is the possibility of establishing a boat ramp at the western terminus of Wickham Rd?

Pete Henn – Establishing a boat ramp at that location is unlikely. Access to the ramp is restricted by the fact that Wickham Rd is not a public right of way. Additionally, the only place to locate a boat ramp would be directly into a significant drainage canal. A boat ramp at that location would lead to significant erosion and undermining the stability of canal banks.

Question from *Mike Knight* – Can you provide a brief description of how the District strategizes/prioritizes treatment of water hyacinth vs. water lettuce?

Randy Snyder – The District and FWC both treat floating plants within River Lakes – FWC within the River channel and lakes, the District treats remainder of property. Floating plant treatments are concentrated along river and lake shorelines. Floating plants in marsh inevitably end up in a dry marsh and won't survive.

Pete Henn – The goal is maintenance control – keeping plant populations small to reduce the intensity of control measures. This has been shown to reduce herbicide use and non-target damage.

BREAK – 10:35 A.M.
Participants were encouraged to move around, discuss meeting content one-on-one with fellow attendees, enjoy light refreshments (provided by the District), use the restroom, review 2023 River Lakes Conservation Area Land Management Plan Summary.

PUBLIC COMMENT PERIOD – 10:55 A.M.
Introduction from *Brent Bachelder* – The public comment period is designed as an opportunity for members of the general public to provide input to the land management plan. Suggestions, recommendations and considerations will be incorporated into the plan to the fullest extent possible. District staff, Graham Williams, will be recording the substantive content of public comments and I will confirm with meeting participants that their information has been recorded accurately. In the interest of time, individual comments will be limited to three minutes per person. Additional comments may be submitted by contacting Brent Bachelder at: bbachelder@sjrwmd.com.

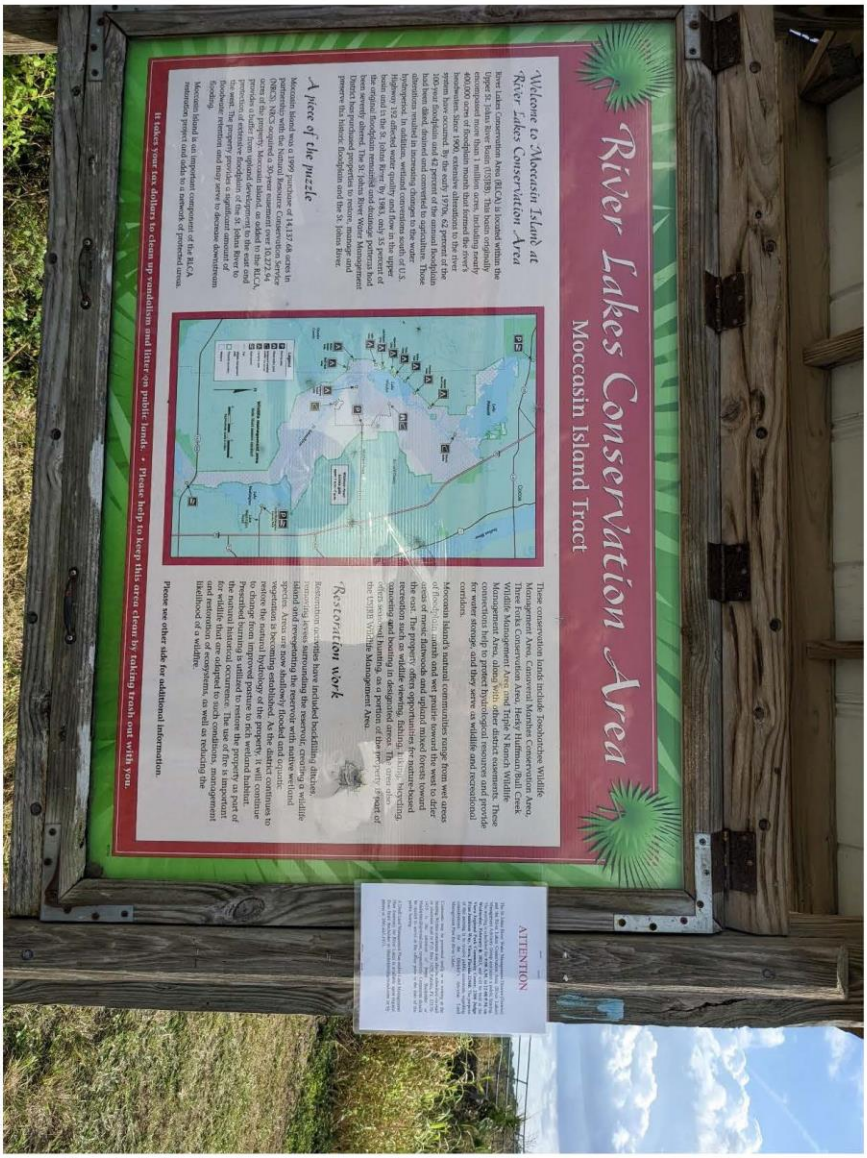
- Comment from *Robert Wright* – Continue to offer primitive camping at the existing 11 campsites by collaborating with relevant stakeholders.
- Comment from *Lt. Darrin Riley* – Seek opportunities to improve hunter access, possibly by collaborating with Duda, to extend open gate hours at Wickham Rd. gate. Current posted open hours are 7:00 A.M. to 7:00 P.M., there is opportunity for hunters to get locked in.
- Comment from *Sandra Sullivan* – Investigate opportunities for contaminate testing related to biosolids applications and dredge spoil disposal on adjacent lands.
- Comment from *Sandra Sullivan* – Prioritize acquisition of lands within the optimal boundary.
- Comment from *Sandra Sullivan* – Seek funding for and prioritize acquisition of areas that provide for flood protection and resilience. Timing is ripe to seek funding now.

PROCESS SUMMATION – 11:25 A.M.
Conclusion from *Brent Bachelder* – A record of this meeting, slides from the meeting presentation and a digital copy of the Land Management Plan Summary will be distributed to all meeting participants and MAG members, using sign-in information provided by the participants. The draft management plan will be completed with information gathered from this meeting and will be reviewed by an internal team of District staff. Currently, the planning timeline is as follows. The draft management plan will be submitted to the State of Florida's Acquisition and Restoration Council for review by March 1, 2023. The Acquisition and Restoration Council will consider approval of plan at their June 9, 2023 meeting. The District Governing Board will consider approval of the plan at their June 13, 2023 meeting.

HEARING ADJOURNED AT 11:30 A.M.
Brent Bachelder adjourned the meeting.

EXHIBIT A - NOTICES

PUBLIC HEARING
RIVER LAKES CONSERVATION AREA
MANAGEMENT ADVISORY GROUP
2023 LAND MANAGEMENT PLAN UPDATE



A Daily Publication By:

FLORIDA TODAY
FLORIDATODAY.com
A GANNETT COMPANY

SJRWMD
JAN 13 2023
MAIL CENTER

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
PO BOX 1429

PALATKA, FL, 32178

STATE OF WISCONSIN COUNTY OF BROWN:
Before the undersigned authority personally appeared said legal clerk, who on oath says that he or she is a Legal Advertising Representative of the **FLORIDA TODAY** , a daily newspaper published in Brevard County, Florida that the attached copy of advertisement, being a Legal Ad in the matter of

Notice of Meetings

as published in **FLORIDA TODAY** in the issue(s) dated:
or by publication on the newspaper's website, if authorized, on

01/09/2023

Affiant further says that the said **FLORIDA TODAY** is a newspaper in said Brevard County, Florida and that the said newspaper has heretofore been continuously published in said Brevard County, Florida each day and has been entered as periodicals matter at the post office in **MELBOURNE** in said Brevard County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he or she has never paid nor promised any person, firm or coporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Sworn to and Subscribed before me this 9th of January 2023, by legal clerk who is personally known to me

Affiant

Notary State of Wisconsin County of Brown

5·15·23

My commission expires

Publication Cost: $195.86
Ad No: 0005545533
Customer No: 3863294465A
This is not an invoice
# of Affidavits 1

AD#5545533 1/9/2023
Notice of Meeting/Workshop Hearing
The ST. JOHNS RIVER WATER MANAGEMENT DISTRICT and the RIVER LAKES CONSERVATION AREA MANAGEMENT ADVISORY GROUP announce a public hearing to which all persons are invited.
DATE AND TIME: Wednesday, February 8, 2023, 9:00 a.m. – 12:00 p.m.
PLACE: Viera Regional Park Community Center, 2360 Judge Fran Jamieson Way, Viera, Florida 32940
GENERAL SUBJECT MATTER TO BE CONSIDERED: Public hearing to discuss and receive public comment on the St. Johns River Water Management District's (District) Ten-year Land Management Plan for the River Lakes Conservation Area. Use contact information provided below to request a copy of the proposed Land Management Plan and/or a summary of the Land Management Plan. Comments may be presented orally or in writing at the hearing. Written comments may also be submitted via mail or electronic mail using the contact information provided below. Comments should be mailed to arrive at the District prior to the date of the public hearing.
A COPY OF THE AGENDA MAY BE OBTAINED BY CONTACTING:
Brent Bachelder, Land Resource Specialist
P.O. Box 1429,
Palatka, FL, 32178-1429
email: bbachelder@sjrwmd.com
phone: (386)643-1973.
Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 7 days before the workshop/meeting by contacting: bbachelder@sjrwmd.com. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).
If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.
FOR MORE INFORMATION, YOU MAY CONTACT: Brent Bachelder, bbachelder@sjrwmd.com or (386)643-1973.

NANCY HEYRMAN
Notary Public
State of Wisconsin

Agenda Report

2725 Judge Fran Jamieson Way
Viera, FL 32940

New Business - Miscellaneous

J.8. 12/20/2022

Subject:
Request for Notice of Public Hearing for Update to River Lakes Conservation Area Land Management Plan at Brevard County Board of County Commissioners Meeting

Fiscal Impact:
N/A

Dept/Office:
St. Johns River Water Management District

Requested Action:
It is requested that a Notice of Public Hearing be made on the record during the December 20, 2022 Brevard County Board of County Commission meeting. Fulfilling the District's statutory (259.032(10)) requirement to notice the Public Hearing during a regularly recurring meeting of a local governing body.

Summary Explanation and Background:
A public hearing for the 2023 Update to the River Lakes Conservation Area Land Management Plan will be held on Wednesday, February 8, at 9:00 AM in Brevard County. The purpose of the public hearing is to receive public comment on the St. Johns River Water Management District's (District) 2023 Land Management Plan for the River Lakes Conservation Area, a 20 mile long stretch of floodplain marsh managed by the District. Information received by the District through the hearing will be used to further refine and improve the update to the River Lakes Conservation Area Land Management Plan. The Public Hearing will be hosted by the River Lakes Conservation Area Management Advisory Group.

The Land Management Plan establishes goals and objectives for managing River Lakes Conservation Area over the next 10 years. The District would like to invite review and comment on the draft Land Management Plan from Brevard County leaders and residents.

Public Hearing participants will be given time to provide oral comments regarding the draft Land Management Plan. Written comments may also be submitted via mail or electronic mail. A copy of the draft Land Management Plan is currently available for review.

Additional details regarding the public hearing, including a link to the DRAFT Land Management Plan are available through the District's website under "meetings and announcements." We can also provide meeting details to county staff, for use on social media and the county's website.
The District invites the county to participate in the meeting and help us guide the management of this valuable natural resource.

Osceola County
Board of County Commissioners
Meeting Agenda

January 9, 2023 - 1:30 PM

Commission Chambers (4th Floor)
1 Courthouse Square
Kissimmee, Florida 34741

If you want to address the Board, provide written comments or submit documents for the record on an item that is on the Agenda, Request to Speak/Submit Comments/Documents forms shall be submitted online by 5:00 p.m. the day before the meeting by going to www.osceola.org to pre-register. If you do not have access to a computer but would like to address the Board, you may register to speak in person on a specific Agenda Item by leaving a message on the dedicated voice mail line (407)742-TALK (8255) before 5:00 p.m. the day before the meeting, providing your contact details and the specific item(s) you wish to address. For Consent/Public Hearing and Public Hearing Items (includes quasi-judicial items), Request to Speak forms may be completed in writing 15 minutes prior to the start of the meeting or submitted online by 5:00 p.m. the day before the meeting. Access to the meeting is also being provided telephonically. Please call (407) 205-0551 Code 301797 to listen to the meeting.

Board of Commissioners

Viviana Janer, District 2, Chair
Cheryl L. Grieb, District 4, Vice Chair
Peggy Choudhry, District 1
Brandon Arrington, District 3
Ricky Booth, District 5

County Staff

Don Fisher, County Manager
Frank Townsend, County Attorney

Agenda

Moment of Silence followed by the Pledge of Allegiance

67. The Clerk of the Board has received for informational purposes, the 2023 meeting schedule for the St. Johns River Water Management District's Governing Board, as required by Florida law, 189.417 Florida Statutes. The meetings will be held at District Headquarters, 4049 Reid Street (Highway 100 West), Palatka, Florida as follows: January 10, 2023; February 14, 2023; March 14, 2023; April 11, 2023; May 09, 2023; June 13, 2023; July 11, 2023; August 08, 2023; September 12, 2023, Tentative Budget Hearing at 5:05 p.m.; September 26, 2023, Final Budget Hearing 5:05 p.m.; October 10, 2023; November 14, 2023; and December 12, 2023.

68. The Clerk of the Board has received for informational purposes, from GIR East Community Development District, a District Boundary map; Ordinance #2022-110 of the Board of County Commissioners of Osceola, Florida, establishing the GIR East Community Development District located in the Osceola County and containing approximately 1,525.460 acres; Resolution #2023-04 designating Ms. Alyssa Willson as the District's Registered Agent and the District's address, Kutak Rock LLP, 107 West College Avenue, Tallahassee, Florida, 32301, stating the organizational meeting was held on October 28, 2022; and providing the Fiscal Year 2023 meeting schedule of the Board of Supervisors. The meetings will be held at 3850 Canoe Creek Road, St. Cloud, Florida 34772, beginning at 3:00 p.m. as follows: December 07, 2022; January 04, 2023; February 01, 2023; March 01, 2023; April 05, 2023; May 03, 2023; June 07, 2023; July 05, 2023; August 02, 2023 and September 06, 2023.

County Administration

69. Long Range Agenda.

70. Board Support Services is providing for informational purposes, notice that a public hearing for the 2023 update to the River Lakes Conservation Area Land Management Plan will be held on Wednesday, February 08, at 9:00 a.m. at the Viera Regional Park Community Center, 2300 Judge Fran Jamieson Way, Viera, Florida 32940. The Public Hearing will be hosted by the River Lakes Conservation Area Management Advisory Group. The purpose of the public hearing is to receive public comment on the SJRWMD 2023 Land Management Plan for the River Lakes Conservation Area. Information received by the District through the hearing will be used to further refine and improve the update to the River Lakes Conservation Area Land Management Plan. The Land Management Plan establishes goals and objectives for managing River Lakes Conservation Area over the next 10 years. The District would like to invite review and comment on the draft Land Management Plan from Osceola County leaders and residents. Public Hearing participants will be given time to provide oral comments regarding the draft Land Management Plan. Written comments may also be submitted via mail or electronic mail. Additional details regarding the public hearing, including how to obtain the draft Land Management Plan and how to submit written comments, are available through the District's website at www.sjrwmd.com/meetings-announcements/. This notice is intended to fulfill the District's statutory (Chapter 259.032, Florida Statutes) requirement to notice the Public Hearing during a regularly recurring meeting of a local governing body.

Notice of Meeting/Workshop Hearing

WATER MANAGEMENT DISTRICTS
St. Johns River Water Management District

The ST. JOHNS RIVER WATER MANAGEMENT DISTRICT and the RIVER LAKES CONSERVATION AREA MANAGEMENT ADVISORY GROUP announces a hearing to which all persons are invited.

DATE AND TIME: Wednesday, February 8, 2023, 9:00 a.m. – 12:00 Noon

PLACE: Viera Regional Park Community Center, 2300 Judge Fran Jamieson Way, Viera, Florida 32940

GENERAL SUBJECT MATTER TO BE CONSIDERED: Public hearing to discuss and receive public comment on the St. Johns River Water Management District's (District) Ten-year Land Management Plan for the River Lakes Conservation Area. Use contact information provided below to request a copy of the proposed Land Management Plan and/or a summary of the Land Management Plan. Comments may be presented orally or in writing at the hearing. Written comments may also be submitted via mail or electronic mail using the contact information provided below. Comments should be mailed to arrive at the District prior to the date of the public hearing.

A copy of the agenda may be obtained by contacting: Brent Bachelder, Land Resource Specialist
P.O. Box 1429, Palatka, FL 32178-1429, email: bbachelder@sjrwmd.com, phone: (386)643-1973.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 7 days before the workshop/meeting by contacting: bbachelder@sjrwmd.com. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

For more information, you may contact: Brent Bachelder, bbachelder@sjrwmd.com or (386)643-1973.

APPENDIX E – MANAGEMENT ADVISORY GROUP

RECORD

MEETING
RIVER LAKES CONSERVATION AREA
MANAGEMENT ADVISORY GROUP
2023 LAND MANAGEMENT PLAN UPDATE

On February 8, 2023, the Management Advisory Group (MAG) for the River Lakes Conservation Area's Land Management Plan held a meeting regarding the 2023 Update. Immediately prior to their meeting, the MAG hosted a Public Hearing at Brevard County's Viera Regional Park Community Center, 2300 Judge Fran Jamieson Way, Viera, FL 32940. The purpose of the MAG Meeting was to discuss findings from the Public Hearing and materials developed for the Land Management Plan. Seven members of the MAG and four District staff participated in the meeting. This record includes an outline of the hearing agenda.

A summary of the meeting is provided below.

MEETING AGENDA

1. Review of Public Comments
2. Round Robin Draft Land Management Plan Goals and Objectives
3. Next Steps

MEETING PARTICIPANTS

MANAGEMENT ADVISORY GROUP
Present: Joel Andreas (FWC), Pete Henn (District), Mike Knight (Brevard County Environmentally Endangered Lands Program), Keith Rathburn (A. Duda and Sons, Inc.), Clark Taylor (Brevard County Airboat Association), Chris Vandello (Florida Park Service)
Invited, Not Present: Andrea Boliek (Florida Fish and Wildlife Conservation Commission), David Cox (Audubon), Crenel Francis (USDA, Natural Resources Conservation Service), Tommie Suggs (Florida Forest Service)

DISTRICT STAFF
Brent Bachelder (Planner, Bureau of Land Resources), Brian Emanuel (Chief, Bureau of Land Resources), Pete Henn (Program Manager, Bureau of Land Resources), Graham Williams (Land Manager, Bureau of Land Resources)

MEETING MINUTES/NOTES

CALLED TO ORDER – 12:00 P.M.
Introduction from *Brent Bachelder* – Provided a presentation outlining the purpose and agenda for the meeting.

REVIEW OF PUBLIC COMMENTS – 12:05 P.M.
Introduction from *Brent Bachelder* – Explained that the purpose of the review of public comments period was for the MAG members to discuss comments made by the public during the Public Hearing. MAG members were asked to provide suggestions on how to best address public comments.

Below is a list of the comments collected during the Public Hearing, along with responses from MAG members.

- Comment from *Robert Wright* – Continue to offer primitive camping at the existing 11 campsites by collaborating with relevant stakeholders.
    - Brent Bachelder – The District is pursuing an objective to collaborate on the management and maintenance of campsites of River Lakes. The hope is that through a cooperative process campsites on the Property can be managed with the safety and interest of the general public in mind. The District will also ensure District and FWC rules and regulations are consistent and noticed adequately. If management and maintenance of campsites is not improved through implementation of these two strategies, the District reserves the right to reduce camping opportunities on the property.
- Comment from *Lt. Darrin Riley* – Seek opportunities to improve hunter access, possibly by collaborating with Duda, to extend open gate hours at Wickham Rd. gate. Current posted open hours are 7:00 A.M. to 7:00 P.M., there is opportunity for hunters to get locked in.
    - Keith Rathburn – Recommendation – for this to work a Brevard Sherriff deputy or FWC Law Enforcement officer could be the designated gate attendant. Any other system will be challenging. Currently a Duda staff member is required to be present, extending hours for Duda staff is unrealistic. Installing a combination lock has proven problematic in the past at other locations – combinations are not treated securely and inevitably result in unauthorized access to property.
- Comment from *Sandra Sullivan* – Investigate opportunities for contaminate testing related to biosolids applications and dredge spoil disposal on adjacent lands.
    - Brent Bachelder – As stated during the Question and Answer portion of the meeting, the District will continue to conduct water quality monitoring within River Lakes. The specific water quality parameters monitored within the Property are established through guidelines, rules, regulations, policies and plans that are

administered through processes outside of the scope of this Land Management Plan.

- Comment from *Sandra Sullivan* – Prioritize acquisition of lands within the optimal boundary.
    - The MAG agrees that additional land within the optimal boundary should be acquired for conservation and resiliency.
- Comment from *Sandra Sullivan* – Seek funding for and prioritize acquisition of areas that provide for flood protection and resilience. Timing is ripe to seek funding now.
    - The MAG agrees that additional land within the optimal boundary should be acquired for conservation and resiliency.

ROUND ROBIN DRAFT LAND MANAGEMENT PLAN GOALS AND OBJECTIVES – 1:00 P.M.
Introduction from *Brent Bachelder* – Explained that the purpose of this portion of the meeting is to give the MAG members an opportunity to discuss specific draft goals and/or objectives for River Lakes. MAG members were encouraged to provide additional goals and objectives that are not covered within those drafted.

- Suggestion from *Mike Knight* – Consider possible locations for recreational amenities (campsites, shelter, pavilion) that are more readily accessible by non-motorized watercraft.
    - Brent Bachelder – District staff will look into this.

MEETING ADJOURNED AT 1:15 P.M.
Brent Bachelder adjourned the meeting.

APPENDIX F – SOILS

ANCLOTE - The Anclote series consists of very deep, very poorly drained, rapidly permeable soils in depressions, poorly defined drainage ways, and flood plains. They formed in thick beds of sandy marine sediments. Near the type location, the mean annual temperature is about 75 degrees F., and the mean annual precipitation is about 55 inches. Slopes range from 0 to 2 percent. Native vegetation consists of cypress, bay, popash, pond pine, cabbage palm, red maple, and juncus species.

CANOVA - The Canova series consists of very deep, very poorly drained, moderately slowly permeable soils in depressions and fresh water swamps and marshes. They formed in loamy marine sediments. Most areas of Canova soils remain in their natural state and are used for wildlife habitat. The vegetation is dominated by reeds, sedges, sawgrass, lilies, scattered cypress, maple, gum, bay, and myrtle.

CHOBEE – Chobee soils are very deep, very poorly drained, slowly to very slowly permeable soils in depressions, flats, and occasionally on river floodplains in the Lower Coastal Plain. Formed in thick beds of loamy marine sediments. Drained areas are used for citrus, pasture, and range. Most of the soils remain in their natural state and have vegetation consisting of pickerelweed, lilies, sawgrass, and scattered swamp maples in treeless areas. Some areas have a growth of ash, gum, maple and cypress.

EAU GALLIE – The Eau Gallie series consists of deep or very deep, poorly or very poorly drained, slowly permeable soils in flats, sloughs and depressional areas. They formed in sandy and loamy marine sediments in Peninsula Florida. Natural vegetation may consist of longleaf pine, South Florida slash pine, and saw palmetto, with understory vegetation possibly including inkberry, southern bayberry, and pineland threeawn.

EVERGLADES - The Everglades series consists of very deep, very poorly drained, rapid to very rapidly permeable organic soils in freshwater swamps and marshes that flood for very long periods. They formed in thick deposits of hydrophytic plant remains. Very poorly drained; rapid to very rapid permeability. The natural vegetation includes Florida willow, sawgrass, reeds, lilies, and other aquatic, fibrous, non-woody plants and hardwood trees.

FLORIDANA – Floridana soils are very deep, very poorly drained, slowly to very slowly permeable soils on low, broad flats, flood plains, and in depressional areas. They formed in thick beds of sandy and loamy marine sediments. Slopes in areas where this soil is found ranges from 0-1%. Natural vegetation consists of sand cordgrass, cabbage palmetto, myrtle, and pineland threeawn. In depressional areas, most of the soil has a sparse to dense cover of cypress. In floodplains, the vegetation is mostly sweetgum, black gum, red maple, and cypress.

HOLOPAW - The Holopaw series consists of deep and very deep, poorly and very poorly drained soils formed in sandy marine sediments. These soils are rapidly permeable in the A and E horizons and moderately or moderately slowly permeable in the B horizon. These soils are on low lying flats, in poorly defined drainages or depressional areas. Slopes range from 0 to 2 percent. Native

vegetation is scattered slash and pond pine, cabbage and saw palmettos, scattered cypress, myrtle, sand cordgrass, and pineland threeawn.

IMMOKALEE - The Immokalee series consists of deep and very deep, poorly drained and very poorly drained soils that formed in sandy marine sediments. They occur on flatwoods and in depressions of Peninsular Florida. Slopes are dominantly 0 to 2 percent but range to 5 percent. Principal vegetation is longleaf and slash pines and undergrowth of saw palmetto, gallberry, wax myrtle, and pineland threeawn. In depressions, water tolerant plants such as cypress, loblolly bay gorodonia, red maple, sweetbay, maidencane, blue maidencane, chalky bluestem, sand cordgrass, and bluejoint panicum are more common.

MALABAR – Malabar soils are very deep, poorly to very poorly drained soils in sloughs, shallow depressions, and along flood plains. Formed in sandy and loamy marine sediments. Slopes in areas where these soils are found range from 0-2%. Native vegetation consists of scattered slash pine, cypress, wax myrtle, cabbage palm, pineland threeawn, and maidencane. In depressions, the vegetation is dominantly St. Johns Wort or maidencane.

MANATEE – Manatee soils are very deep, very poorly drained, and moderately permeable soils in depressions, broad drainage ways, and on floodplains. They formed in sandy and loamy marine sediments. Natural vegetation in these soils includes red maple, gum, cabbage palm, and widely spaced cypress. Treeless areas are covered by pickerelweed, sedge, maidencane, sawgrass, cutgrass bluestem, panicum, cinnamon fern, sand cordgrass, St. Johns Wort, and other perennial grasses.

MICCO - The Micco Series consists of deep, very poorly drained soils that formed in herbaceous organic material and sandy and loamy mineral material. These soils are on flood plains, freshwater marshes, and depressions. Very poorly drained. Runoff is very slow. Permeability is moderate to moderately slow. Most areas are in natural vegetation of sawgrass, lilies, sedges, cypress, bay, maple, and black gum and used for range, wildlife habitat, or water storage areas.

MYAKKA – Deep and very deep, poorly to very poorly drained soils formed in sandy marine deposits. These soils are on flatwoods, high tidal areas, flood plains, depressions, and gently sloping to barrier islands. Slopes in areas where these soils are found range from 0-8%. Native vegetation includes longleaf and slash pines with an undergrowth of saw palmetto, running oak, inkberry, wax myrtle, huckleberry, chalky bluestem, pineland threeawn, and scattered fetterbush.

OLDSMAR - The Oldsmar series consists of very deep, poorly drained and very poorly drained soils in flats and depressions of Peninsular Florida. They formed in sandy marine sediments overlying loamy materials. Slopes range from 0 to 2 percent. Native vegetation consists of cabbage palmetto, saw palmetto, live oak, slash pine, with an undergrowth of laurel, wax myrtle, and pineland threeawn. In depressions the trees are cypress, black gum, pond pine, loblolly bay, red maple, and sweetbay. Other plants included maidencane, blue maidencane, chalky bluestem, sand cordgrass, and bluejoint panicum.

PINEDA – Pineda soils are deep and very deep, poorly and very poorly drained, very slowly permeable soils in depressions, low hammocks, poorly defined drainageways, broad low flats, and floodplains. Formed in thick beds of sandy and loamy marine sediments on the lower coastal plain. Slopes in areas where these soils are found range from 0-2%. Native vegetation consists of slash pine, cypress, myrtle, cabbage palm, blue maidencane, chalky bluestem, blue point panicum, sedges, pineland threeawn, and sand cordgrass.

POMPANO - The Pompano series consists of very deep, very poorly drained, rapidly permeable soils in depressions, drainageways, and broad flats. They formed in thick beds of marine sands. Near the type location, the mean annual temperature is about 73 degrees F., and the mean annual precipitation is about 50 inches. Slopes range from 0 to 2 percent. Natural vegetation consists of palmetto, widely spaced cypress, gum, and slash pine, and native grasses.

QUARTZIPAMMENTS – Soil usually associated with a borrow pit site.

RIVIERA – Riviera soils are very deep, poorly drained, very slowly permeable soils on broad, low flats and in depressions in the lower coastal plain. They formed in stratified sandy and loamy marine sediments on the lower coastal plain. Slopes in areas where these soils are found range from 0-2%. Native vegetation consists of slash pine, cabbage, and saw palmetto, scattered cypress, maidencane, and pineland threeawn.

TERRA CEIA - The Terra Ceia series consists of very deep, very poorly drained organic soils that formed from non-woody fibrous hydrophytic plant remains. They occur mostly in nearly level fresh water marshes and occasionally on river flood plains and in tidal swamps or flats. Natural vegetation includes sawgrass, lilies, sedges, reeds, maidencane, and other aquatic plants. Wooded areas include cypress, black gum, cabbage palm, carolina ash, loblolly bay, red maple, sweetbay, and pond pine. American and white mangrove trees are dominate in tidal areas.

TOMOKA - The Tomoka series consists of deep, very poorly drained, moderately permeable soils that formed in decomposed dark reddish brown and black organic material about 27 inches thick over sand and loamy mineral material. Slopes range from 0 to 2 percent. Native vegetation is sawgrass, lilies, reeds, sedges, myrtle and other aquatic plants. Cypress, red and white bay, maple and pond pine are common tree species.

WABASSO - The Wabasso series consists of deep or very deep, very poorly and poorly drained, very slowly and slowly permeable soils on flatwoods, flood plains, and depressions in Peninsula Florida. They formed in sandy and loamy marine sediments. Slopes range from 0 to 2 percent. Most areas of Wabasso soils are in natural vegetation and are used for native range. The natural vegetation consists of longleaf pine, slash pine, cabbage palm, live oak, with an understory of saw palmetto, laurel oak, wax myrtle, chalky bluestem, and pineland threeawn.

WINDER – Winder soils are very deep, poorly drained, slowly to very slowly permeable soils on broad, low flats, and depressional areas. Formed in loamy marine sediments on the lower coastal plain. Slopes in areas where these soils are found range from 0-2%. Most areas are native vegetation and used for wildlife habitat. Natural vegetation consists of cordgrass, maidencane, cabbage palmetto, saw palmetto, and pineland threeawn.

APPENDIX G – GRAZING PLANS

Moccasin Island WRP
Brevard County, Florida
Grazing Management Plan

Nest Agreement No. 66420998003WW

Prepared By: Greg Hendricks
USDA-NRCS (Retired)
Rangeland Management Specialist
Advanced Florida Master Naturalist
Merritt Island, Florida

1 of 22

X *Greg Hendricks*

Greg Hendricks
Range & Pasture Management Specialist
Florida Eco Enterprises, LLC

X _____

WRP Program Participant

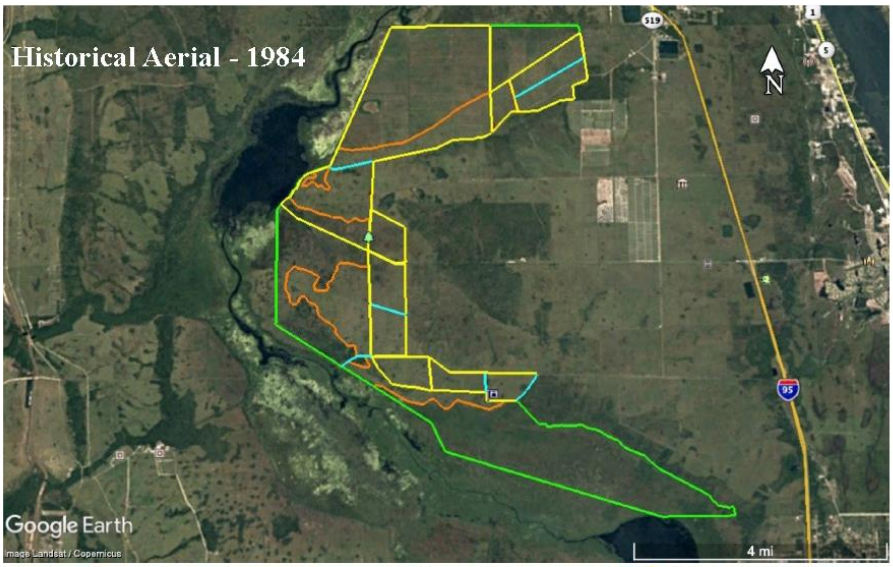
X _____

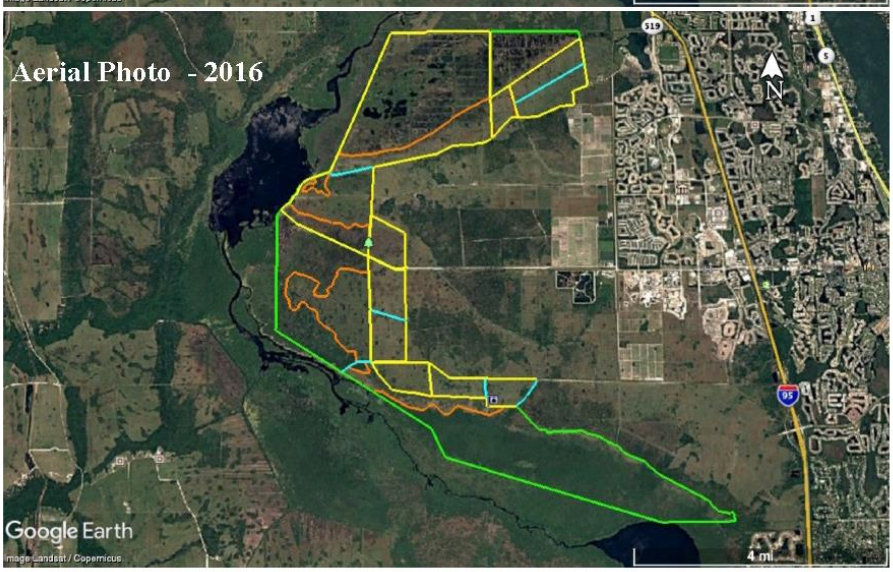
Roney Gutierrez
USDA - NRCS
ASTC (Easements)

Table of Contents

General Property Description

The Moccasin Island Wetland Reserve Program (WRP) easement located in Brevard County Florida provide a safe and effective ecological buffer between intensive residential development located east of the property and the St. Johns River adjacent to the west. The landscape within the easement property looks very similar today compared to its 1984 aerial take photo 35 years ago. Its is anticipated that residential development will continue to encroach from the east making this easement more critical in the future.





4 of 22

Pastures located in Area 1 in the northern part of the easement consist of bahiagrass and common bermudagrass as the primary forage species with remnant areas occupied with white clover. Low density cattle grazing following a rotational grazing management strategy is essential in maintaining this open "prairie-like" agro-ecosystem.

Pasture grasses, pennywort, and other common pasture weeds provide cover, nesting materials and a seed source for many grassland birds and other species.

Native grasslands such as this wet prairie has a strong presence of desirable blue maidencane and other associated naive grasses such as purple, chalky and broomsedge bluestems.

5 of 22

Blue maidencane is the dominant native rangeland grass on the wet prairie, and is shown here generating new forage regrowth on the last week of February. This resilient native forages species is important to livestock and wildlife on these native grasslands.

Low density livestock grazing demonstrates its contribution to sustaining wet prairies and freshwater marshes in a suitable habitat structure beneficial to nesting sandhill cranes within the easement boundary.

Goals & Objectives

The objective of this grazing management plan is to provide guidance and recommendations to NRCS staff, SJRWMD (WRP Participant) and the grazing lessee on methods and techniques that will support livestock grazing as an effective land management tool within the easement boundary. For this purpose, this grazing management plan will focus on the primary forage producing areas such as pasturelands, semi-improved pastures, and native wet prairies and freshwater marshes available to livestock.

Recommended stock density, following rest-rotation grazing management and adherence to proper forage utilization limits are the principle management strategies that will guide the application of livestock grazing in support of meeting wetland restoration goals and objectives. The ability to apply livestock grazing for the benefit of natural resource management requires having the right stock density, proper grazing periods and length of rest following grazing to

allow for recovery of desirable forage plants. The objective of this grazing plan will be to recommend the appropriate use of existing forage resources in a manner that will meet livestock health and performance needs and to achieve wetland restoration goals.

To achieve wetland restoration and management goals the following must be accomplished:

1. Maintain "cow-tight" boundary fences.
2. Ensure quality stockwater is available within each pasture.
3. Control shrubs and herbaceous weeds where needed.
4. Follow a rest-rotation grazing management strategy.
5. Maintain grazing records to assist with annual grazing plan revisions.
6. Revise the annual grazing management plan in a timely manner incorporating program participant's input.

Soils

Review of the county-level published soil survey is an important part of inventorying the natural resources and for making forage production predictions. The USDA - NRCS Soil Survey recognizes 19 different soil map units within the easement boundary. Soils provide valuable information pertaining to present and former ecological communities, their ability to grow native and domestic forages and to assist in managing for better wildlife habitat.

In **Appendix I** of this management plan is a list of the soils found on this property, their soil map symbols, soil names and native plant communities correlated with each soil. Native plant communities are divided into communities of frequent fire (fire dependent), infrequent fire (fire sub-climax communities) and those communities that experience rare or no fire (climax communities). Following this table of information is a soil map of the property.

Grazing Management & Supporting Practices

USDA - NRCS conservation practice Prescribed Grazing - Code 528, is defined as managing the harvesting of vegetation with grazing and/or browsing animals. This practice combined with Fence - Code 382 and Watering Facility - Code 614 should be incorporated within this grazing management plan to ensure healthy livestock, sustainable forage resources, desirable wildlife habitats while supporting wetland restoration goals.

Before embarking upon any conservation practice or activity that has the potential to manipulate or impact vegetative communities or landscape cover, consult with USDA - NRCS to ensure these activities meet existing compatible use authorizations (CUA).

Fencing

Additional fencing appears to be needed in six different locations within the easement as noted below:

Separating Pastures 1b & 1c	7,165 feet
Separating Pastures 4a & 4 b	3,963 feet
Separating Pastures 3b & 3c	3,154 feet
Separating Pastures 3g & 3h	2,743 feet
East Boundary of 3f	2,829 feet
West Boundary of 3f	1,633 feet

When additional or replacement fencing is deemed necessary, refer to **Appendix VI** of this management plan for USDA - NRCS constructions specifications for barbwire fencing.

Stockwater Development

This annual grazing management plan is based upon a rest-rotation grazing management where cattle are confined to a specific pasture for a designated period of time, followed resting or deferring the pasture to allow for adequate forage regrowth. For this type of livestock - forage management regime to function properly it is essential that an adequate source of livestock water is available and maintained within each pasture.

Stockwater ponds when large enough can provide suitable livestock water. The minimum size of each stockwater pond must be 1/4 acre and 10 feet deep with one end sloped at 4:1 for cattle access and the remaining three sides sloped at 2:1. Using these dimensions, approximately 2,433 cubic yards of material will be excavated to create a 1/4 acre stockwater pond. (See the Grazing Plan Maps for desired stockwater pond locations and refer to **Appendix VII** in this management plan for stockwater pond dimensions and design.

Brush Management

Sea myrtle (*Baccharis halimifolia*) and wax myrtle (*Myrica cerifera*) are native shrub species that have the ability to invade wetlands and other transitional areas to a level that wildlife habitat and livestock forage resources can be impacted. Should this was to occur, land management should approach USDA - NRCS and request permission through a CUA to apply mowing and/or roller-chopping to control these species with the overall objective to achieve wetland habitat improvement.

Herbaceous Weeds

Dogfennel, ragweed and soft rush as well as other common pasture weeds can be found throughout the ranch, however, not a levels that would elevate concern. Good grazing management will greatly assist in keeping these species in-check by simulating desirable forage grasses.

Prescribed Burning

Prescribed burning should be applied if pasture biomass become old and rank, and may also be considered for addressing sea myrtle and/or wax myrtle invasions. When pastures ares burned it is essential that a minimum of 30 days deferment from grazing be implemented following prescribed burn treatments.

Grazing Height Tolerances

To optimize forage production and maximize livestock forage intake from both native and domestic pasture forages, it is critical that livestock be allowed to graze no closer than the proper stubble height or grazing tolerances noted below. Following these guidelines will ensure rapid recovery and regrowth of forages following grazing, improved animal performance, sustain forage productivity and improved wildlife habitat.

Table 1 - Grazing Height Tolerances

Forage Species	Begin Grazing	Begin Resting
Bahiagrass	6 - 8 inches	2 - 3 inches
Common Bermuda	8 - 10 inches	4 - 5 inches
Blue Maidencane	12 - 16 inches	6 - 8 inches
Bushybeard Bluestem	12 - 14 inches	6 - 8 inches
Maidencane	24 - 26 inches	10 - 12 inches

Animal Unit Equivalents

Animal Unit Equivalents (AUE's) are used to develop a unit of measure across multiple classes of livestock based upon the animal's body weight. AUEs assist in preparing livestock forage inventories and estimates of livestock carrying capacity based upon the ability of each pasture to produce forage. Animal unit day (AUD), animal unit month (AUM) and animal unit year (AUY) estimates the amount of forage available to sustain a 1000 pound cow with calf-at-side for 1, 30 and 365 days respectively.

Livestock Class	Average Weight (pounds)	Animal Unit Equivalent	Forage Consumed * (Pounds) AUD	AUM	AUY **
Cow w/ calf	1000	1.0	26	790	9490
Dry Cow	900	0.9	24	730	8760
Bull	1500	1.5	39	1187	14,235

* Forage consumed based upon daily intake of 2.6% of livestock body weight.

** AUY assumes calf-at-side is restricted to 6 months

Livestock Forage Inventory

The livestock forage inventory estimates the current livestock carrying capacity of the WRP easement area available to livestock grazing. In the following table forage yield potential of each pasture is provided. In columns 3, 4 and 5 are carrying capacity estimates in AUM's per acre, AUM's and total AUY's, i.e., the number of livestock that can be supported within the easement boundary over 12 months.

Moccasin Island WRP	Acres	AUM's/Ac.	AUMs	Total AUYs
1 a Pasture	153	2.5	382	32
1 b Pasture	322	2.5	805	67
1 c Pasture	329	2.5	823	69
4 a Semi-Improved Marsh	632 2,319	1.5 .8	948 1855	234
4 b Semi-Improved Wet Prairie Marsh	575 272 48	1.5 1.0 .8	863 272 38	98
3 a Pasture	253	2.5	633	53
3 b Pasture	309	2.5	773	64
3 c Pasture	275	2.5	688	57
3 d Pasture	242	2.5	605	50
3 e Pasture	194	2.5	485	40
3 f Pasture	198	2.5	495	41
3 g Semi-Improved Wet Prairie Forest Swamp	774 767 365	1.5 1.0 0	1161 767 0	161
3 h Semi-Improved Forest Swamp	320 2,549	1.5 0	480 0	40
Total	10,896			1006

Annual Grazing Plan

To achieve desirable grassland management, animal health and livestock performance it is imperative that a rest-rotation grazing system be implemented to effectively manage key grazing resources. Livestock forages, both native and introduced provide the essential resources critical to the health and productivity of the livestock. The interaction of cattle upon the landscape, i.e., grazing, trampling, trailing, controlling of invasive plant species and cycling of nutrients will contribute greatly to the health and ecological functions of the property.

This annual grazing plan is divided into two components, the **North Area** which encompasses Areas 1 and 4 and the **South Area** which encompasses Area 3 as described by the current cattle lessee and former landowner.

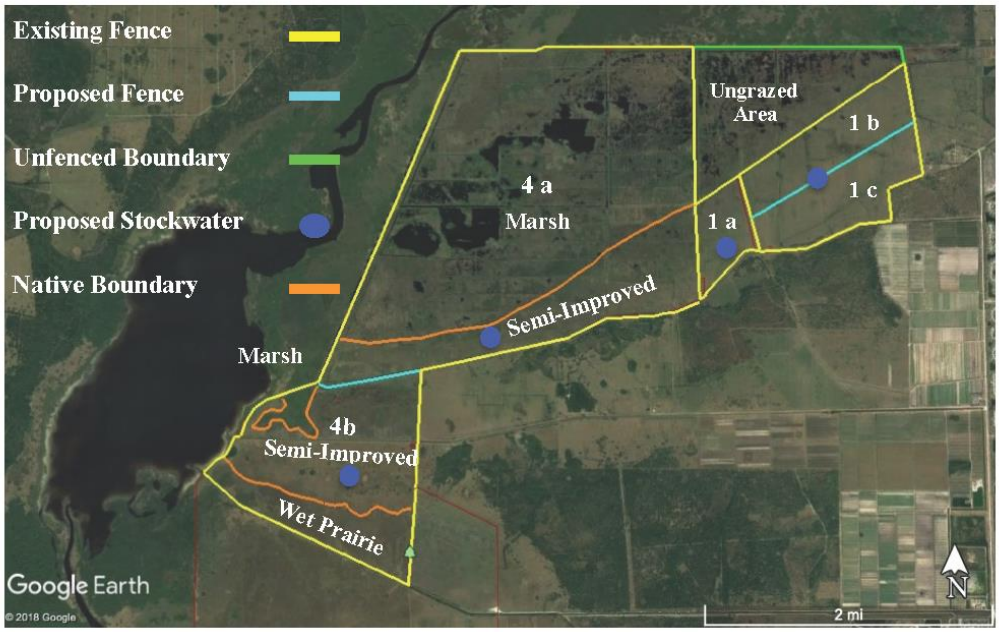
In the North Area, this grazing management proposes one herd of cattle not to exceed 350 animal units grazing pastures 1a, 1b and 1c during the summer forage grand-growth period rotating the herd every 7 - 15 days based upon forage growth rate. As forages achieve maximum growth rate, livestock should be moved in such as manner that shorter grazing and rest periods are applied to ensure maximum forage intake of the highest forage quality. As forage regrowth slows due to diminished rainfall, shorter day-length and cooler night temperatures, grazing duration and pasture deferment should be lengthened. Pasture 4 a and 4 b are large pastures that encompass former pasture, semi-improved pasture and native wetland areas undergoing restoration resulting from restoring more natural hydroperiods. Within these areas are bahiagrass, common bermudagrass, and important native wetland plants that provide livestock forage such as maidencane, blue maidencane and cutgrass. Within this grazing management plan, these pasture areas are designed to provide livestock carrying capacity during the drier winter and spring periods of the year.

In the South Area, this grazing management plan proposes one herd of cattle not to exceed 450 animal units grazing pastures 3 a - 3 f during the summer forage grand-growth period rotating the herd every 4 - 7 days following the same principles described above for the North Area. Use of livestock lanes currently in place will assist in moving cattle in a timely manner. Pastures 3 g and 3 h are large pastures similar to 4 a and 4 b and are designed to provide livestock carrying capacity during the drier winter and spring periods of the year.

To assist the cattle lessee to meet land management goals and objectives, adjustments to the livestock forage inventory and this grazing management plan should be done annually based upon forage utilization monitoring and grazing records kept by the lessee. See **Appendix IV** in this management plan for more information on creating grazing management records and use of the USDA-NRCS form developed for collecting this information.

This annual grazing management plan is designed to minimize feeding of hay supplements. If hay supplements are required locate hay bales away from wetlands, open water, intact native plant communities or other environmentally sensitive areas. Adhere to grazing tolerances noted

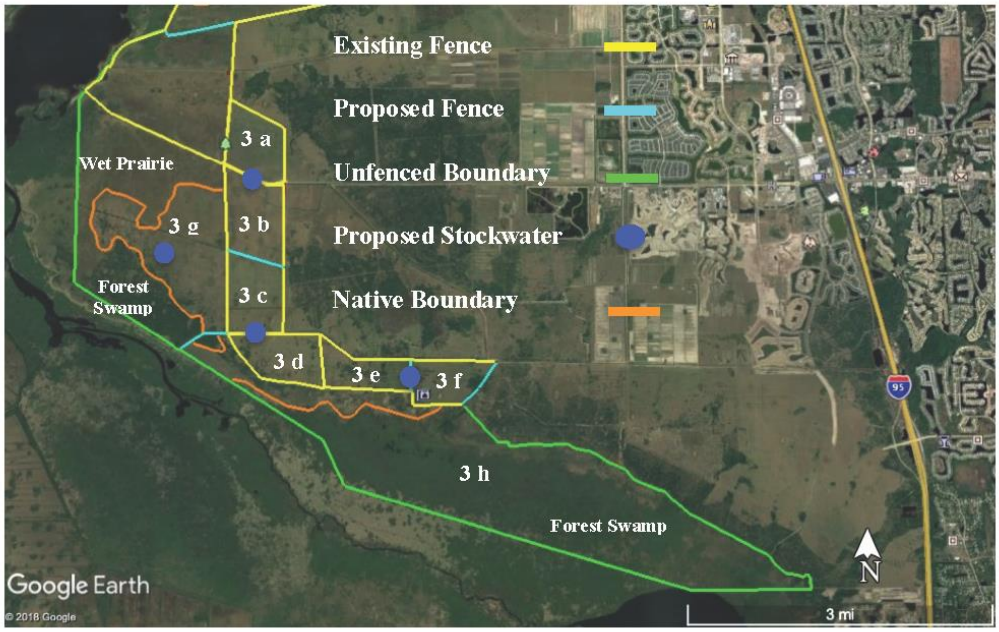
above to ensure key forage species are not overgrazed. Consequences of weather, markets and other unexpected factors may cause the lessee to deviate from the grazing schedule for short periods of time. However, the overall concept of applied grazing management by providing key deferment periods to promote desirable grassland health and vigor should always be part of the overall management philosophy.



Annual Grazing Schedule - North Area (350 Animal Units)

Pasture	Acres	AUM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1a	153	382						Move Cattle Herd Every 10 - 15 Days						
1b	322	805												
1c	329	823												
4a	2,951	2,803												
4b	898	1,176												
Livestock Supplements	X - Protein Y - Mineral H - Hay		X Y H	X Y H	X Y H	X Y H	Y H	Y	Y	Y	Y	Y	Y	Y

Annual Grazing Schedule - South Area (450 Animal Units)

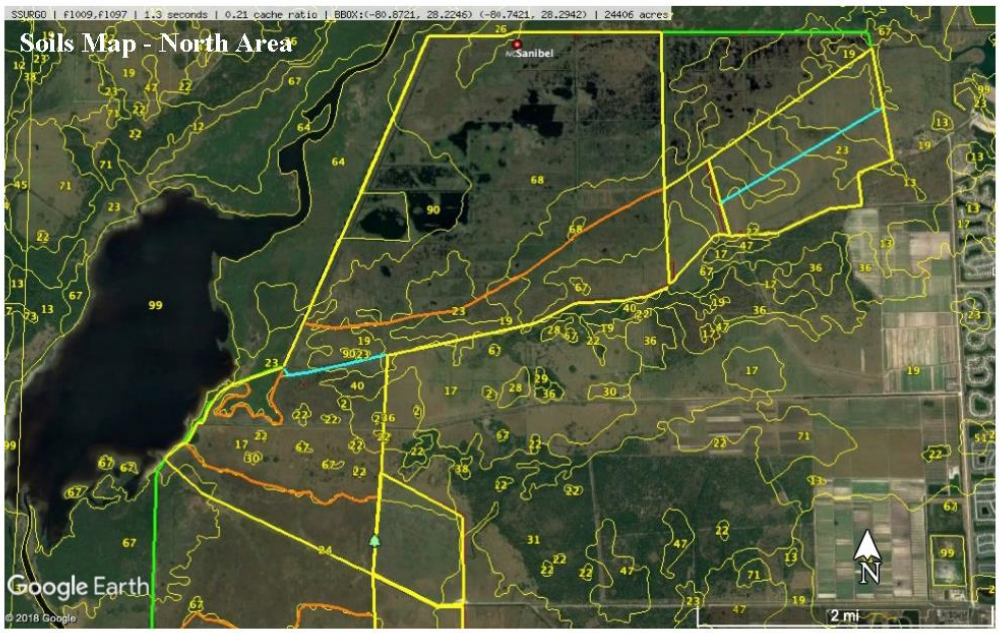


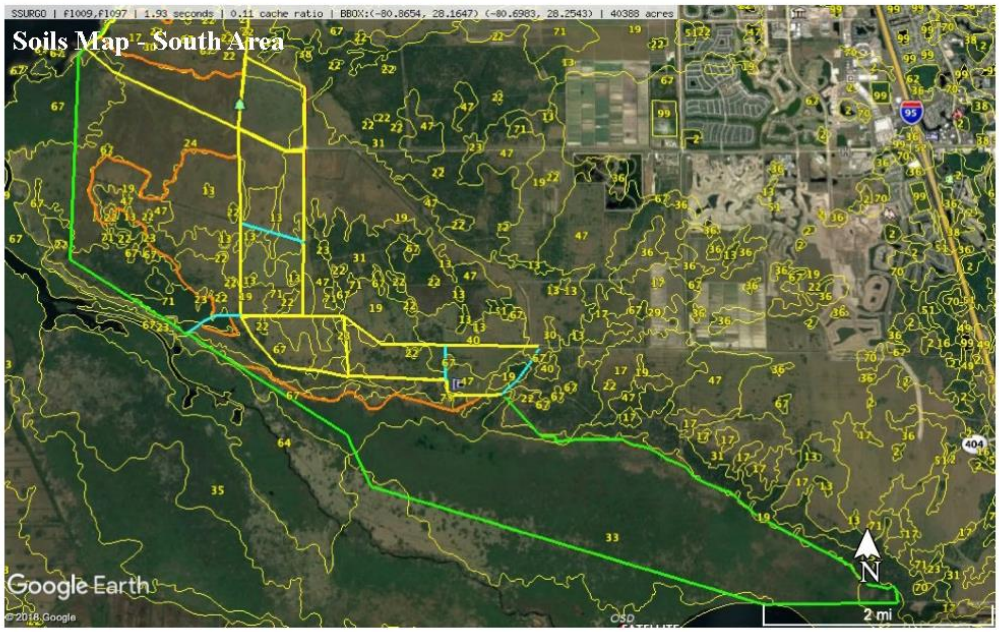
Pasture	Areas	AUM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3 a	253	633					Move Cattle Herd Every 4 - 7 Days							
3 b	309	773												
3 c	275	688												
3 d	242	605												
3 e	194	485												
3 f	198	495												
3 g	1,906	1,928												
3 h	2,869	480												
Livestock Supplements	X - Protein Y - Mineral H - Hay		X Y H	X Y H	X Y H	X Y H	Y H	Y	Y	Y	Y	Y	Y	Y

Appendix I: Soils

Soil Map Symbol	Soil Map Name	Fire Dependent (Frequent Fire)	Fire Sub-Climax (Infrequent Fire)	Climax Rare or No Fire)
2	Anclote sand, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
13	Chobee mucky loamy f.s., depressional	Marsh	Cypress Swamp	Hardwood Swamp
17	Eau Gallie sand	Mesic Flatwoods	Mixed Pine/Mesic Forest	Mesic Forest
19	Riviera sand	Wet Prairie	Mixed Pine/ Hydric Forest	Hydric Forest
22	Floridana sand, freq, ponded	Marsh	Cypress Swamp	Hardwood Swamp
23	Floridana sand, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
24	Floridan, Chobee & Felda, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
26	Holopaw sand	Wet Prairie	Mixed Pine/ Hydric Forest	Hydric Forest
30	Malabar sand	Wet Prairie	Mixed Pine/ Hydric Forest	Hydric Forest
33	Mico mucky peat, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
35	Everglades mucky peat, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
36	Myakka sand	Mesic Flatwoods	Mixed Pine/Mesic Forest	Mesic Forest
40	Oldsmar sand	Mesic Flatwoods	Mixed Pine/Mesic Forest	Mesic Forest
47	Pineda sand	Wet Prairie	Mixed Pine/ Hydric Forest	Hydric Forest
67	Tomoka muck, freq., flooded	Marsh	Cypress Swamp	Hardwood Swamp
68	Tomoka muck, drained, freq., flooded	Marsh	Cypress Swamp	Hardwood Swamp
71	Wabasso sand	Wet Flatwoods	Mixed Pine/ Hydric Forest	Hydric Forest
73	Winder loamy sand	Wet Prairie	Mixed Pine/ Hydric Forest	Hydric Forest

Soil Map Symbol	Soil Map Name	Fire Dependent (Frequent Fire)	Fire Sub-Climax (Infrequent Fire)	Climax Rare or No Fire)
90	Terra Ceia muck, drained, freq., flooded	Marsh	Cypress Swamp	Hardwood Swamp





Appendix II: Grazing Land Resources & Natural Ecological Communities

Pasture - Bahiagrass (*Paspalum notatum*) is a non-native warm-season perennial forage grass that produces its greatest volume of forage and best quality during the wet-season summer months. Bahiagrass can be managed on Florida's sandy nutrient poor soils without fertilizer, however yields are less and weed encroachment more problematic. Periodic mowing is advisable prior to weeds setting flower to minimize seed production of weedy plants. When forest canopies exceeding 60%, little to no forage production can be expected.

Mesic Flatwoods - These somewhat poorly drained native upland communities were formerly one of the dominant communities throughout central and south Florida. Characterized by saw palmetto and wiregrass, these formers grasslands were once dominated by a variety of bluestem grasses such as creeping, purple and chalky bluestems, lopsided indiangrass and a variety of panicums and other grass-like plants. These communities are considered fire sub-climax, and required periodic burning every 3-5 years.

Mesic Hardwoods - These somewhat poorly drained native upland plant communities are dominated by evergreen hardwoods that include live oak, laurel oak, southern magnolia, and often have cabbage palms within their understory. These forested communities when observed with an extensive saw palmetto shrub cover are thought to be former flatwood communities that have had its natural fire regime diminished or removed to allow hardwood species to develop by natural ecological succession

Hydric Forests - These native wetland forested communities are dominated by hardwood species such as swamp laurel oak, live oak, water oak, sweet gum, sweetbay magnolia, red cedar, cabbage palm and a variety of shrubs and ground vegetation tolerant of hydric soil conditions and occasional inundation. These forest plant communities provide excellent habitat and mast production supporting a variety of important wildlife species such as wild turkey, deer and important predator species. These areas provide little to no grazing value due to their dense forest canopy.

Wet Prairie & Wet Flatwoods - These wetland native grasslands are commonly identified as transition zones between mesic plant communities and more hydric sites such as marshes and swamps. Native grasses such as blue maidencane, bluepoint panicum, purple bluestem and a variety of sedges and rushes historically dominated the ground vegetation. Wet prairies are typified as lacking pines, where wet flatwoods is characterized by their slash and pond pine presence. Both sites lacked saw palmetto due to their natural hydroperiod during the wet season.

Freshwater Marsh - These native wetlands are formed as a result of depressions, large basins, or in association with floodplains such as those along the St. Johns River. Historically these sites were dominated by maidencane and cutgrass associated with other wetland herbaceous vegetation such as sand cordgrass, spike rush, arrowheads, pickerel weed, sawgrass, sedges and rushes.

Cypress/Hardwood Swamp - These seasonally inundated forested wetlands when not disturbed by fire, wind damage or other disturbances are typically occupied by climax forest species with little to no ground cover. The forest community is commonly dominated by cypress, red maple, pop ash, bay trees, swamp dogwood and willows. Sites that experience a rare fire are often dominated by cypress, however, as fire frequency lessens, hardwood species often become dominant.

Appendix III: Grazing Records

It is recommended that the lessee use the USDA-NRCS FL-ECS-3 form for keeping grazing records. Animal Unit Day information can be analyzed to determine if modifications are needed to make adjustment to the annual grazing plan.

U.S. Department of Agriculture
Natural Resources Conservation Service

FL-ECS-3
9/2000

RANGELAND AND PASTURELAND STOCKING ASSESSMENT RECORDS

PASTURE NO. : _____ **ACRES:** ____ **YEAR:** ____

1. Date In: _____ Date Out: _____ Animal Units:_____ Animal Unit Days_____	8. Date In_____ Date Out_____ Animal Units_____ Animal Unit Days_____
2. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	9. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
3. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	10. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
4. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days_____	11. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
5. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	12. Date Out _____ Animal Units _____ Animal Unit Days_____
6. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	13. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
7. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	14. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____

Animal Unit Days (AUD) = No. Days x Animal Units — TOTAL AUD(s): ___

Animal Units Month(s) (AUM) = $\frac{\text{AUD(s)}}{\text{30(days)}}$ — TOTAL AUM(s) ___

AUM(s) per Acre = $\frac{\text{Total AUM(s)}}{\text{No. Acres}}$ — AUM(s) per Acre ___

Dates and Amounts of Fertilizer: _____

Date of: First Frost: _____ Last Frost _____

Monthly Rainfall: J :____F ____M ____A ____M ____J ____J ____A ___S ____O ____N ____D ___
Yearly Rainfall Total ___

18 of 22

Appendix IV: Monitoring Plan

Evaluation of this annual grazing management plan should be performed in coordination with USDA-NRCS or their representative, SJRWMD, FWC and the cattle lessee. This evaluation should be conducted following the completion of the winter/spring grazing season prior to the on-set of the summer wet-season. Pasture evaluations should focus on total animal units days grazed, condition and trends of key forage resources, grazing use intensity and other issues pertinent to management of livestock under this grazing plan and to wetland restoration objectives.

Vegetative Transects: This information provides a valuable assessment of the existing plant composition and can be used to tract changes over time. Place a T-Post to establish a permanent reference point. From the T-Post stretch a measuring tape to establish a line-point intercept transect for 50 - 100 meters depending on the site location. At 1 - 2 meter intervals, measure the nearest rooted plant and tally this information to determine an estimate of the plant composition of the pasture. This data should be taken at different times of the year, e.g., spring, summer and fall to obtain a good understanding of the pasture's plant composition and its trends overtime.

Grazing Utilization: This information is critical to the success of any ranching enterprise. Placement of grazing exclosure cages strategically within pastures provides an opportunity to evaluate the forage utilization level by the livestock. Cages should be established within pastures prior to cattle entering the pasture. Once cattle depart the pasture, compare key forage species from within and outside the exclosure cage by forage height and/or weight.

The percent difference in plant height or weight of the vegetation outside the cage compared to forage inside the cage provides an estimate of the level of forage utilization by the livestock on the pasture.

The rule-thumb for proper grazing utilization is to never graze more than 50% of the available forage. This ensures enough leaf-area critical to support rapid regrowth of forages and to maintain a strong plant vigor of desirable forage plants.

Appendix V: Barbwire Fence Guidance

This sheet lists the minimum requirements to meet Florida Fence Standard (FL 382) for barbwire fence *if USDA Food Security Act costing-sharing is a consideration*. Variances in fence design may be allowed if requested. All variances requests shall be submitted to the State Rangeland Management Specialist or an individual with proper job approval authority for approval. All barbed wire fences will be installed using braces that meet Florida NRCS specifications for braces. Please note, SJRWMD may have standards that exceed the following.

Wire and Spacing
Use only new wire composed of two twisted strands of minimum class 3 galvanized 15.5 gauge high tensile steel barbwire.

Number of Wires
Interior cross fence - 3 wires (minimum) to manage movement of larger livestock such as cattle and horses.
Boundary fence - 4 wire (minimum) are required for boundary fences and next to highways.

Fence and Wire Height and Placement
Cattle and Horses-
- The minimum top wire height for 4 and 5 wire fences is 42 inches above ground level.
- The minimum top wire height for 3 wire fences is 38 inches above ground level.
- Install wires with a minimum of 10-12 inches spacing between the top 2 wires.

Note: Inline fence wire spacing shown below are recommendations only.

WIRE HEIGHT AND SPACING OF WIRES IN INCHES (“)			
Number of Line Wires	**5 Strand**	**4 Strand**	**3 Strand**
Boundary Fence Top Wire Height (minimum)	46	46	**Not Acceptable**
Boundary Fence Bottom Wire Height (minimum)	6	12	**Not Acceptable**
Recommended Inline Fence Wire Spacing (inches)			
Cattle and Horses	6, 16, 26, 36, 46	16, 26, 32, 44	16, 26, 38
To Allow For Wildlife Movement	**Not recommended**	18, 24, 30, 42	18, 26, 38

LINE POSTS MATERIALS, POST SPACING AND INSTALIATION DEPTH

- **Steel** - Use only new, painted or galvanized T or U posts.

- **Wood-** Treated with 0.4 lbs/ft3 of chromate copper arsenate (CCA type A, B or C or equivalent). Minimum size, 3" top-diameter X 6.5' length.

- **Post Spacing** - The maximum distance between line posts is 16 feet without the use of stays, or 30 ft. with a minimum of 1 stay between posts.

- **Installation** - Drive or bury wood posts at least 24 inches into the ground in sandy or loamy soils. Install posts to a 42 inch depth in muck soils. If post holes are dug, backfill by tamping the soil around the post at every 4 in. depth.

- **Fastening** - Attach wires to the side of the post receiving the most livestock pressure. Drive staple diagonally to the wood's grain and at a slight downward angle (upward if the pull is up) such as in low places to avoid splitting posts and loosening of staples. Space should be left between staple and post to permit free movement of wire.

- **Wood posts** - Use 1.5 inch (minimum), 9 gauge (minimum), class 3 galvanized staples.

- **Steel posts** - Use manufactured clips or wire posts.

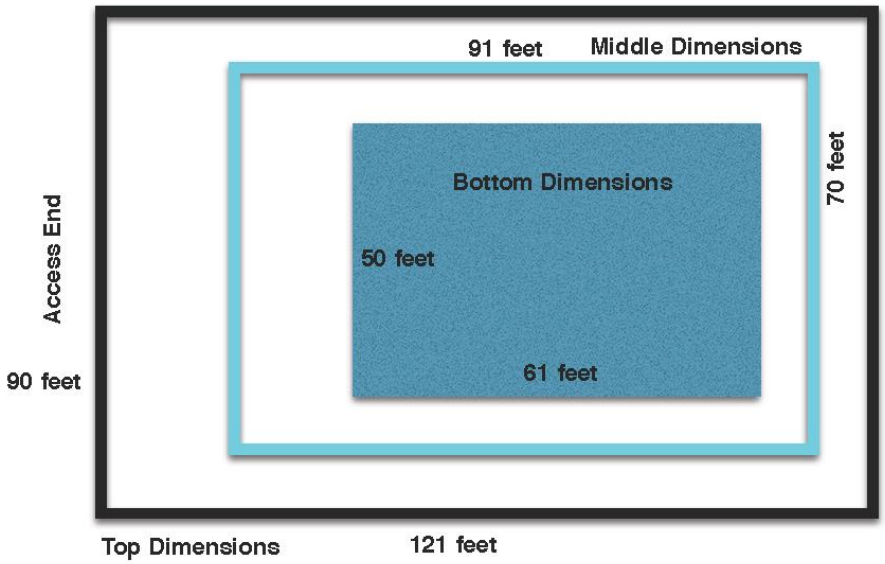
Appendix VI - Stockwater Development

Stock Pond Design (1/4 Acre Surface Area)

Access end sloped 4:1

Other sides sloped 2:1

Total volume excavated: ~ 2,433 yds ^{3}



Duda Farms & Mocassin Island WRP
Brevard County, Florida
Annual Grazing Management Plan

Prepared By: Greg Hendricks
USDA-NRCS (Retired)
Rangeland Management Specialist
Advanced Florida Master Naturalist
Merritt Island, Florida

1 of 26

X Greg Hendricks

Greg Hendricks
Range & Pasture Management Specialist
Florida Eco Enterprises, LLC

X _____

Grazing Lessee

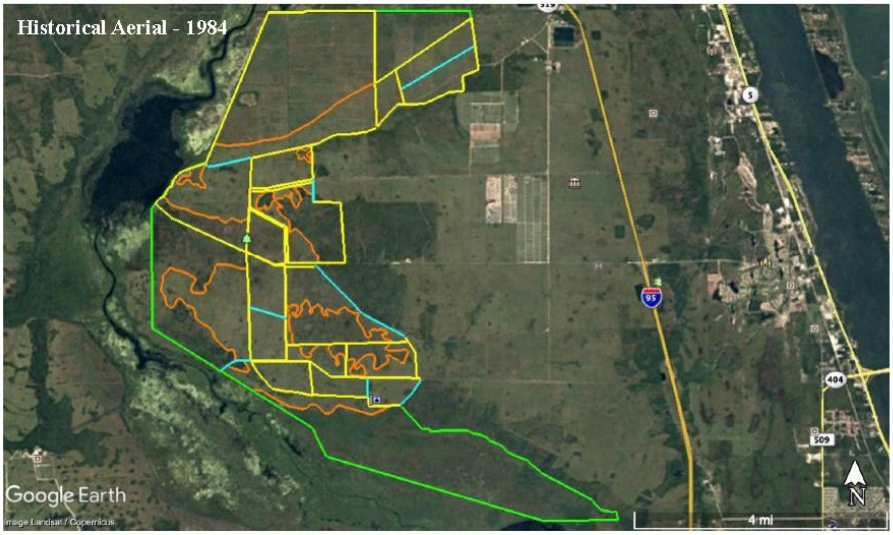
X _____

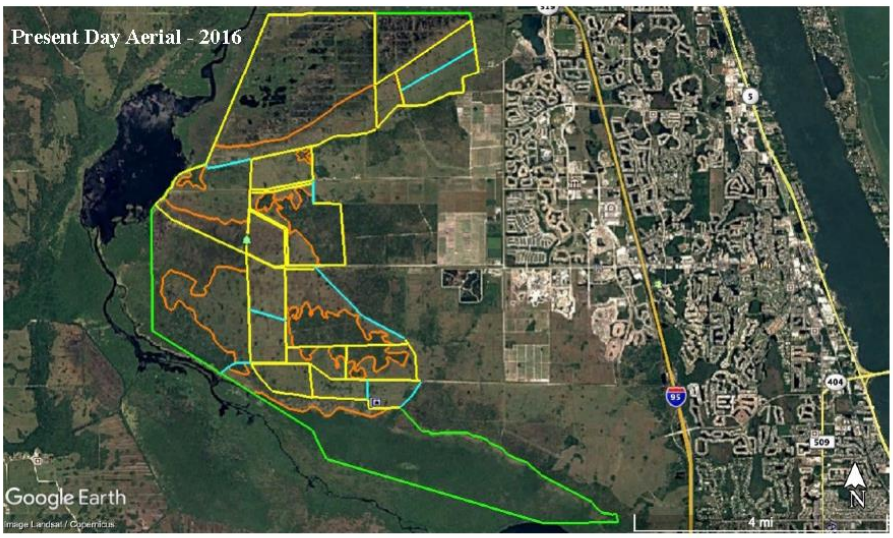
Peter Henn
Project Manager
St. Johns River Water Management District

Table of Contents

General Property Description

The Moccasin Island Wetland Reserve Program (WRP) easement and the SJRWM - Duda Farms grazing lease is located in Brevard County Florida providing an effective ecological buffer between intensive residential development east of the property and the St. Johns River adjacent to the west. The landscape within the easement property looks very similar today compared to its 1984 aerial photo taken 35 years ago. It is anticipated that residential development will continue to encroach from the east making this easement even more critical in the future.





Areas of well managed pasture similar to this area in field 2a located on Oldsmar Sand are maintaining an excellent stand of bahiagrass.

Other areas of former pasture located within field 2a located on EauGallie Sand have been converted to a marsh-like plant community dominated by soft rush, smartweed, carpetgrass, with remnants of bahiagrass still present. Flooding from an artisan well appears to be the principle driver of this ecological succession.

Water accumulation from the artisan well located in the southeast corner of field 2a is having a diminishing effect on the forage production of bahiagrass in this area.

5 of 26

This pasture in field 2 h located on Oldsmar Sand is maintaining a good stand of bahiagrass forage. Encroachment of broomsedge bluestem, a native forage species, provides forage to livestock and contributes to wildlife habitat structure on prairie-like habitat.

A good stand of limpograss (*Hemarthria altissima*) in hayfield 2 d located on Riviera Sand provides an excellent supplement for cattle during periods of low forage growth.

Rest-rotation grazing management optimizes forage yields on pasturelands, wet prairies and freshwater marshes as well as providing suitable habitat structure for nesting sandhill cranes.

6 of 26

Goals & Objectives

The objective of this grazing management plan is to provide guidance and recommendations to NRCS staff related to the WRP easement, SJRWMD staff related to their grazing lease and the grazing lessee on methods and techniques that will support livestock grazing as an effective land management tool. For this purpose, this grazing management plan will focus on the primary forage producing areas such as pasturelands, semi-improved pastures, and native wet prairies, flatwoods and marshes available to livestock.

Recommended stock density, following rest-rotation grazing management and adherence to proper forage utilization limits are the principle management strategies that will guide the application of livestock grazing in support of meeting land management goals and objectives. The ability to apply livestock grazing for the benefit of natural resource management requires having the right stock density, proper grazing periods and length of rest following grazing to allow for recovery of desirable forage plants, native and domestic. The objective of this grazing plan is to recommend the appropriate use of existing forage resources in a manner that will meet livestock health and performance requirements while achieving land management goals.

To meet all land management goals the following must be accomplished:

1. Maintain "cow-tight" boundary fences.
2. Ensure quality stockwater is available within each pasture.
3. Control shrubs and herbaceous weeds where needed.
4. Follow a rest-rotation grazing management strategy.
5. Maintain grazing records to assist with annual grazing plan revisions.
6. Revise the annual grazing management plan in a timely manner incorporating grazing lessee inputs.

Soils

Review of the county-level published soil survey is an important part of inventorying the natural resources and for making forage production predictions. The USDA - NRCS Soil Survey recognizes 19 different soil map units within the property. Soils provide valuable information pertaining to present and former ecological communities, their ability to grow native and domestic forages and to assist in managing for better wildlife habitat.

In **Appendix I** of this management plan is a list of the soils, their soil map symbols, soil names and native plant communities correlated with each soil. Native plant communities are divided into communities of frequent fire (fire dependent), infrequent fire (fire sub-climax communities) and those communities that experience rare or no fire (climax communities). Following this table of information are soil maps of the property.

Grazing Management & Supporting Practices

USDA - NRCS conservation practice Prescribed Grazing - Code 528, is defined as managing the harvesting of vegetation with grazing and/or browsing animals. This practice combined with Fence - Code 382 and Watering Facility - Code 614 should be incorporated within this grazing management plan to ensure healthy livestock, sustainable forage resources and desirable wildlife habitats.

Before embarking upon any conservation practice or activity that has the potential to manipulate or impact vegetative communities or landscape cover within the WRP easement, consult with USDA - NRCS staff to ensure these activities meet existing compatible use authorizations (CUA).

Fencing

Additional fencing requirements to support rest-rotation grazing management:

Separating Pastures 1b & 1c	7,165 feet
Separating Pastures 4a & 4 b	3,963 feet
Separating Pastures 3e & 3f	2,743 feet
East Boundary of 3d	2,829 feet

When additional or replacement fencing is deemed necessary, refer to **Appendix V** of this management plan for USDA - NRCS constructions specifications for barbwire fencing.

Stockwater Development

This annual grazing management plan is based upon a rest-rotation grazing management where cattle are confined to a specific pasture for a designated period of time, followed by resting or deferring the pasture to allow for adequate forage regrowth. For this type of livestock - forage management regime to function properly it is essential that an adequate source of livestock water is available and maintained within each pasture.

Stockwater ponds when large enough can provide suitable livestock water. The minimum size of each stockwater pond should be 1/4 acre and 10 feet deep with one end sloped at 4:1 for cattle access and the remaining three sides sloped at 2:1. Using these dimensions, approximately 2,433 cubic yards of material will be excavated to create a 1/4 acre stockwater pond. (See the Grazing Plan Maps for desired stockwater pond locations and refer to **Appendix VI** in this management plan for stockwater pond dimensions and design.

Brush Management

Sea myrtle (*Baccharis halimifolia*) and wax myrtle (*Myrica cerifera*) are native shrub species that have the ability to invade wetlands and other transitional areas to a level that wildlife habitat and livestock forage resources can be impacted. When this occurs management should consider roller-chopping on native lands or mowing on pasturelands to control these species in accordance to land management objectives.

Herbaceous Weed Control

Dogfennel, ragweed and soft rush as well as other common pasture weeds can be found throughout the ranch. In most areas good grazing management will greatly assist in keeping these species in-check by simulating desirable forage grasses. Vigilance on non-native invasive species such as tropical soda apple (pictured right), cogongrass (field 2 h NW corner) and Brazilian pepper need to be controlled year-round to avoid these species from becoming monocultures.

Prescribed Burning

Prescribed burning should be applied if pasture biomass become too old and rank for effective forage production, and may also be considered for addressing sea myrtle and/or wax myrtle invasions. When pastures areas are burned it is essential that a minimum of a 30 day deferment from grazing be implemented following prescribed burn treatments.

Grazing Height Tolerances

To optimize forage production and maximize livestock forage intake from both native and domestic forages, it is critical that livestock be allowed to graze no closer than the proper stubble height or grazing tolerances noted below. Following these guidelines will ensure rapid recovery and regrowth of forages following grazing, improved animal performance, sustain forage productivity and wildlife habitat.

Table 1 - Grazing Height Tolerances

Forage Species	Begin Grazing	Begin Resting
Bahiagrass	6 - 8 inches	2 - 3 inches
Common Bermuda	8 - 10 inches	4 - 5 inches
Limpograss	24 - 26 inches	10 - 12 inches
Blue Maidencane	12 - 16 inches	6 - 8 inches
Bluestem Species	12 - 14 inches	6 - 8 inches
Maidencane	24 - 26 inches	10 - 12 inches

Animal Unit Equivalents

Animal Unit Equivalents (AUE's) are used to develop a unit of measure across multiple classes of livestock based upon the animal's body weight. AUEs assist in preparing livestock forage inventories and estimates of livestock carrying capacity based upon the ability of each pasture to produce forage. Animal unit day (AUD), animal unit month (AUM) and animal unit year (AUY) estimate the amount of forage available to sustain a 1000 pound cow with calf-at-side for 1, 30 and 365 days respectively.

Livestock Class	Average Weight (pounds)	Animal Unit Equivalent	Forage Consumed * (Pounds) AUD	AUM	AUY **
Cow w/ calf	1000	1.0	26	790	9490
Dry Cow	900	0.9	24	730	8760
Bull	1500	1.5	39	1187	14,235

* Forage consumed based upon daily intake of 2.6% of livestock body weight.

** AUY assumes calf-at-side is restricted to 6 months

Livestock Forage Inventory

The livestock forage inventory estimates the current livestock carrying capacity of the WRP easement and SJRWMD Duda Farms grazing lease for livestock grazing. In the following table forage yield potentials of each pasture is provided. In columns 3, 4 and 5 are carrying capacity estimates in AUM's per acre, AUM's and total AUY's, i.e., the number of livestock that can be supported within the each pasture area for 12 months.

Moccasin Island WRP and Duda Farms	Acres	AUM's/Ac.	AUMs	Total AUYs
1 a Pasture	153	2.5	382	32
1 b Pasture	322	2.5	805	67
1 c Pasture	329	2.5	823	69
2 a Pasture Marsh Mixed Pine	188 123 20	3.0 .8 .4	670	56
2 b Pasture Marsh Mixed Pine	58 28 62	2.0 1.0 .4	169	14
2 c Pasture Wet Prairie Marsh Mixed Pine	147 52 5 439	2.5 .7 .8 .4	585	49
2 d Limpograss Hay	59	6.0	354	30
2 e Pasture Wet Prairie Marsh Mixed Pine	15 350 29 401	2.5 .7 .7 .4	463	39
2 f Pasture Marsh Mixed Pine	74 9 16	2.0 .8 .4	226	19
2 g Pasture Marsh Mixed Pine	65 6 24	2.0 .8 .4	145	12

Moccasin Island WRP and Duda Farms	Acres	AUM's/Ac.	AUMs	Total AUYs
2 h Pasture Marsh Mixed Pine	202 13 172	2.0 .8 .4	483	40
3 a Pasture	253	2.5	633	53
3 b Pasture	584	2.5	1461	122
3 c Pasture	242	2.5	605	50
3 d Pasture	392	2.5	980	82
3 e Semi-Improved Wet Prairie Forest Swamp	774 767 365	1.5 1.0 0	1161 767 0	161
3 f Semi-Improved Forest Swamp	320 2,549	1.5 0	480 0	40
4 a Semi-Improved Marsh	632 2,319	1.5 .8	948 1855	234
4 b Semi-Improved Wet Prairie Marsh	575 272 48	1.5 1.0 .8	863 272 38	98
Total	13,453			1267

Annual Grazing Plan

To achieve desirable grassland management, animal health and livestock performance it is imperative that a rest-rotation grazing system be implemented to effectively manage key grazing resources. Native and domestic pasture forages, as well as some non-native invasive species such as torpedograss, provide palatable resources important to maintaining the health and productivity of beef cattle. The interaction of cattle upon the landscape, i.e., grazing, trampling, trailing, controlling of invasive plant species and cycling of nutrients will contribute greatly to the overall health and ecological functions of the property.

This annual grazing plan incorporates the forage production capacity of the USDA - NRCS WRP easement and the SJRWMD Duda Farms property into one overall management plan. To effectively apply livestock grazing in an ecologically and economically sound manner, four livestock herds are recommended within the section, "Annual Grazing Schedules."

Herd 1 (250 Animal Units) utilizes fields 1a, 1b and 1c during the active growing summer months where livestock should be moved every 10 - 15 days using forage stubble heights as the principle guide to determine when to rotate the herd to the next pasture. If forages become in short supply, move this herd to field 4a for 30 days to allow fields 1a, 1b, and 1c to recover. Field 4a should be deferred during most of the year and should be used during the winter dry-period January - April.

Herd 2 (450 Animal Units) utilizes fields 3b, 3 c and d combined and 3e throughout the year, where the grazing duration varies from 10 - 15 days during the active summer growing season and slowing to 16 - 20 days during the winter dry-period January - March. It is recommended that this herd be confined to field 3f during the month of April prior to reinitiating the grazing system of fields 3b, 3c/d and 3e.

Herd 3 (250 Animal Units) utilizes fields 2a, 2b and c combined and 3a during the active growing summer months where livestock should be moved every 10 - 15 days. If forage becomes in short supply, move this herd to field 4b for 30 days to allow fields 2a, 2b/c and 3a to recover. Field 4b should be deferred during most of the year and should be used during the winter dry-period January - April.

Herd 4 (100 Animal Units) utilizes field 2e, 2f and g combined and 2h throughout the year, where the grazing duration varies from 10 - 15 days during the active summer growing season and slowing to 16 - 20 days during the winter dry-period January - April.

Adjustments to the livestock forage inventory and grazing management plan should be done annually based upon forage utilization monitoring and grazing records kept by the lessee. See **Appendix III** for more information on grazing management records and the use of the USDA-NRCS form developed for collecting this information.

This annual grazing management plan is designed to minimize feeding of hay supplements. If hay supplements are required locate hay bales away from wetlands, open water, intact native plant communities or other environmentally sensitive areas. Adhere to grazing tolerances noted above to ensure key forage species are not overgrazed. Consequences of weather, markets and other unexpected factors may cause the lessee to deviate from grazing schedules for short periods of time. However, the overall concept of applied grazing management by providing key deferment periods to promote desirable grassland health and vigor should always be part of the overall management philosophy.

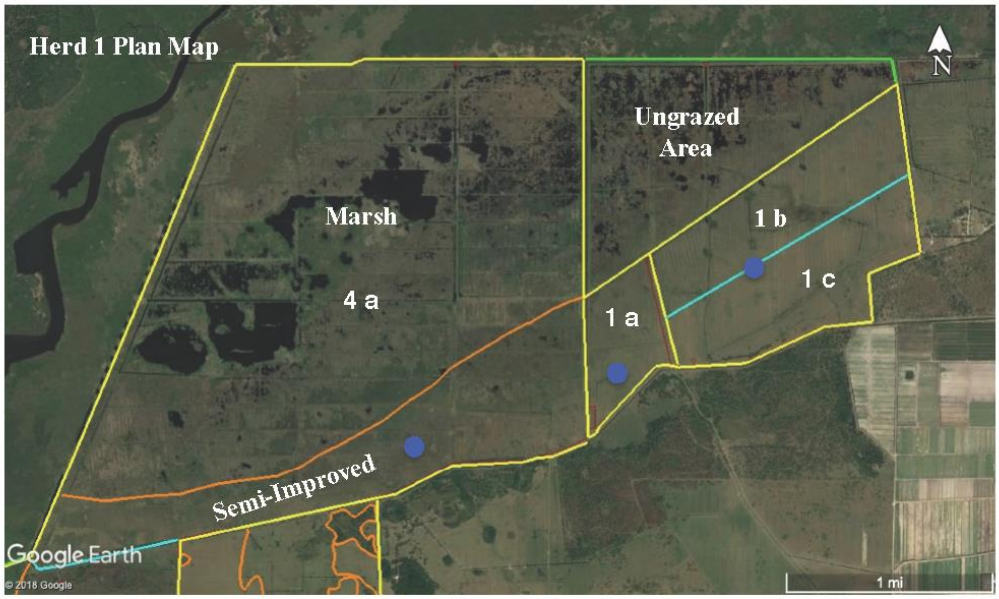
Map Symbols

- **Existing Fence**
- **Proposed Fence**
- **Unfenced Boundary**
- **Native Boundary**
- **Inventory Transect**
- **Proposed Stockwater**

Annual Grazing Schedules

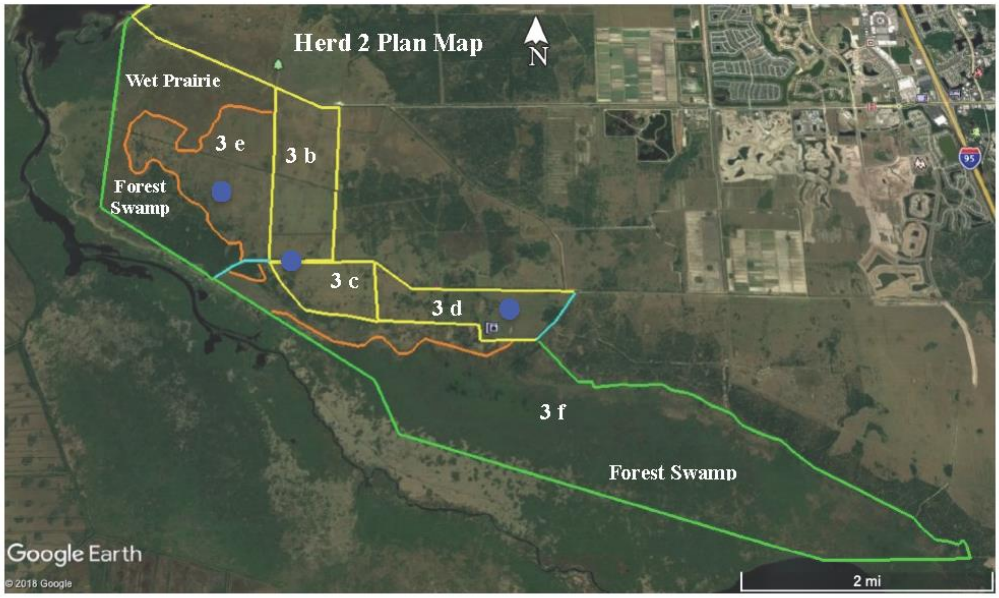
Herd 1 (250 Animal Units)

Pasture	Acres	AUM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1a	153	382					Move Cattle Herd Every 10 - 15 Days							
1b	322	805												
1c	329	823												
4a	2,951	2,803												
Livestock Supplements	X - Protein Y - Mineral H - Hay		X Y H	X Y H	X Y H	X Y H	Y H	Y	Y	Y	Y	Y	Y	Y



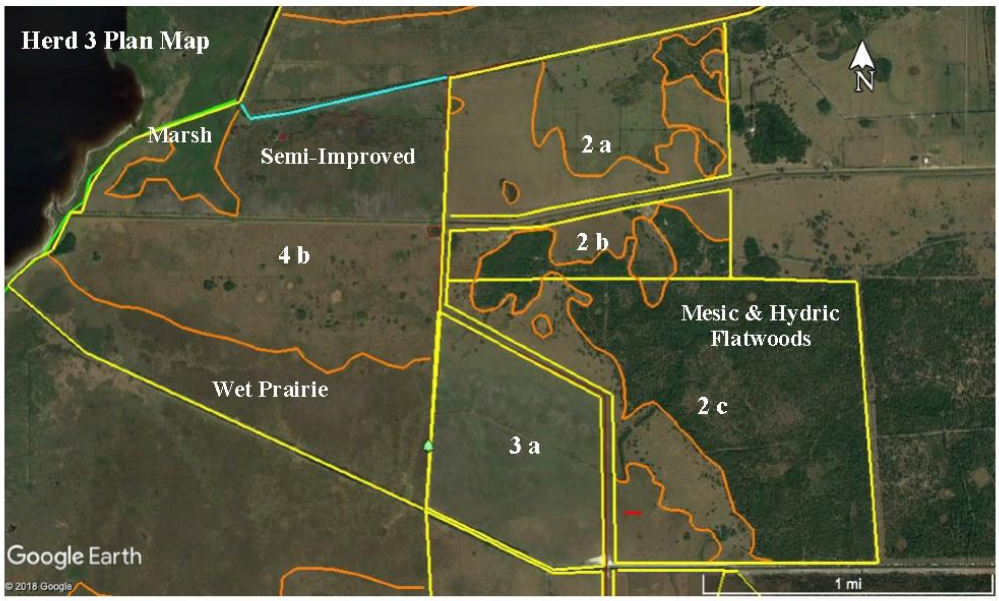
Herd 2 WRP South (450 Animal Units)

Pasture	Acres	AUM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3 b	584	1461	Move Cattle Herd Every 16 - 20 Days				Move Cattle Herd Every 10 - 15 Days							
3 c & d	634	1585												
3 e	1,906	1,928												
3 f	2,869	480												
Livestock Supplements	X - Protein Y - Mineral H - Hay		X Y H	X Y H	X Y H	X Y H	Y H	Y	Y	Y	Y	Y	Y	Y



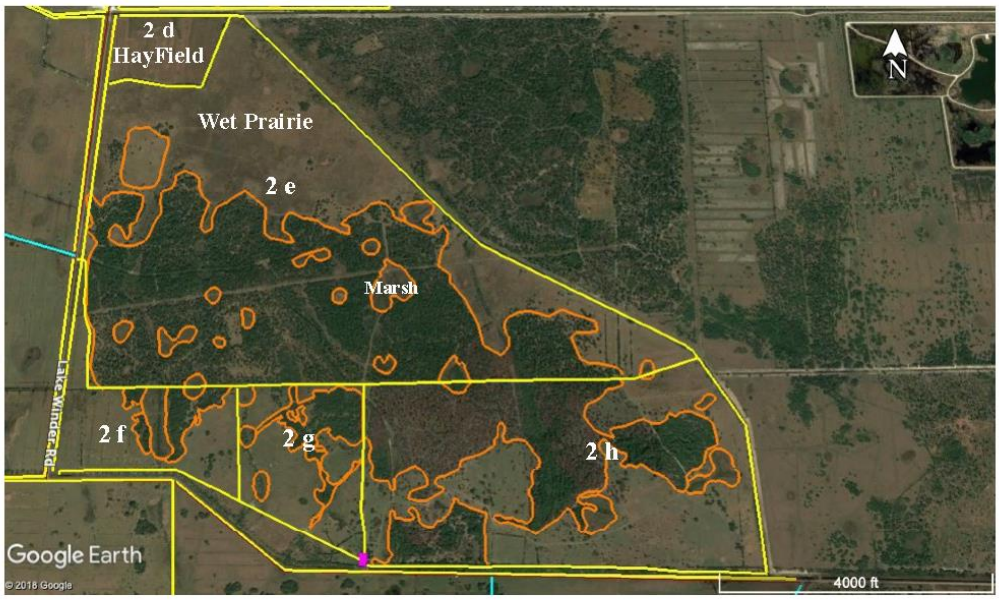
Herd 3 (250 Animal Units)

Pasture	Acres	AUM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2 a	331	670					Move Cattle Herd Every 10 - 15 Days							
2 b & c	791	754												
3 a	253	688												
4 b	895	1173												
Livestock Supplements	X - Protein Y - Mineral H - Hay		X Y H	X Y H	X Y H	X Y H	Y H	Y	Y	Y	Y	Y	Y	Y



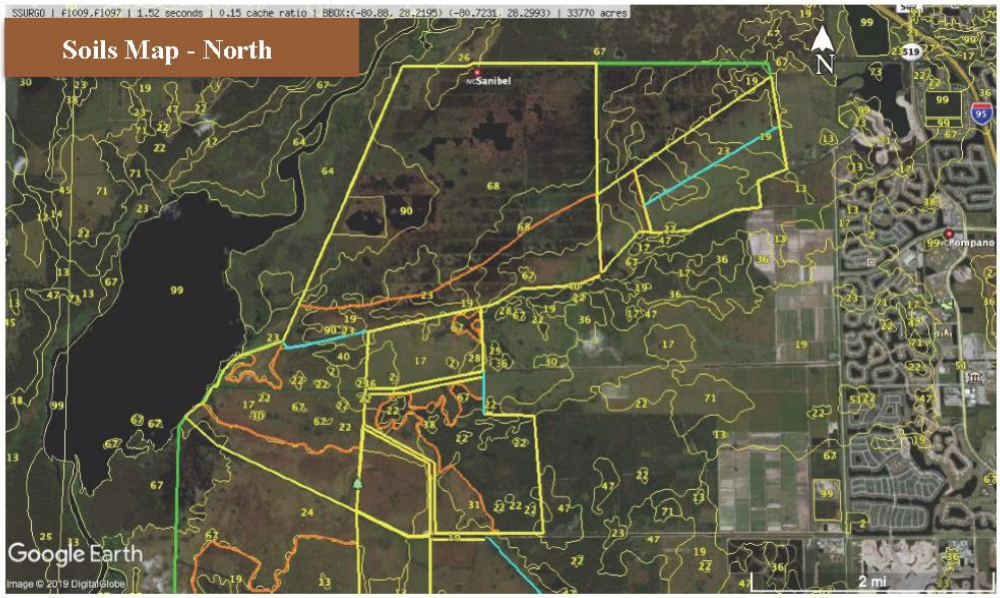
Herd 4 (100 Animal Units)

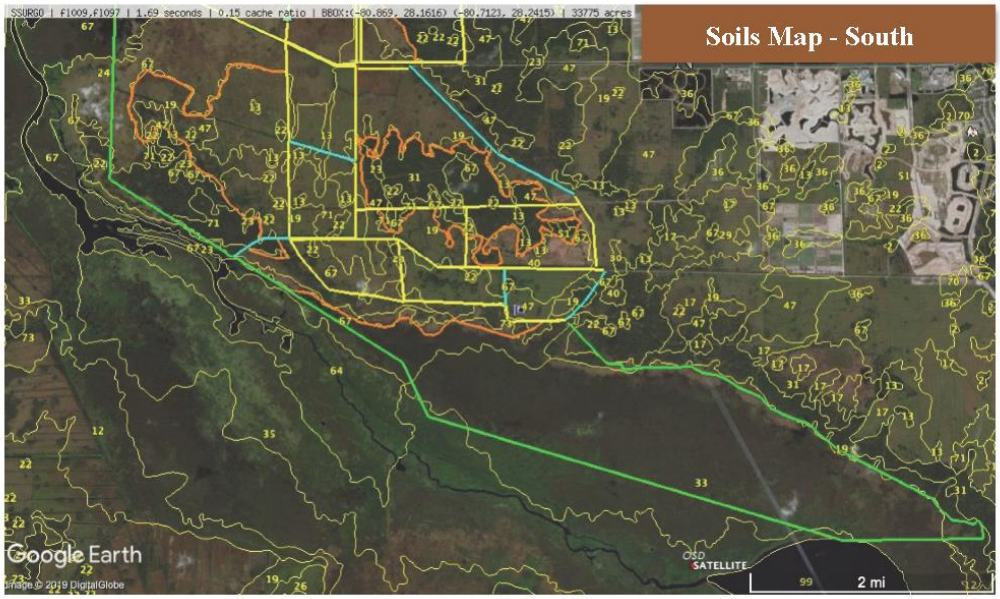
Pasture	Acres	AUM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2 e	795	463	Move Cattle Herd Every 16 - 20 Days				Move Cattle Herd Every 10 - 15 Days							
2 f & 2 g	194	371												
2 h	387	483												
Livestock Supplements	X - Protein Y - Mineral H - Hay		X Y H	X Y H	X Y H	X Y H	Y H	Y	Y	Y	Y	Y	Y	Y



Appendix I: Soils

Soil Map Symbol	Soil Map Name	Fire Dependent (Frequent Fire)	Fire Sub-Climax (Infrequent Fire)	Climax Rare or No Fire)
2	Anclote sand, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
13	Chobee mucky loamy f.s., depressional	Marsh	Cypress Swamp	Hardwood Swamp
17	Eau Gallie sand	Mesic Flatwoods	Mixed Pine/Mesic Forest	Mesic Forest
19	Riviera sand	Wet Prairie	Mixed Pine/Hydric Forest	Hydric Forest
22	Floridana sand, freq, ponded	Marsh	Cypress Swamp	Hardwood Swamp
23	Floridana sand, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
24	Floridan, Chobee & Felda, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
26	Holopaw sand	Wet Prairie	Mixed Pine/Hydric Forest	Hydric Forest
30	Malabar sand	Wet Prairie	Mixed Pine/Hydric Forest	Hydric Forest
33	Mico mucky peat, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
35	Everglades mucky peat, freq. flooded	Marsh	Cypress Swamp	Hardwood Swamp
36	Myakka sand	Mesic Flatwoods	Mixed Pine/Mesic Forest	Mesic Forest
40	Oldsmar sand	Mesic Flatwoods	Mixed Pine/Mesic Forest	Mesic Forest
47	Pineda sand	Wet Prairie	Mixed Pine/Hydric Forest	Hydric Forest
67	Tomoka muck, freq., flooded	Marsh	Cypress Swamp	Hardwood Swamp
68	Tomoka muck, drained, freq., flooded	Marsh	Cypress Swamp	Hardwood Swamp
71	Wabasso sand	Wet Flatwoods	Mixed Pine/Hydric Forest	Hydric Forest
73	Winder loamy sand	Wet Prairie	Mixed Pine/Hydric Forest	Hydric Forest
90	Terra Ceia muck, drained, freq., flooded	Marsh	Cypress Swamp	Hardwood Swamp


Soils Map - North
N
Sanibel
Pompano
Google Earth
2 mi


Soils Map - South
Google Earth
SATELLITE
2 mi

Appendix II: Grazing Land Resources & Natural Ecological Communities

Pasture - Bahiagrass (*Paspalum notatum*) is a non-native warm-season perennial forage grass that produces its greatest volume of forage and best quality during the wet-season summer months. Bahiagrass can be managed on Florida's sandy nutrient poor soils without fertilizer, however yields are less and weed encroachment more problematic. Periodic mowing is advisable prior to weeds setting flower to minimize seed production of weedy plants. When forest canopies exceeding 60%, little to no forage production can be expected.

Semi-Improve Pasture is pastureland that was formally dominated by non-native warm-season perennial forage species such as bahiagrass that due to lack of soil amendments and/or lack of or too much soil moisture promotes reestablishment of native species both desirable and weeds. Semi-improved pasture consists of domesticated forage species between 40 and 60 percent foliar cover. Areas having greater than 60% of their planted pasture species are considered pasture, areas less than 40 percent of their planted pasture species and more greatly resemble a native plant communities are referred to as a rangeland or naturalized pasture such as marshes, wet prairies, flatwoods etc.

Mesic Flatwoods - Are native rangelands that are somewhat poorly drained native upland plant communities. These areas were formerly one of the dominant plant communities throughout central and south Florida. Characterized by saw palmetto and wiregrass, these formers grasslands were once dominated by a variety of bluestem grasses such as creeping, purple and chalky bluestems, lopsided indiangrass and a variety of panicums and other grass-like plants. These communities are considered fire sub-climax and required periodic burning every 3-5 years.

Mesic Hardwoods - Are native forest communities that are somewhat poorly drained native upland plant communities dominated by evergreen hardwoods that include live oak, laurel oak, southern magnolia, and often have cabbage palms within their understory. These forested communities when observed with an extensive saw palmetto shrub understory are thought to have been former flatwood rangelands that have had its natural fire regime diminished or removed allowing hardwood species to develop.

Hydric Forests - Are native wetland forested communities that are dominated by hardwood species such as swamp laurel oak, live oak, water oak, sweet gum, sweetbay magnolia, red cedar, cabbage palm and a variety of shrubs and ground vegetation tolerant of hydric soil conditions and occasional inundation. These forest plant communities provide excellent habitat and mast production supporting a variety of important wildlife species such as wild turkey, deer and important predator species. These areas provide little to no grazing value due to their dense forest canopy.

Wet Prairies - Are native rangelands that are commonly identified as transition zones between mesic plant communities and more hydric sites such as marshes and swamps. Native grasses

such as blue maidencane, bluepoint panicum, purple bluestem and a variety of sedges and rushes historically dominated the ground vegetation. Wet prairies are typified as lacking pines, where wet flatwoods is characterized by a presence of slash and/or pond pines. Both sites lacked saw palmetto due to their natural hydroperiod during the wet season associated with this plant community.

Freshwater Marshes - Are native rangelands that are formed as a result of depressions, large basins, or in association with floodplains such as those along the St. Johns River. Historically these sites were dominated by maidencane and cutgrass associated with other wetland herbaceous vegetation such as sand cordgrass, spike rush, arrowheads, pickerel weed, sawgrass, sedges and rushes.

Forest Swamp - Are native forested wetlands that have frequent inundations of water wither by flooding or ponding. When not disturbed by fire, wind damage or other disturbances, these native plant communities are occupied by climax forest species with little or no ground cover. These forest communities are commonly dominated by cypress, red maple, pop ash, bay trees, swamp dogwood and willows. Sites that experience a rare fire are often dominated by cypress, however, as fire frequency lessens, hardwood species can become dominant.

Appendix III: Grazing Records

It is recommended that the lessee use the USDA-NRCS FL-ECS-3 form for keeping grazing records. Animal Unit Day information can be analyzed to determine if modifications are needed to make adjustment to the annual grazing plan.

U.S. Department of Agriculture
Natural Resources Conservation Service

FL-ECS-3
9/2000

RANGELAND AND PASTURELAND STOCKING ASSESSMENT RECORDS

PASTURE NO. : _____ **ACRES:** ____ **YEAR:** ____

1. Date In: _____ Date Out: _____ Animal Units:_____ Animal Unit Days_____	8. Date In_____ Date Out_____ Animal Units_____ Animal Unit Days_____
2. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	9. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
3. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	10. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
4. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days_____	11. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
5. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	12. Date Out _____ Animal Units _____ Animal Unit Days_____
6. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	13. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____
7. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____	14. Date In _____ Date Out _____ Animal Units _____ Animal Unit Days _____

Animal Unit Days (AUD) = No. Days x Animal Units — TOTAL AUD(s): ___

Animal Units Month(s) (AUM) = $\frac{\text{AUD(s)}}{\text{30(days)}}$ — TOTAL AUM(s) ___

AUM(s) per Acre = $\frac{\text{Total AUM(s)}}{\text{No. Acres}}$ — AUM(s) per Acre ___

Dates and Amounts of Fertilizer: _____

Date of: First Frost: _____ Last Frost _____

Monthly Rainfall: J :____F ____M ____A ____M ____J ____J ____A ___S ____O ____N ____D ___
Yearly Rainfall Total ___

22 of 26

Appendix IV: Monitoring Plan

Evaluation of this annual grazing management plan should be performed in coordination with USDA-NRCS or their representative, SJRWMD or their representative, FWC and the cattle lessee. This evaluation should be conducted following the completion of the winter/spring grazing season prior to the on-set of the summer wet-season. Pasture evaluations should focus on total animal units days grazed during the previous year, condition and trends of key forage resources, grazing use intensity and other issues pertinent to management of livestock under this grazing plan.

Vegetative Transects: Are valuable assessments of the existing plant composition and can be used to tract changes over time. Place a T-Post to establish a permanent reference point. From the T-Post stretch a measuring tape to establish a line-point intercept transect for 50 - 100 meters depending on the site location. At 1 - 2 meter intervals, measure the nearest rooted plant and tally this information to determine an estimate of the plant composition of the pasture. This data should be taken at different times of the year, e.g., spring, summer and fall to obtain a good understanding of the pasture's plant composition and its trends overtime.


Inventory Transect Field 2 c

Grazing Utilization: This information is critical to the success of any ranching enterprise. Placement of grazing exclosure cages strategically within pastures provides an opportunity to evaluate the forage utilization by livestock. Cages should be established within pastures prior to cattle entering the pasture. Once cattle depart the pasture, compare key forage species from within and outside the exclosure cage by forage height and/or weight. The percent difference in plant height or weight of the vegetation outside the cage compared to forage inside the cage provides an estimate of the level of forage utilization by the livestock on the pasture.

The rule-thumb for proper grazing utilization is to never graze more than 50% of available forage. This ensures enough leaf-area critical to support rapid regrowth of forages and to maintain a strong plant vigor of desirable forage plants.


Photo From Another Site

Appendix V: Barbwire Fence Guidance

This sheet lists the minimum requirements to meet Florida Fence Standard (FL 382) for barbwire fence *if USDA Food Security Act costing-sharing is a consideration*. Variances in fence design may be allowed if requested. All variances requests shall be submitted to the State Rangeland Management Specialist or an individual with proper job approval authority for approval. All barbed wire fences will be installed using braces that meet Florida NRCS specifications for braces. Please note, SJRWMD may have standards that exceed the following.

Wire and Spacing
Use only new wire composed of two twisted strands of minimum class 3 galvanized 15.5 gauge high tensile steel barbwire.

Number of Wires
Interior cross fence - 3 wires (minimum) to manage movement of larger livestock such as cattle and horses.
Boundary fence - 4 wire (minimum) are required for boundary fences and next to highways.

Fence and Wire Height and Placement
Cattle and Horses-

- The minimum top wire height for 4 and 5 wire fences is 42 inches above ground level.
- The minimum top wire height for 3 wire fences is 38 inches above ground level.
- Install wires with a minimum of 10-12 inches spacing between the top 2 wires.

Note: Inline fence wire spacing shown below are recommendations only

WIRE HEIGHT AND SPACING OF WIRES IN INCHES (“)			
Number of Line Wires	**5 Strand**	**4 Strand**	**3 Strand**
Boundary Fence Top Wire Height (minimum)	46	46	**Not Acceptable**
Boundary Fence Bottom Wire Height (minimum)	6	12	**Not Acceptable**
Recommended Inline Fence Wire Spacing (inches)			
Cattle and Horses	6, 16, 26, 36, 46	16, 26, 32, 44	16, 26, 38
To Allow For Wildlife Movement	**Not recommended**	18, 24, 30, 42	18, 26, 38

LINE POSTS MATERIALS, POST SPACING AND INSTALIATION DEPTH

- **Steel** - Use only new, painted or galvanized T or U posts.
- **Wood**- Treated with 0.4 lbs/ft3 of chromate copper arsenate (CCA type A, B or C or equivalent). Minimum size, 3" top-diameter X 6.5' length.
- **Post Spacing** - The maximum distance between line posts is 16 feet without the use of stays, or 30 ft. with a minimum of 1 stay between posts.
- **Installation** - Drive or bury wood posts at least 24 inches into the ground in sandy or loamy soils. Install posts to a 42 inch depth in muck soils. If post holes are dug, backfill by tamping the soil around the post at every 4 in. depth.
- **Fastening** - Attach wires to the side of the post receiving the most livestock pressure. Drive staple diagonally to the wood's grain and at a slight downward angle (upward if the pull is up) such as in low places to avoid splitting posts and loosening of staples. Space should be left between staple and post to permit free movement of wire.
- **Wood posts** - Use 1.5 inch (minimum), 9 gauge (minimum), class 3 galvanized staples.
- **Steel posts** - Use manufactured clips or wire posts.

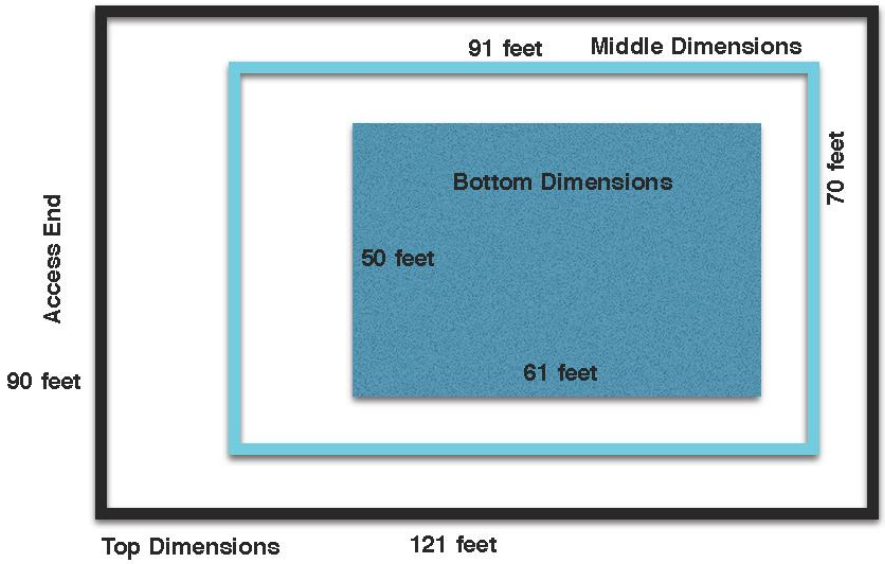
Appendix VI - Stockwater Development

Stock Pond Design (1/4 Acre Surface Area)

Access end sloped 4:1

Other sides sloped 2:1

Total volume excavated: ~ 2,433 yds ^{3}



APPENDIX H – SPECIES LIST

PLANTS

Common name	Scientific name	Status
Budda pea	*Aeschynomene indica*	
Alligatorweed*	*Alternanthera philoxeroides*	FII
Southern amaranth	*Amaranthus australis*	
Common ragweed	*Ambrosia artemisiifolia*	
Blue maidencane	*Amphicarpum muhlenbergia*	
Chaffweed	*Anagallis minima*	
Bushy bluestem	*Andropogon glomeratus*	
Broomsedge bluestem	*Andropogon virginicus*	
Common carpetgrass	*Axonopus fissifolius*	
Big carpetgrass	*Axonopus furcatus*	
Groundsel tree; saltbush	*Baccharis halimifolia*	
Herb-of-grace	*Bacopa monnieri*	
Smallhead doll's daisy	*Boltonia diffusa*	
Florida bluehearts	*Buchnera floridana*	
Bromelike sedge	*Carex bromoides*	
Long's sedge	*Carex longii*	
Spadeleaf	*Centella asiatica*	
Purple thistle	*Cirsium horridulum*	
Nuttall's thistle	*Cirsium nuttallii*	
Swagrass	*Cladium jamaicense*	
Wild taro	*Colocasia esculenta*	FI
Asiatic dayflower*	*Commelina communis*	
Blue mistflower	*Conoclinium coelestinum*	
Stiff dogwood	*Cornus foemina*	
Lanceleaf rattlebox	*Crotalaria lanceolata*	
Colombian waxweed*	*Cuphea carthagenensis*	
Bermudagrass*	*Cynodon dactylon*	
African bermudagrass*	*Cynodon nlemfuensis*	
Jointed flatsedge	*Cyperus articulatus*	
Cuban bulrush	*Cyperus blepharoleptos*	
Haspan flatsedge	*Cyperus haspan*	
Le Conte's flatsedge	*Cyperus lecontei*	
Swamp flatsedge	*Cyperus ligularis*	
Fragrant flatsedge	*Cyperus odoratus*	
Manyspike flatsedge	*Cyperus polystachyos*	
Pinebarren flatsedge	*Cyperus retrorsus*	
Tropical flatsedge	*Cyperus surinamensis*	
Cypress witchgrass	*Dichanthelium dichotomum*	

Cypress witchgrass	*Dichanthelium ensifolium*	
Southern crabgrass	*Digitaria ciliaris*	
Virginia buttonweed	*Diodia virginiana*	
Coast cockspur	*Echinochloa walteri*	
False daisy	*Eclipta prostrata*	
Water hyacinth	*Eichhornia crassipes*	FI
Knotted spikerush	*Eleocharis interstincta*	
Conecup spikerush	*Eleocharis tuberculosa*	
American burnweed	*Erechtites hieraciifolius*	
Oakleaf fleabane	*Erigeron quercifolius*	
Dogfennel	*Eupatorium capillifolium*	
Falsefennel	*Eupatorium leptophyllum*	
Roundleaf thoroughwort	*Eupatorium rotundifolium*	
Slender flattop goldenrod	*Euthamia caroliniana*	
Carolina fimbry	*Fimbristylis caroliniana*	
	Galactia elliotti	
Stiff marsh bedstraw	*Galium tinctorium*	
Narrowleaf purple everlasting	*Gamochaeta falcata*	
Limpograss*	*Hemarthria altissima*	FII
Swamp rosemallow	*Hibiscus grandiflorus*	
Innocence	*Houstonia procumbens*	
Manyflower marshpennywort	*Hydrocotyle umbellata*	
Musky mint	*Hyptis alata*	
West Indian marshgrass	*Hymenachne amplexicaulis*	FI
Cogongrass*	*Imperata cylindrica*	FI
Savanna iris	*Iris savannarum*	
Soft rush	*Juncus effusus*	
Shore rush	*Juncus marginatus*	
Bighead rush	*Juncus megacephalus*	
Virginia saltmarsh mallow	*Kosteletzkya pentacarpos*	
Shortleaf spikesedge*	*Kyllinga brevifolia*	
lantana	*Lantana strigocamara*	FI
Common duckweed	*Lemna minor*	
American frogbit	*Limnobium spongia*	
Canada toadflax	*Linaria canadensis*	
Italian ryegrass*	*Lolium perenne*	
Coral honeysuckle	*Lonicera sempervirens*	
Large-flowered primrose-willow	*Ludwigia grandiflora*	
Seaside primrosewillow	*Ludwigia maritima*	
Creeping primrosewillow	*Ludwigia repens*	
Peruvian primrosewillow	*Ludwigia peruviana*	FI

Old world climbing fern*	*Lygodium microphyllum*	FI
Broad-leaved paperbark	*Melaleuca quinquenervia*	
Chocolateweed*	*Melochia corchorifolia*	
Climbing hempvine	*Mikania scandens*	
Bitter melon	*Momordica charantia*	
Wax myrtle	*Myrica cerifera*	
Blue toadflax	*Nuttallanthus canadensis*	
Clustered mille grains	*Oldenlandia uniflora*	
Common yellow woodsorrel	*Oxalis corniculata*	
Fall panicgrass	*Panicum dichotomiflorum*	
Maidencane	*Panicum hemitomon*	
Torpedograss*	*Panicum repens*	FI
Egyptian paspalidium	*Paspalidium geminatum*	
Brook crowngrass*	*Paspalum acuminatum*	
Knotgrass	*Paspalum distichum*	
Field paspalum	*Paspalum laeve*	
Bahiagrass*	*Paspalum notatum*	
Thin paspalum	*Paspalum setaceum*	
Vaseygrass*	*Paspalum urvillei*	
Purple passionflower	*Passiflora incarnata*	
Turkey tangle frogfruit	*Phyla nodiflora*	
American pokeweed	*Phytolacca americana*	
Pitted stripeseed	*Piriqueta cistoides caroliniana*	
Water lettuce*	*Pistia stratiotes*	FI
Sweetscent	*Pluchea odorata*	
Yellow milkwort	*Polygala rugelii*	
Dotted smartweed	*Polygonum punctatum*	
Rustweed	*Polypremum procumbens*	
Pickeralweed	*Pontedaria cordata*	
Common water hyacinth*	*Pontederia crassipes*	
Mock bishopweed	*Ptilimnium capillaceum*	
Live oak	*Quercus virginiana*	
Starrush whitetop	*Rhynchospora colorata*	
Largeflower mexican clover*	*Richardia grandiflora*	FII
Castor bean*	*Ricinus communis*	FII
Southern dewberry	*Rubus trivialis*	
Tropical dock*	*Rumex obovatus*	
Cabbage palm	*Sabal palmetto*	
American cupscale	*Sacciolepis striata*	
Lanceleaf arrowhead	*Sagittaria lancifolia*	
Carolina willow	*Salix caroliniana*	

Tropical sage	*Salvia coccinea*	
Water spangles*	*Salvinia minima*	FI
Limewater brookweed	*Samolus ebracteatus*	
White twinevine	*Sarcostemma clausum*	
Brazilian pepper*	*Schinus terebinthifolius*	FI
Softstem bulrush	*Scirpus tabernaemontani*	
Sweetbroom	*Scoparia dulcis*	
Saw palmetto	*Serenoa repens*	
Knotroot bristlegrass	*Setaria parviflora*	
Yellow bristlegrass*	*Setaria pumila*	
Cuban jute	*Sida rhombifolia*	
Narrowleaf blue-eyed grass	*Sisyrichium angustifolium*	
American black nightshade	*Solanum americanum*	
Potato tree	*Solanum erianthum*	
Tropical soda apple*	*Solanum viarum*	FI
Sand cordgrass	*Spartina bakeri*	
Smutgrass*	*Sporobolus indicus*	FI
St. Augustinegrass	*Stenotaphrum secundatum*	
	Symphyotrichum simmondsii	
Annual saltmarsh aster	*Symphyotrichum subulatum*	
American germander	*Teucrium canadense*	
White clover*	*Trifolium repens*	
Southern cattail	*Typha domingensis*	
Broadleaf cattail	*Typha latifolia*	
Caesarweed	*Urena lobata*	FI
Paragrass*	*Urochloa mutica*	FI
Fourleaf vetch	*Vicia acutifolia*	
Muscadine	*Vitis rotundifolia*	

* = Exotic species

INVERTEBRATES

Common name	Scientific name	Status
Florida leaf-footed bug	*Acanthocephala femorata*	
Gulf fritillary	*Agraulis vanillae*	
White peacock	*Anartia jatrophae*	
Western honey bee	*Apis mellifera*	
Great southern white	*Ascia monuste*	
Sachem	*Atalopedes campestris*	
American bumble bee	*Bombus pensylvanicus*	
White checkered skipper	*Burnisius albescens*	
Halloween pennant	*Celithemis eponina*	

Margined leatherwing beetle	*Chauliognathus marginatus*
Cottonwood leaf beetle	*Chrysomela scripta*
Spotless lady beetle	*Cycloneda sanguinea*
Queen	*Danaus glippus*
Monarch	*Danaus plexippus*
Southern tussock moth	*Dasychira meridionalis*
Common eastern velvet ant	*Dasymutilla occidentalis*
Rosy maple moth	*Dryocampa rubicunda*
Common cotton stainer bug	*Dysdercus suturellus*
Eastern pondhawk	*Erythremis simplicicollis*
Barred yellow	*Eurema daira*
Zebra heliconian	*Heliconius charithonia*
Ceraunus blue	*Hemiargus ceraunus*
Fiery skipper	*Hylephila phyleus*
Citrine forktail	*Ischnura hastata*
Clouded skipper	*Lerema accius*
Viceroy	*Limenitis archippus*
Twin-spot skipper	*Oligoria maculata*
Ocola skipper	*Panoquina ocola*
Black swallowtail	*Papilio polyxenes*
Orange-barred sulphur	*Phoebis philea*
Cloudless sulphur	*Phoebis sennae*
Phaon crescent	*Phyciodes phaon*
Cottonwood borer	*Plectrodera scalator*
Horse's paper wasp	*Polistes major major*
Little yellow	*Pyrisitia lisa*
Mischievous bird grasshopper	*Schistocerca damnifica*
Dorantes longtail	*Thorybes dorantes*
Golden silk spider	*Trichonephila clavipes*
Southern carpenter bee	*Xylocopa micans*

VERTEBRATES

FISHES

Common name	Scientific name	Status
Blueback Herring	*Alosa aestivalis*	
American Shad	*Alosa sapidissima*	
White Catfish	*Ameiurus catus*	
Yellow Bullhead	*Ameiurus natalis*	
Brown Bullhead	*Ameiurus nebulosus*	
Bowfin	*Amia calva*	

American Eel	*Anguilla rostrata*
Pirate Perch	*Aphredoderus sayanus*
Walking Catfish	*Clarias batrachus*
Gizzard Shad	*Dorosoma cepedianum*
Threadfin Shad	*Dorosoma petenense*
Everglades Pygmy Sunfish	*Elassoma evergladei*
Bluespotted Sunfish	*Enneacanthus gloriosus*
Lake Chubsucker	*Erimyzon sucetta*
Chain Pickerel	*Esox niger*
Swamp Darter	*Etheostoma fusiforme*
Golden Topminnow	*Fundulus chrysotus*
Seminole Killifish	*Fundulus seminolis*
Eastern Mosquitofish	*Gambusia holbrooki*
African Jewelfish	*Hemichromis letourneuxi*
Least Killifish	*Heterandria formosa*
Brown Hoplo	*Hoplosternum littorale*
Atlantic Stingray	*Hypanus sabinus*
Channel Catfish	*Ictalurus punctatus*
Flagfish	*Jordanella floridae*
Brook Silverside	*Labidesthes sicculus*
Longnose Gar	*Lepisosteus osseus*
Florida Gar	*Lepisosteus platyrhincus*
Redbreast Sunfish	*Lepomis auritus*
Warmouth	*Lepomis gulosus*
Bluegill	*Lepomis macrochirus*
Dollar Sunfish	*Lepomis marginatus*
Redear Sunfish	*Lepomis microlophus*
Spotted Sunfish	*Lepomis punctatus*
Bluefin Killifish	*Lucania goodei*
Rainwater Killifish	*Lucania parva*
Mayan Cichlid	*Mayaheros urophthalmus*
Inland Silverside	*Menidia beryllina*
Largemouth Bass	*Micropterus salmoides*
Striped Mullet	*Mugil cephalus*
Golden Shiner	*Notemigonus crysoleucas*
Taillight Shiner	*Notropis maculatus*
Coastal Shiner	*Notropis petersoni*
Tadpole Madtom	*Noturus gyrinus*
Pugnose Minnow	*Opsopoeodus emiliae*
Tilapia	*Oreochromis spp.*
Sailfin Molly	*Poecilia latipinna*

Black Crappie	*Pomoxis nigromaculatus*	
Sailfin Catfish species	*Pterygoplichthys spp.*	
Atlantic Needlefish	*Strongylura marina*	

AMPHIBIANS

Common name	Scientific name	Status
Cricket frog	*Acris gryllus*	
Oak toad	*Anaxyrus quercicus*	
Southern toad	*Anaxyrus terrestris*	
Greenhouse frog	*Eleutherodactylus planirostris*	
Eastern narrowmouth toad	*Gastrophryne carolinensis*	
Green treefrog	*Hyla cinerea*	
Pinewoods treefrog	*Hyla femoralis*	
Squirrel treefrog	*Hyla squirella*	
Cuban tree frog	*Osteopilus septentrionalis*	
Southern chorus frog	*Pseudacris nigrita*	
Little grass frog	*Pseudacris ocularis*	
Pig frog	*Lithobates grylio*	
Southern leopard frog	*Lithobates sphenocephala*	

REPTILES

Common name	Scientific name	Status
Florida cottonmouth	*Agkistrodon piscivorus conanti*	
American alligator	*Alligator mississippiensis*	
Green anole	*Anolis carolinensis*	
Brown anole	*Anolis sagrei*	
Florida softshell turtle	*Apalone ferox*	
Six-lined racerunner	*Aspidoscelis sexlineatus*	
Florida snapping turtle	*Chelydra serpentina osceola*	
Southern black racer	*Coluber constrictor priapus*	
Eastern rat snake	*Pantherophis alleghaniensis*	
Southeastern five-lined skink	*Eumeces inexpectatus*	
Gopher tortoise	*Gopherus polyphemus*	G3, S3, ST
Striped mud turtle	*Kinosternon bauri*	
Banded watersnake	*Nerodia fasciata pictiventris*	
Florida green watersnake	*Nerodia floridana*	
Eastern rat snake	*Pantherophis alleghaniensis*	
Corn snake	*Pantherophis guttatus*	
Peninsula cooter	*Pseudemys floridana peninsularis*	
Florida redbelly turtle	*Pseudemys nelsoni*	
Ground skink	*Scincella lateralis*	
Dusky pygmy rattlesnake	*Sistrurus miliarius barbouri*	

Florida box turtle	*Terrapene carolina bouri*	
Peninsula ribbon snake	*Thamnophis sauritus sackenii*	
Eastern garter snake	*Thamnophis sirtalis sirtalis*	

BIRDS

Common name	**Scientific name**	**Status**
Cooper's hawk	*Accipiter cooperii*	
Sharp-shinned hawk	*Accipiter striatus*	
Spotted sandpiper	*Actitis macularia*	
Red-winged blackbird	*Agelaius phoeniceus*	
Wood Duck	*Aix sponsa*	
Leconte's sparrow	*Ammodramus leconteii*	
Grasshopper sparrow	*Ammodramus savannarum*	
Northern shoveler	*Anas clypeata*	
Green-winged teal	*Anas crecca*	
Blue-winged teal	*Anas discors*	
Mottled duck	*Anas fulvigula*	
Anhinga	*Anhinga anhinga*	
Snow goose	*Anser caerulescens*	
American pipit	*Anthus rubescens*	
Florida sandhill crane	*Antigone canadensis pratensis*	G5T2, S2, ST
Chuck-will's-widow	*Antrostomus carolinensis*	
Eastern whip-poor-will	*Antrostomus vociferus*	
Limpkin	*Aramus guarauna*	G5, S3
Ruby-throated hummingbird	*Archilochus colubris*	
Great egret	*Ardea alba*	
Great blue heron	*Ardea herodias*	
Ruddy turnstone	*Arenaria interpres*	
Burrowing owl	*Athene cunicularia floridana*	G4T3, S3, ST
Lesser scaup	*Aythya affinis*	
Ring-necked duck	*Aythya collaris*	
Tufted titmouse	*Baeolophus bicolor*	
Upland sandpiper	*Bartramia longicauda*	
Cedar waxwing	*Bombycilla cedrorum*	
American bittern	*Botaurus lentiginosus*	
Great horned owl	*Bubo virginianus*	
Cattle egret	*Bubulcus ibis*	
Short-tailed hawk	*Buteo brachyurus*	G4G5, S1
Red-tailed hawk	*Buteo jamaicensis*	
Red-shouldered hawk	*Buteo lineatus*	
Green heron	*Butorides virescens*	
Sanderling	*Calidris alba*	

Dunlin	*Calidris alpina*	
White-rumped sandpiper	*Calidris fuscicollis*	
Stilt sandpiper	*Calidris himantopus*	
Western sandpiper	*Calidris mauri*	
Pectoral sandpiper	*Calidris melanotos*	
Least sandpiper	*Calidris minutilla*	
Semi-palmated sandpiper	*Calidris pusilla*	
Buff-breasted sandpiper	*Calidris subruficollis*	
Chuck-will's-widow	*Caprimulgus carolinensis*	
Crested caracara	*Caracara plancus*	G5, S2, T, FT
Wilson's warbler	*Cardellina pusilla*	
Northern cardinal	*Cardinalis cardinalis*	
Turkey vulture	*Cathartes aura*	
Belted kingfisher	*Ceryle alcyon*	
Chimney swift	*Chaetura pelagica*	
Semipalpated plover	*Charadrius semipalmatus*	
Killdeer	*Charadrius vociferus*	
Common nighthawk	*Chordeiles minor*	
Northern harrier	*Circus cyaneus*	
Marsh wren	*Cistothorus palustris*	
Sedge wren	*Cistothorus platensis*	
Yellow-billed cuckoo	*Coccyzus americanus*	
Northern flicker	*Colaptes auratus*	
Northern bobwhite	*Colinus virginianus*	
Rock pigeon	*Columba livia*	
Common ground-dove	*Columbina passerina*	
Eastern wood-pewee	*Contopus virens*	
Black vulture	*Coragyps atratus*	
American crow	*Corvus brachyrhynchos*	
Fish crow	*Corvus ossifragus*	
Smooth-billed ani	*Crotophaga ani*	
Blue jay	*Cyanocitta cristata*	
Black-bellied whistling duck	*Dendrocygna autumnalis*	
Black-throated blue warbler	*Dendroica caerulescens*	
Yellow-rumped warbler	*Dendroica coronata*	
Prairie warbler	*Dendroica discolor*	
Yellow-throated warbler	*Dendroica dominica*	
Palm warbler	*Dendroica palmarum*	
Yellow warbler	*Dendroica petechia*	
Pine Warbler	*Dendroica pinus*	
Blackpoll warbler	*Dendroica striata*	

Bobolink	*Dolichonyx oryzivorus*	
Pileated woodpecker	*Dryocopus pileatus*	
Gray catbird	*Dumetella carolinensis*	
Little blue heron	*Egretta caerulea*	G5, S4, ST
Reddish egret	*Egretta rufescens*	G4, S2, ST
Snowy egret	*Egretta thula*	
Tricolored heron	*Egretta tricolor*	G5, S4, ST
Swallow-tailed kite	*Elanoides forficatus*	G5, S2
Least flycatcher	*Empidonax minimus*	
Willow flycatcher	*Empidonax traillii*	
White ibis	*Eudocimus albus*	
Merlin	*Falco columbarius*	G5, S2
Peregrine falcon	*Falco peregrinus*	G4, S2
American kestrel	*Falco sparverius*	
American coot	*Fulica americana*	
Wilson's snipe	*Gallinago delicata*	
Common snipe	*Gallinago gallinago*	
Common moorhen	*Gallinula chloropus*	
Gull-billed tern	*Gelochelidon nilotica*	
Common yellowthroat	*Geothlypis trichas*	
Whooping crane	*Grus americana*	G1, SNR, XN, FXN
House finch	*Haemorhous mexicanus*	
Bald eagle	*Haliaeetus leucocephalus*	
Worm-eating warbler	*Helmitheros vermivorum*	
Black-necked stilt	*Himanoptus mexicanus*	
Barn swallow	*Hirundo rustica*	
Orchard oriole	*Icterus spurius*	
Least bittern	*Ixobrychus exilis*	
Loggerhead shrike	*Lanius ludovicianus*	
Herring gull	*Larus argentatus*	
Laughing gull	*Larus atricilla*	
Ring-billed gull	*Larus delawarensis*	
Short-billed dowitcher	*Limnodromus griseus*	
Long-billed dowitcher	*Limnodromus scolopaceus*	
Hooded merganser	*Lophodytes cucullatus*	
Gadwall	*Mareca strepera*	
Red-bellied woodpecker	*Melanerpes carolinus*	
Red-headed woodpecker	*Melanerpes erythrocephalus*	
Wild turkey	*Meleagris gallopavo*	
Swamp sparrow	*Melospiza georgiana*	
Song sparrow	*Melospiza melodia*	

Northern mockingbird	*Mimus polyglottos*	
Black and white warbler	*Mniotilta varia*	
Brown-headed cowbird	*Molothrus ater*	
Wood stork	*Mycteria americana*	G4, S2, DL, FT
Ash-throated flycatcher	*Myiarchus cinerascens*	
Great-crested flycatcher	*Myiarchus crinitus*	
Whimbrel	*Numenius phaeopus*	
Yellow-crowned night-heron	*Nyctanassa violacea*	
Black-crowned night-heron	*Nycticorax nycticorax*	
Eastern screech owl	*Otus asio*	
Osprey	*Pandion haliaetus*	
Northern parula	*Parula americana*	
Savannah sparrow	*Passerculus sandwichensis*	
Blue grosbeak	*Passerina caerulea*	
Painted bunting	*Passerina ciris*	
Indigo bunting	*Passerina cyanea*	
American white pelican	*Pelecanus erythrorhynchos*	
Brown pelican	*Pelecanus occidentalis*	
Cliff swallow	*Petrochelidon pyrrhonota*	
Bachman's sparrow	*Peucaea aestivalis*	G3, S3
Double-crested cormorant	*Phalacrocorax auritus*	
Downy woodpecker	*Picoides pubescens*	
Eastern towhee	*Pipilo erythrophthalmus*	
Roseate spoonbill	*Platalea ajaja*	G5, S2, ST
Glossy ibis	*Plegadis falcinellus*	
Black-bellied plover	*Pluvialis squatarola*	
Pied-billed grebe	*Podilymbus podiceps*	
Blue-gray gnatcatcher	*Polioptila caerulea*	
Vesper sparrow	*Pooecetes gramineus*	
Purple gallinule	*Porphyrio martinica*	
Gray-headed swamphen	*Porphyrio poliocephalus*	
Sora	*Porzana carolina*	
Boat-tailed grackle	*Quiscalus major*	
Common grackle	*Quiscalus quiscula*	
King rail	*Rallus elegans*	
Ruby-crowned kinglet	*Regulus calendula*	
Black skimmer	*Rhynchops niger*	
Bank swallow	*Riparia riparia*	
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	G4G5, S2, E, FE
Eastern phoebe	*Sayornis phoebe*	
Ovenbird	*Seiurus aurocapillus*	

Louisiana waterthrush	*Seiurus motacilla*	
Northern waterthrush	*Seiurus novaeboracensis*	
Blackburnian warbler	*Setophaga fusca*	
Magnolia warbler	*Setophaga magnolia*	
Chestnut-sided warbler	*Setophaga pensylvanica*	
American redstart	*Setophaga ruticilla*	
Cape may warbler	*Setophaga tigrina*	
Black-throated green warbler	*Setophaga virens*	
Brown-headed nuthatch	*Sitta pusilla*	
Cinnamon teal	*Spatula cyanoptera*	
Yellow-bellied sapsucker	*Sphyrapicus varius*	
Pine siskin	*Spinus pinus*	
American goldfinch	*Spinus tristis*	
Clay-colored sparrow	*Spizella pallida*	
Chipping sparrow	*Spizella passerina*	
Northern rough-winged swallow	*Stelgidopteryx serripennis*	
Least tern	*Sterna antillarum*	
Caspian tern	*Sterna caspia*	
Forster's tern	*Sterna forsteri*	
Royal tern	*Sterna maxima*	
Eurasian collared-dove	*Streptopelia decaocto*	
Least tern	*Sternula antillarum*	G4, S3, ST
Barred owl	*Strix varia*	
Eastern meadowlark	*Sturnella magna*	
European starling	*Sturnus vulgaris*	
Tree swallow	*Tachycineta bicolor*	
Carolina wren	*Thryothorus ludovicianus*	
Brown thrasher	*Toxostoma rufum*	
Lesser yellowlegs	*Tringa flavipes*	
Greater yellowlegs	*Tringa melanoleuca*	
Solitary sandpiper	*Tringa solitaria*	
House wren	*Troglodytes aedon*	
American robin	*Turdus migratorius*	
Gray kingbird	*Tyrannus dominicensis*	
Scissor-tailed flycatcher	*Tyrannus forficatus*	
Eastern kingbird	*Tyrannus tyrannus*	
Orange-crowned warbler	*Vermivora celata*	
White-eyed vireo	*Vireo griseus*	
Red-eyed vireo	*Vireo olivaceous*	
Blue-headed vireo	*Vireo solitarius*	
Hooded warbler	*Wilsonia citrina*	

White-winged dove	*Zenaida asiatica*
Mourning dove	*Zenaida macroura*
White-crowned sparrow	*Zonotrichia leucophrys*

MAMMALS

Common name	**Scientific name**	**Status**
Coyote	*Canis latrans*	
Least shrew	*Cryptotis parva*	
Nine-banded armadillo	*Dasypus novemcinctus*	
Opossum	*Didelphis marsupialis*	
River otter	*Lutra canadensis*	
Bobcat	*Lynx rufus*	
Round-tailed muskrat	*Neofiber alleni*	
White-tailed deer	*Odocoileus virginianus*	
Cotton mouse	*Peromyscus gossypinus*	
Raccoon	*Procyon lotor*	
Least harvest mouse	*Reithrodontomys humulis*	
Gray squirrel	*Sciurus carolinensis*	
Cotton rat	*Sigmodon hispidus*	
Feral pig	*Sus scrofa*	
Eastern cottontail rabbit	*Sylvilagus floridanus*	
Marsh rabbit	*Sylvilagus palustris*	

STATUS

FNAI Global Element Rank

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted
range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T
portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).

FNAI State Element Rank
S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme
vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due
to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or
vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.
SNR = Element not yet ranked (temporary).

Federal Legal Status
DL = Species has been delisted.
E = Endangered: species in danger of extinction throughout all or a significant portion of its range.
E, T = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
XN = Species currently listed endangered but tracked population is a non-essential experimental population.
T = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency. Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida

State Legal Status
FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
FXN = Federal listed as an experimental population in Florida
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

APPENDIX I: DISTRICT FOREST MANAGEMENT PLAN

In 1998 the Florida Legislature charged all state land management agencies with managing the forest resources on the lands they have acquired (253.036, Florida Statutes). To date, the St. Johns River Water Management District (District) has acquired nearly 621,000 acres of land. Approximately 46% of these acres are forested.

Even prior to the legislative directive, the District has been managing its forest resources. Timber sales began in 1991 with a salvage sale at Lake George Conservation Area following a wildfire. Since then, timber sales are conducted based upon the immediate needs of the natural communities and recommendations from individual area management plans. This plan provides guidance and coordination for the management of the District's forest resources.

PURPOSE OF FOREST MANAGEMENT

The District manages forest resources for the:

1) Restoration of natural communities.
2) Maintenance of the health and vigor of natural communities.
3) Generation of revenues to counterbalance the cost of land management activities
4) Reduce wildfire risks
5) Sustainable progress towards core missions

Restoring Natural Communities

The District acquires its land from a variety of private owners, and each owner had their own vision for the land. Many times in fulfilling their vision, private owners altered the natural communities by clearing for agricultural purposes or for planting trees. Whenever practicable, the District is charged with maintaining and/or restoring the land to its natural state and condition.

Thinning, clearcutting, invasive plant management and planting are all tools used to restore natural communities, but in almost all cases they are used in conjunction with fire. The combinations of overstory control and fire management are the primary restoration tools in forested communities.

In forested communities, controlling or manipulating the overstory serves as the primary tool to maintain or restore the natural community. The density of the overstory dictates the health and diversity of understory species. If the overstory

becomes too dense, both the overstory and understory species begin to suffer. In cases where the overstory remains crowded too long, individual understory plants begin to disappear. Often seeds of these plants will remain dormant in the soil. Thinning individual trees from an overcrowded stand allows more light, moisture, and nutrients to be available for groundcover plants. This allows dormant plants to reoccupy their former sites, thereby restoring the natural state and condition.

In some cases, private owners planted a species of tree that did not naturally occupy the site. In these cases, the District will clearcut the undesired tree species and replant with the more appropriate species.

In cases where the previous owner cleared the site, the District will prepare the site and plant the appropriate tree species. Since longleaf pine (*Pinus palustris*) occupies approximately 5% of the area it did in 1900, and since longleaf offers a suite of wildlife benefits greater than most other pines, the District will emphasize planting of longleaf on all sites where longleaf is suited for the site.

Maintenance of the Health and Vigor of the Natural Communities

The health or quality of a forested natural community is maintained by three primary factors: 1) the availability of water, 2) the frequency of fire, and 3) the density and species composition of the overstory.

In few cases do the activities of the District affect the availability of water on District forestlands. Exceptions are where sites are restored through rehydration of historically wetland systems or managing vegetation for water yield benefits. Weather is the primary factor influencing the availability of water.

Fire influences the health of forested communities by altering the process of succession. Fire holds natural communities in an intermediate stage of succession that is referred to as a fire climax community. If fire is removed, these natural communities follow the path of succession to become some other community. In Florida, most natural communities historically experienced fire on a frequent basis. In fact, most communities are dependent upon frequent fire for their continued existence. Because of its importance as a management tool, fire is specifically addressed in detail in the District's Fire Management Plan.

The third factor influencing the health and/or quality of forested natural communities is the overstory density and species composition. In a truly natural system, wildfire, climatic disturbances, along with insects and diseases combined to control the

composition of the overstory, which in turn controls the composition of the understory. Wildfire, insects and disease kill trees as individuals or groups, which reduces the density of the overstory and alters the species composition. These events or outbreaks would often impact large areas, especially areas where the stand density was high, weakening the overstory trees and increasing their susceptibility to pathogens. Prior to human intervention, there were huge expanses of natural land that could easily absorb large-scale alterations of the overstory so that no plant or animal species could be extirpated. Today, Florida is fast approaching a condition where natural areas are becoming islands. Plants and animals have fewer areas to populate and it is more difficult to transfer their genetic material between isolated areas of ideal habitat. Therefore, conservation land managers no longer rely entirely on large-scale disturbances to control overstory density and species composition. By managing the overstory with selective harvesting, the density and species composition can be controlled to maintain a healthy natural community while minimizing the potential for large-scale impacts.

As land managers, the District also has an obligation to protect neighboring landowners from any large-scale wildfire, insect, non-native invasive plant or disease outbreaks that may originate on District land and spread to adjacent lands. This obligation prohibits the District from employing a truly natural management system to control overstory species, density, and composition and requires the District to utilize a more interactive management program.

Generation of Revenues

The Florida legislature has directed public land managers to manage forest resources for an economic return (253.036, Florida Statutes). The District generates revenue when implementing sound overstory management practices to maintain the health of the natural community. These practices include but are not limited to thinning operations, removal of undesired species (clearcuts), and salvage cuts to remove trees damaged from wildfires, insect infestations, non-native invasive plant species and/or disease outbreaks. The revenue generated from these operations can be used to fund land acquisition, restoration and other land management activities.

FOREST RESOURCES INVENTORY

Following legislative directive, and seeking to keep its land management efficient, the District has sought management partners. The following chart illustrates the lead manager status of District owned lands (Figure 1).

The District's Land Management Rule, agreements and philosophy call for the lead manager's rules and policies to direct the management of the affected lands, therefore this plan will be focused on the lands where the District is identified as the lead manager. The District serves as the lead manager on 374,796 acres. These acres managed by the District are broken down as follows (Figure 2).

Thirty-seven percent of the District Managed Lands are forested, with 16% being forested uplands and 21% forested wetlands.

OBJECTIVES OF FOREST MANAGEMENT

The District's forest management objectives are to:

- Maintain the health and diversity of forested communities on District lands.
- Provide for older aged forest conditions. As public landowners we have the opportunity to provide habitat for species requiring older age classed trees.
- Provide for an array of forest stand structures and age classes. Each species of plant and animal has an age-class of forest stand that is most desirable. By providing the array of structures and age-classes, the District can provide habitat for a wide variety of species.
- Implement activities which sustainably advance the District's core missions.

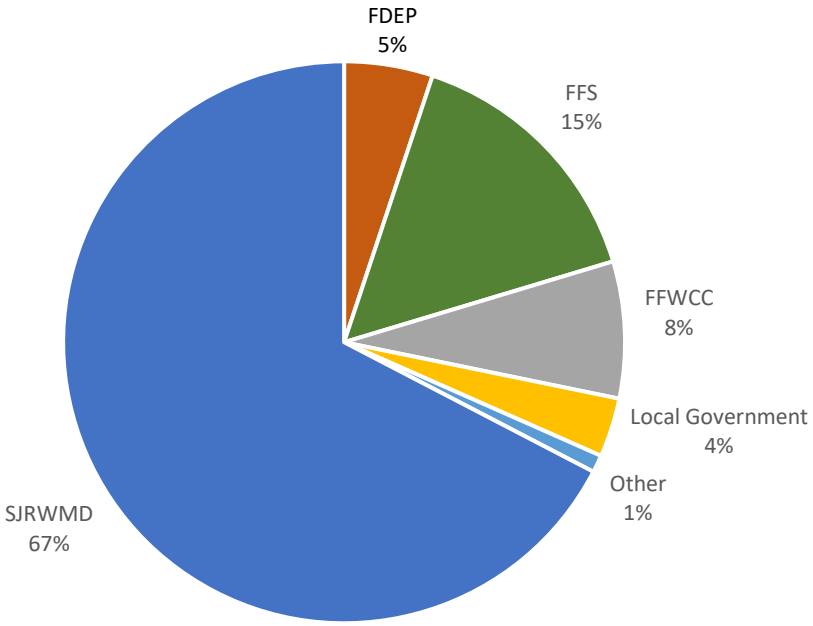


Figure 1: District Owned Land by Lead Manager.

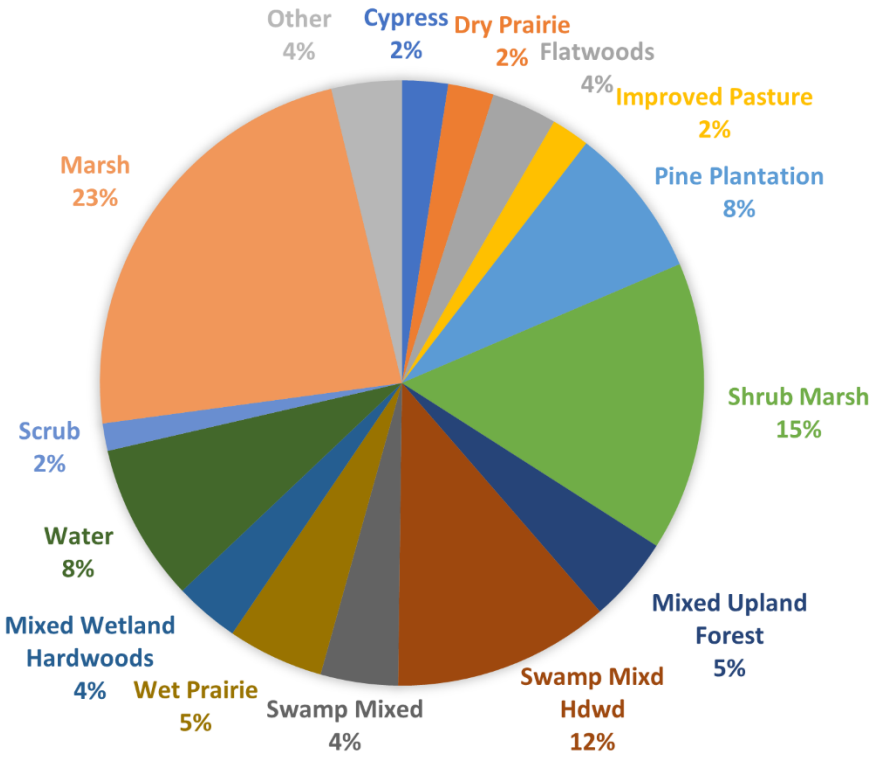


Figure 2: Percentage acres SJRWMD Managed Lands by Land Type.

Techniques of Forest Management

Inventory

The District developed a GIS Forestry database that links timber attribute information, inventory plots, and timber volume information with its spatial location. The database incorporated with annually collected inventory data will track forest changes over time. Changes resulting from harvests, wildfires, insect infestations, disease outbreaks and reforestation efforts can be updated quickly and easily. Periodic updates of volume and growth information is incorporated into the database. The database aids in determining natural community needs along with geographic distribution and appropriate management techniques to implement. The database is an intricate part in managing for community health and in developing future land management workplans.

Harvesting

To accomplish its goals the District employs a suite of harvesting systems. Clearcutting is a silvicultural operation used to remove the entire overstory at one time. This tool will be used with limited application dependent upon the specific management needs. Those needs may include:

1. Insect or disease control. Forest pests occur naturally at low population densities and are a vital part of the forested community. When population densities reach epidemic levels control measures to remove the host and adjacent trees must be implemented to protect the remainder of the stand.
2. Salvage. If the overstory has been killed or severely damaged, removing (salvaging) the overstory will recover some financial value of the timber and will allow the District access necessary to replant the site.
3. Species conversion. If offsite species exist, clearcutting enables the District to replace the offsite species with one that is appropriate.

Thinning is a silvicultural operation where selected individual trees are removed from the stand to reduce the density of overstory trees to improve growing conditions for the remaining overstory trees and the understory plants. This method is not applied with a goal of establishing regeneration.

The seed tree system is a silvicultural operation where the entire overstory except 10-15 prime trees per acre are harvested at one time. These 10-15 trees serve as the seed source for the next generation. This technique is seldom used by the District. While the seed tree system is effective, it creates major change in the stand condition both visually to the public and biologically to the plants and animals in the stand.

Shelterwood is a silvicultural operation in which the overstory is removed in phases. When it is time to regenerate the stand, approximately 60-70 percent of the stand is

removed either in one or two harvests. Again, the older trees serve as the seed source for the next generation. Once the younger trees are established the original overstory trees can be removed or they can remain on site and be subject to thinning at the same time as the younger generation. The major benefit of this system is it results in a more gradual change from the mature trees to the next generation both visually to the public and biologically to the plants and animals.

A new modification of the shelterwood called an irregular shelterwood has been developed. An irregular shelterwood begins the same as shelterwood but portions of the original overstory remain on site. When the second-generation trees are thinned, a few of the first-generation trees are also thinned. To be established, both the first- and second-generation trees are reduced to 30-40 square feet of basal area to make room for the third-generation trees. Once the third-generation trees are established the site has few first-generation trees, some second-generation trees and many third-generation trees. This provides for a variety of age classes in a single stand but is much easier to apply and requires much less staff time than uneven-aged selection management.

Uneven-aged selection is a silvicultural operation in which trees, either as individuals or in small ½ acre groups are harvested from throughout the stand every five - ten years. The holes left by the removal of these trees are filled with seedlings from adjacent trees thereby creating a patchwork stand composed of trees of all ages. While this system offers the greatest distribution of age within a stand, truly an uneven aged condition which some scientists think is best for wildlife, it also requires significant staff inputs and to date appears too labor intensive to employ on a large scale.

Site Preparation

When it is necessary to establish regeneration, either naturally or artificially the District may employ one or more of the site preparation techniques described below. Herbicide will be used when staff have determined that it is the most effective means to control the competing vegetation. Herbicides will not be used if it adversely affects the desirable understory species within the planting site. The use of herbicide is necessary when attempting to restore native trees and groundcover to improved pasture areas. Herbicide can be applied with hand sprayers, tank sprayers, or aerially from a helicopter, depending upon the species to be treated and site conditions.

Disking/Scalping these techniques are most useful when trees are being planted in improved pasture areas. Both techniques protect the seedlings from grass competition but offer no benefit to groundcover restoration.

Drum Chopping is effective at reducing competition from shrub species, especially saw palmetto. If properly applied grasses within the treatment area will survive chopping and will often benefit from the choppers' effect on the shrubs.

Bedding is a technique where a small ridge of surface soil is formed to provide an elevated planting or seedbed. It is used primarily in wet areas to improve soil drainage and aeration for seedlings. This type of site preparation technique is not utilized by the District because of the adverse effects it has on groundcover, sheetflow and thus water quality and availability. Therefore, the District's planting costs are often higher than private industry's because without bedding several plantings are often necessary to establish seedlings on wet sites.

Regeneration

Emphasis will be placed on natural regeneration to the extent practicable. In cases where species conversion is required or where no overstory exists to provide natural seed fall, planting will be necessary.
Hand planting is primarily method used by the District because it offers the following benefits:

1. Trees can be placed on the best microsites (i.e., highest ground in wet areas, areas with the least competition.)
2. Groundcover disturbance is minimized.
3. Seedlings can be randomly spaced or planted in clusters to provide a more natural appearance.

Machine planting is used primarily in old field conditions where scalping is employed and rows are suitable.

OVERALL METHODOLOGY

Forested natural communities can be lumped into three different groups with regards to forest management. These include Pine Forests, Upland Hardwoods, and Wetland Hardwood/Cypress. The management of each will differ and be described separately.

Pine Forests

Pine forests include flatwoods, plantations, sandhills and sand pine scrub. With the exception of sand pine scrub pine forests will be managed through thinning. Once the stand is established and trees have reached merchantable size (5 inches at diameter breast height) at approximately 15-20 years of age depending on tree species and sites, thinning will begin. Stands will be thinned as necessary to maintain an overstory basal area range of 60 to 90 square feet per acre. This range promotes good growth of understory plants and provides good habitat for most wildlife using forested natural communities. In order to maintain this basal area range harvests will occur in each stand approximately every ten years, depending on growth rates of the trees. Great care will be exercised during harvesting operations to minimize disturbance of the soil

and groundcover. When properly performed, harvesting actually benefits groundcover regeneration by reducing shrub species and improving growing conditions, such as an increase in light availability.
The need for regeneration will be determined by an inventory of the health, vigor and species composition for the trees in each stand. Once the conditions of the overstory trees indicate the need, a regeneration harvest will be scheduled employing the appropriate silvicultural system described previously. Emphasis will be placed on making the most seamless transition from one generation to the next. Irregular shelterwood harvests will be employed frequently in loblolly, slash and longleaf pine stands.

Emphasis will be placed on having a wide array of age classes between stands and an array of different aged trees within stands. Included in the desired array of ages will be trees and stands significantly older than those typically found on private lands.
To ensure the wide array of age classes is met, the District will separate pine stands into four different types based upon general age and condition. These four types include:

1. Regeneration (age 0 - 10) The site is occupied primarily by tree seedlings and saplings, herbs and shrubs. Competition from the trees has not yet resulted in any reduction in herb or shrub layer. This type begins at planting and continues until crown closure. Herbs, shrubs and grasses occupy 20%-80% of the ground. This type offers benefits to early successional wildlife species such as quail, rabbits, gopher tortoises, deer, turkeys and their predators.
2. Closed Canopy (age 11 - 20) Trees fully occupy the site and form a single, main canopy layer. There is little understory development due to the lack of light passing through the canopy. Where understory exists it is dominated frequently by palmetto and/or gallberry. This type benefits fewer wildlife species but does offer bear and deer good escape cover.
3. Understory (age 21 - 60) The overstory density has been reduced through thinning and the understory is beginning to reinitiate. Adequate light is again available to the forest floor. Groundcover plant species and wildlife both begin to flourish again. Wildlife benefiting from this stand type include: deer, turkey, quail, gopher tortoises.
4. Older Forest Structure (age 60+) This stand type begins to develop a layered overstory. Trees are large, with diameters >12 inches. Snags will begin to appear and should be protected. The understory is diverse and healthy. Wildlife benefiting from this stand are fox squirrels, great horned owl, southeastern kestrel, turkeys, quail, gopher tortoises, red cockaded woodpeckers, eagles and ospreys (nesting trees).

The District will strive to keep 10-15% of its pine forests in type 1, 10-15% in type 2, 30-40% in type 3 and 40% in type 4. The present condition is shown below (Figure 3):

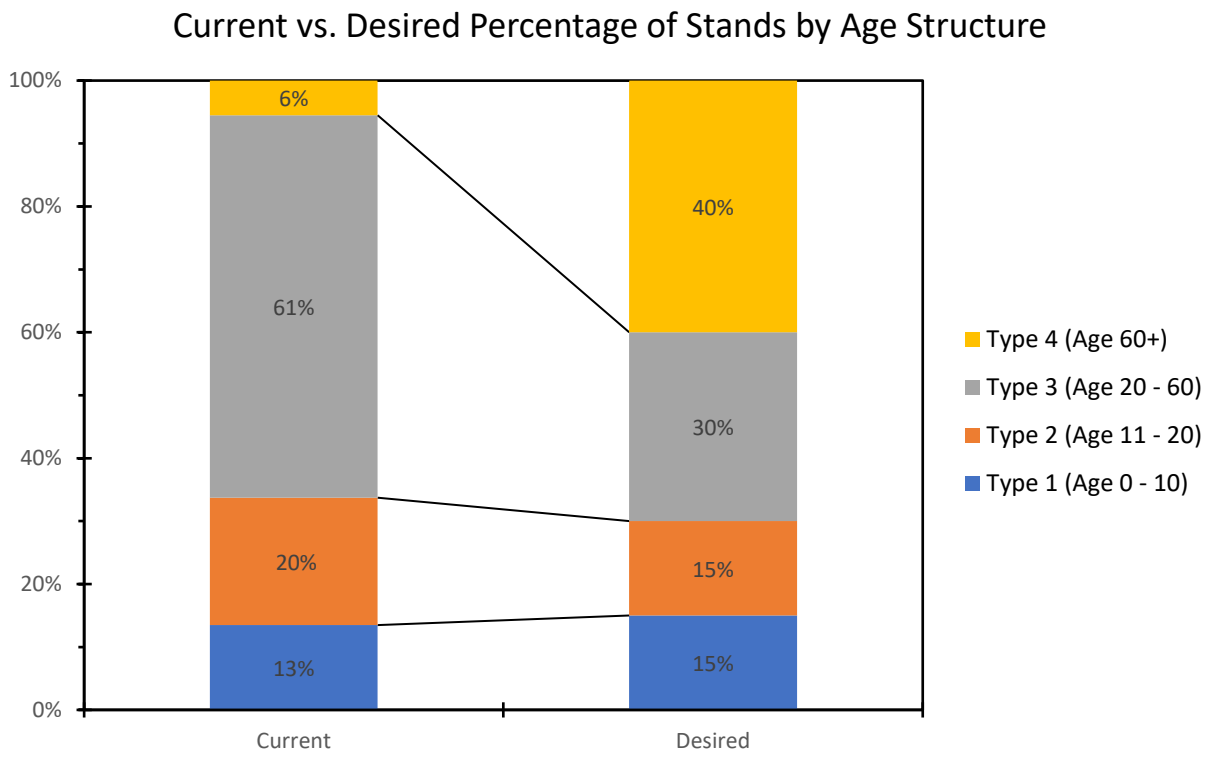


Figure 3: Current vs. Desired Percentage of Stands by Type.

Sand pine management will differ from other pine types because it is adapted to an even aged distribution. Sand pine characteristically grows in dense, even-aged, pure stands, which originated as a direct result of catastrophic fires or similar events. When a killing fire sweeps through a stand of cone-bearing trees, the serotinous cones (which remain tightly closed for many years unless opened by heat) open and release large quantities of seeds to naturally regenerate the area. These catastrophic fires are difficult to mimic with prescribed fire since they are difficult to control. Complete stand removal (clearcutting) is the preferred method available to mimic the natures stand replacing events. The natural cycle for stand replacing events are from 20 – 60 years. Sand pine stand will therefore be clearcut and regenerated on a similar cycle.

The primary forest management activities of the District will be within these pine stands.

UPLAND HARDWOODS

Currently Upland hardwoods constitute 2% of District managed lands. Typically, they are mesic and xeric hammocks with the dominant species being live oak. There is no ecological need for harvesting within these communities and no commercial value to be derived from harvesting live oak.

Limited areas of upland hardwoods have developed on former sand hills and flatwoods due to a lack of fire or other ownership priorities prior to acquisition. These areas can be returned to their original natural community by harvesting the overstory and planting the original species appropriate to the site. Hardwood species encountered on such site include turkey oak, laurel oak, bays and sweetgum.

WETLAND HARDWOODS AND CYPRESS

As with State Forests, in an effort to protect water quality, the District has no plans to harvest timber from the swamps. However, the following may be situations where limited harvesting would offer the District benefits.

Following a catastrophic outbreak of insects, disease or wildfire harvesting the dead timber can create the growing space for the next generation. Most swamp species reproduce from both seed and sprouting. Removing the dead overstory will reduce the hazard from trees falling on people and young trees.

Twenty to 30 years following some catastrophic event the District may choose to selectively thin the hardwoods and cypress to accelerate the process of developing old-growth conditions. In a truly natural setting the development of old-growth conditions will take 75 - 100 years since the trees compete with one another until the weaker individuals die. Through thinning, the number of trees can be reduced, and the growth concentrated on the remaining trees so that they become larger faster and old-growth habitat can be created earlier.

The sensitivity required to log wetland systems cannot be overly stressed. Any harvesting performed in wetlands must be carried out under the most stringent conditions to avoid damage to the site. Harvesting can only be done when rutting and damage to residual trees can be minimized. Harvesting must be closely monitored and shut down if conditions deteriorate.

This plan was approved by the Governing Board in February, 2000 with charts updated January 2020

APPENDIX J – FIRE MANAGEMENT PLAN

River Lakes Conservation Area

Fire Management Plan
Brevard and Osceola Counties, Florida

The District Fire Management Plan provides general fire management information relative to policy, procedure, and reporting. This document provides the guidelines for the implementation of prescribed fire activities on the River Lakes Conservation Area (RLCA).

Introduction and Objectives

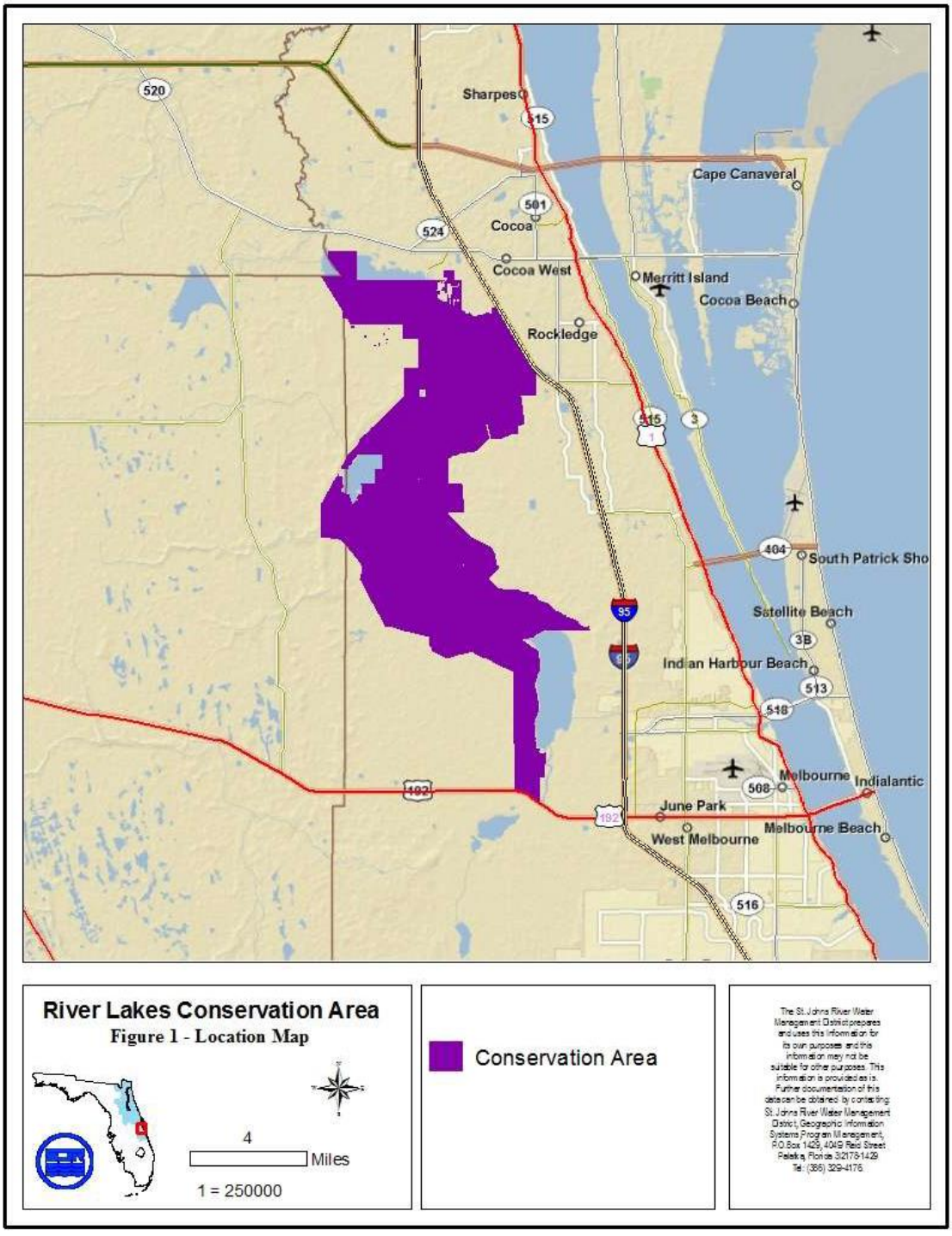
The RLCA covers approximately 39,663 acres in Brevard and Osceola Counties and incorporates nearly 27 miles of the St. Johns River and associated lakes, including Lake Winder and portions of Lake Poinsett and Lake Washington. This conservation area is located in numerous sections of Townships 24, 25, 26, and 27 South and Ranges 34, 35, and 36 East.

The property is located just west of Rockledge, Viera and Melbourne, and east of County Road 419, between SR 520 to the north and U.S. 192 to the south. Figure 1 depicts the location of the conservation area.

Historically, fires have played a vital role in the shaping and maintenance of many of the natural communities in Florida. As such, most vegetative communities and associated wildlife are fire adapted and in many instances fire dependant. Conversely, the exclusion of fire from an area allows for successional changes within the natural community. Fire exclusion leads to the excessive accumulation of fuel loads, which increases the risk for catastrophic wildfires. The goals for the implementation of fire management activities within the conservation area include:

- Reduction of fuel loads through the application of dormant season burns to decrease potential risk of damaging wildfires
- Reintroduction of growing season burns to encourage the perpetuation of native fire adapted ground cover species
- Mitigation of smoke management issues
- Restoration and maintenance of a mosaic of natural plant communities and ecological diversity
- Maintenance and restoration of ecotonal areas

The achievement of these goals requires that the conservation area be partitioned into manageable burn units prior to the application of prescribed fire within those units. The following sections summarize the considerations necessary for the safe and effective use of prescribed fire as a land management tool within the RLCA.


520
Sharpes
515
Cape Canaveral
501
Cocoa
524
Cocoa West
Merritt Island
Cocoa Beach
Rockledge
3
404
South Patrick Sho
95
Satellite Beach
3B
Indian Harbour Beach
513
518
Melbourne
Indialantic
508
192
June Park
West Melbourne
Melbourne Beach
516
River Lakes Conservation Area
Figure 1 - Location Map
4
Miles
1 = 250000
Conservation Area
The St. Johns River Water Management District prepares and uses this information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems Program Management, P.O.Box 1429, 4049 Reid Street Palatka, Florida 32178-1429 Tel: (386) 329-4176

Fire Return Interval

The general frequency to which fire returns to a community type under natural conditions is termed its fire return interval. Some communities require frequent pyric disturbances to perpetuate themselves while others are not fire adapted and subsequently do not require fire to maintain their characteristics. Table 1 and the following discussion of native plant communities occurring on the conservation area and optimal fire return intervals was characterized in part using information from the Florida Natural Areas Inventory's *Guide to the Natural Communities of Florida.*

Table 1.

Community Type	Fire Return Interval*
Floodplain Marsh	3 years
Floodplain Swamp	This is not a fire adapted community.
Mesic Flatwoods	2-4 years
Mesic Hammock	Infrequent; fires may burn edges and may rarely burn interior
Hydric Hammock/Prairie Hydric Hammock	May burn in conjunction with surround community; frequent and low intensity
Improved Pasture	1-4 years

*Stated FNAI fire return intervals are based on regional differences in communities and fuel loading. The District will target the lowest interval possible that will effectively carry fire.

The above referenced fire return intervals relate to high quality natural communities. The fire return interval within degraded systems is variable. Prescribed fire will be applied as necessary to achieve restoration and management goals.

Floodplain marsh is the most prevalent fire adapted natural community type found within the RLCA. Floodplain marshes within the conservation area support a dense, contiguous coverage of pyric plants including sand cordgrass (*Spartina bakeri*) and sawgrass (*Cladium jamaicense*), as well as numerous other hydrophytic plants. The floodplain marshes also include large areas which are shrub encroached, primarily in coastal plain willow (*Salix caroliniana*) and wax myrtle (*Myrica cerifera*) likely resulting from altered hydrology and an elongated fire return interval. In most areas, sand cordgrass and sawgrass will be the primary carrier of fires. Depending on weather parameters during fires, shrub encroached areas will either act as a natural fire break, burn at low intensities through the leaf litter, or burn intensely through the shrub layer.

Mesic flatwoods are a fire adapted upland natural community type found within the RLCA. The mesic flatwoods within the conservation area are highly disturbed and include a dense closed canopy of slash pine (*Pinus elliottii*) and cabbage palm (*Sabal palmetto*) with a shrub layer that includes some saw palmetto (*Serenoa repens*) and gallberry (*Ilex glabra*). The groundcover, where present is dominated by bahia grass (*Paspalum notatum*), but is largely bare due to cattle activity. In most areas of mesic flatwoods, the groundcover will be the primary carrier of fire. It should be noted, that the presence of cabbage palm may facilitate the spread of fire into the canopy.

Improved pastures, which are mostly confined to the east central portions of the property, are incorporated into cattle leases. Depending on cattle grazing activities, bahia grass will carry fire and fire.

Fire management within the remaining plant communities will be in conjunction with the associated floodplain marsh and flatwoods communities. These plant communities will burn as site conditions permit during the implementation of controlled burns in adjacent plant communities. Additionally, these areas will not be excluded from fire activities unless warranted by safety or smoke management issues.

Seasonality and Type of Fire

Historically, most fires in Florida occurred in what is commonly referred to as the "growing season." The growing season usually spans from mid March through August. Fires during the spring and early summer months generally have significant ecological benefits as most fire-adapted flora is perpetuated by fire. Mimicking lightning ignited natural fires by implementing prescribed fire during the growing season provides benefits to natural systems by controlling shrub layers/shrub encroachment and encouraging diversity in groundcover species.

Prescribed burns in the floodplain marsh should take place during the growing season and at minimum interval of every three years, as described by FNAI. Maintaining a frequent, growing season burn regime is critical in controlling shrub encroachment into marsh systems.

Dormant season burns, conducted from mid November through the mid March, are less intense than growing season burns and are a desirable alternative to reduce fuel loads in overgrown areas and typically result in fewer safety and smoke management issues. Fuel loads are moderate across the much of the property. Heavy coverage of cabbage palm within the mesic flatwoods may require the application of fire be in the form of dormant season burning. This will allow for the reduction of fuel loads while providing for the protection of desirable vegetation. The ultimate goal of this strategy will be to move the prescribed fire application into a growing season rotation. District staff anticipates the transition to growing season burns to occur only after a sufficient reduction of fuel levels and tree growth is achieved.

Prescribed fire should not be applied to a recently thinned area of pines. A period of at least one (1) growing season, post harvest will allow the residual trees adequate recovery time. The implementation of prescribed fire inside the recovery window may further stress, weaken, and potentially cause mortality on the remaining trees.

In many cases, fire management units with similar fire management needs may be burned simultaneously, either with crews igniting the areas by hand from the ground, or with the aid of aircraft. Aerial ignition allows District staff to ignite fire management units more quickly, resulting in a faster burnout. In an area with a large mosaic of unavailable fuels, fire can be applied easily to all portions of the unit. With ground based crews this sometimes is infeasible or impossible and may pose a safety issue. An aerial burn safety plan (Exhibit 1) will accompany the individual burn prescriptions and be onsite and on the ground the day of any aerial burn.

Wildfire Policy

In the event of a wildfire, if conditions permit, suppression strategies will utilize existing fuel breaks to contain the wildfire. These fuel breaks may include previously burned areas, existing roads, trails, and firelines, and wetlands and other water bodies. This is only possible, with the

agreement of local fire rescue, DOF, District staff, and when all of the following conditions are met:

1) Fuels within the area have been managed
2) No extreme weather conditions are present or expected
3) There are no other wildfires that may require action
4) There are sufficient resources available to manage the fire to containment
5) The fire and the resulting smoke will not impact neighbors or smoke sensitive areas

If any of these conditions are not met, direct suppression action will be taken.

As soon as possible following a fire in which firelines are plowed, a plan for fireline rehabilitation shall be developed and implemented.

Persons discovering arson or wildfires on the conservation area should report them to the Florida Department of Agriculture and Consumer Services, Division of Forestry (DOF), the St. Johns River Water Management District, or by dialing 911.

Post Burn Reports

Burn reports must be completed after each controlled burn or wildfire. These reports include detailed information regarding the acreage, natural communities, staff and equipment hours, and contractor hours. The timely completion of these reports is necessary for the compilation of information relative to the entire District burn program. Additionally, these reports provide a documented account of site specific conditions which are helpful in the planning of future burns.

Smoke Management

A significant challenge to the implementation of any prescribed burn program is smoke management. Fuel accumulation (dead and live) across the unburned flatwoods is moderate across the conservation area. This accumulation of fuels has the potential to produce a tremendous amount of smoke as areas are burned. As surrounding areas become increasingly urbanized, this problem will increase in magnitude, as there become fewer acceptable places to maneuver a smoke column from a prescribed fire.

The RLCA has a narrow, acceptable smoke shed in which to place a smoke column from a prescribed fire, as there are smoke sensitive areas that border the conservation area and will affect the smoke management of each burn unit. Smoke management is a limiting factor in the application of prescribed fire with in the conservation area, essentially, burns will be limited to those days where weather parameter include winds with an easterly component. The direction and speed of wind can be dramatically effected by sea breeze development during the course of a burn. On this property, forecasts that include stronger sea breezes from the western portions of the State can be particularly problematic and should be avoided. Figure 2 illustrates smoke sensitive areas in relation to the RLCA. As development increases in the area, fire management will become more difficult. Increasing daily traffic on I-95, U.S. l92, and other local roads will

further impair the District's ability to implement prescribed burns at the appropriate fire return intervals within the conservation area.

The majority of fire dependent areas at the RLCA fall within fuel model 3. Depending on the arrangement and composition of fuels (shrub encroachment), fire spread primarily through the marsh grasses. Areas within the conservation area having heavier shrub and midstory fuel accumulation or slash can burn for long periods of time causing additional smoke management issues.

A smoke screening process will be completed with each prescription, before an authorization is obtained from the FDOF. A fire weather forecast is obtained and evaluated for suitable burning conditions and smoke management objectives. A wind direction is chosen that will transport smoke away from urbanized areas and/or impact these smoke sensitive areas in the least possible way. When possible, the smoke plume from burns should be directed back through the conservation area. Smoke can then mix and loft into the atmosphere over uninhabited or rural land adequately enough to minimize off-site impacts.

On burn day, the ability of smoke to mix and disperse into the atmosphere should be good. Dispersion indices should be above 30. Dispersions of greater than 69 will only be selected if other weather and/or site conditions mitigate the potential for extreme fire behavior. Forecast mixing heights should be above 1700ft. Transport winds should be at least 9 mph to effectively minimize residual smoke. Lower transport wind speeds can be utilized if dispersion index and mixing heights are above average. Burns will be conducted with a carefully plotted wind direction to limit and/or eliminate negative impacts from smoke to neighbors and urbanized areas.

Mechanical Treatments

Short and long term weather conditions and urban interface issues are important considerations when implementing a prescribed fire program. Weather conditions such as extended droughts or insurmountable smoke management issues due to increased urbanization may require the District to manage natural systems mechanically. A variety of methods including mowing, roller chopping, and herbicide applications may be incorporated in addition to or as surrogates for prescribed fire.

Many of the floodplain marshes within the conservation area are heavily encroached by shrubs. An integral component to the implementation of a successful prescribed fire program within the RLCA will include roller chopping or other mechanical treatments.
Prescribed fire activities are planned for the conservation area over the next five years and will be conducted in conjunction with annual burn plans.

Legal Considerations

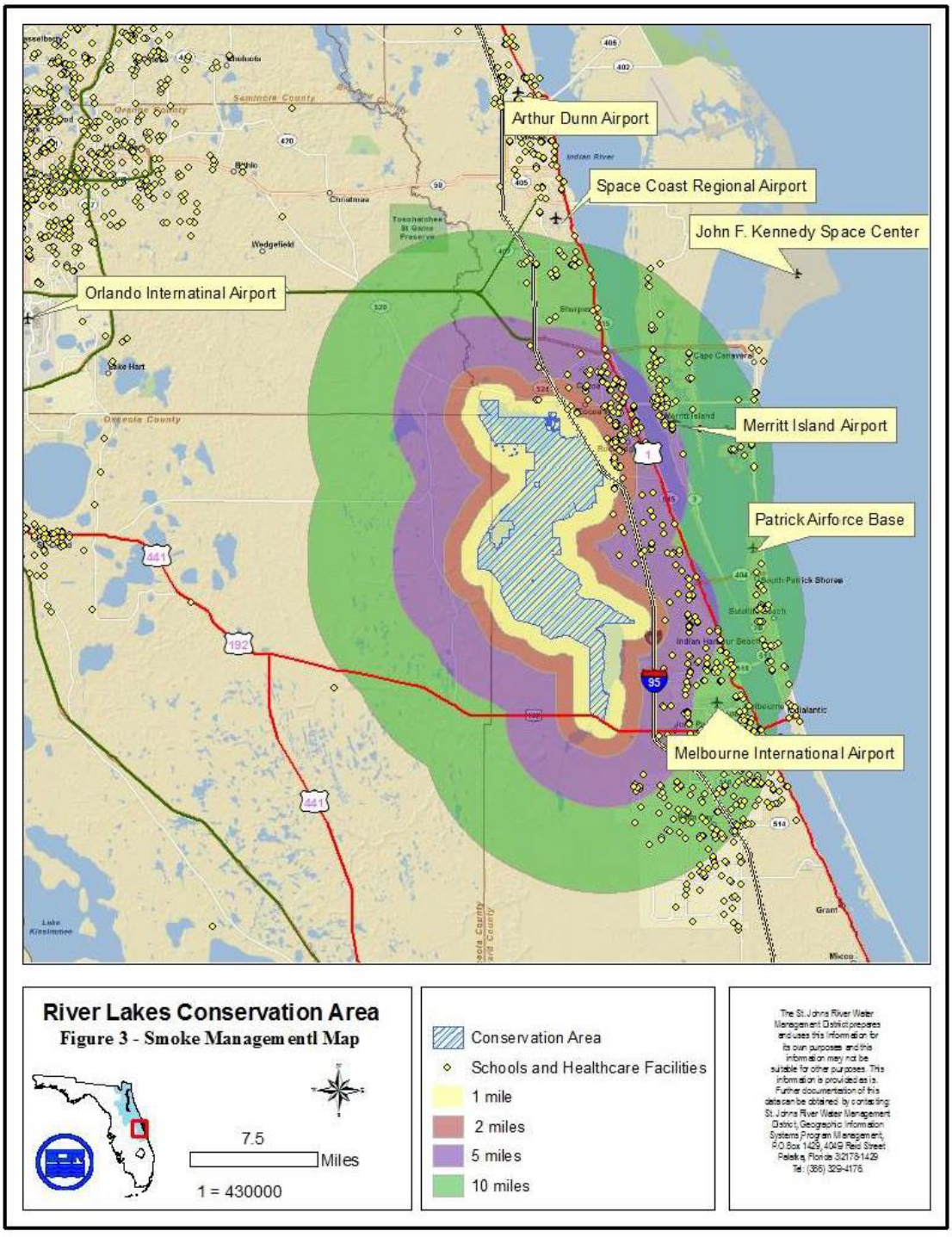
Only burn managers certified by FDOF will approve the unit prescriptions and must be on site while the burn is being conducted. Certified burn managers adhering to the requirements of F.S. 590.026 are protected from liability for damage or injury caused by fire or resulting smoke, unless negligence is proven.

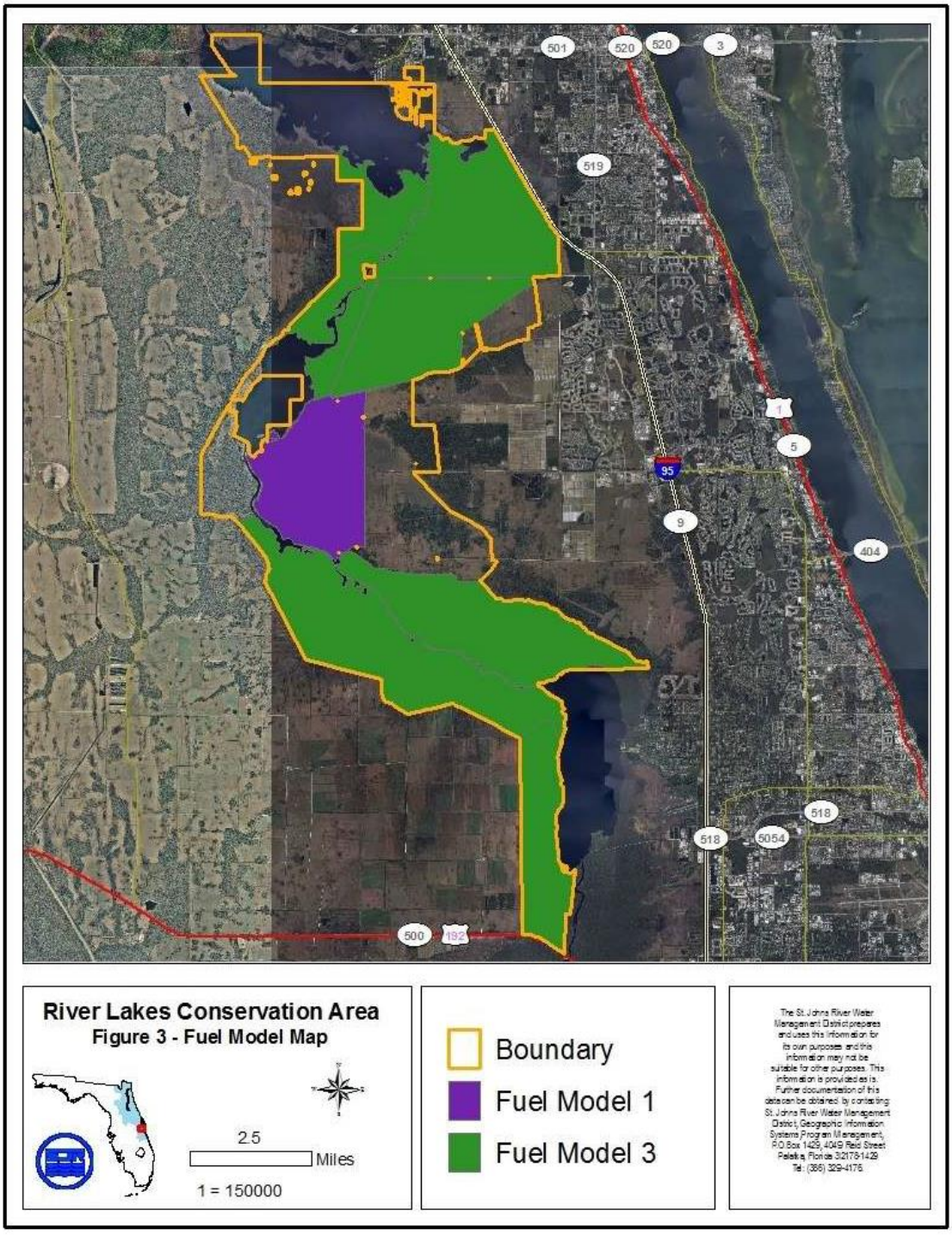
Fire Management Units

Fire management units (FMUs) have been delineated on the conservation area. Where logical, the District used (or will use) existing roads and trails, levees, and natural breaks such as wetlands and water bodies to delineate fire management units. Occasionally, multiple fire management units with similar fire needs will be burned simultaneously and these delineations provide a break in fuels so that staff may burn smaller areas than initially planned if needed.

Ideally, District staff would thoroughly address and describe each fire management unit in terms of its fire management needs. Though all units within the bounds of the conservation area are somewhat different; all can be categorized into one of several fuel model (FM) descriptions. The thirteen standard fuel models (as described in Hal E. Anderson's *Aids to Determining Fuel Models For Estimating Fire Behavior*) were used as a basis for this categorization. The factors considered in determining each FM are: amount, composition and arrangement of available fuels within units, predicted fire behavior within each unit (under conditions acceptable to implement a prescribed burn), and resources necessary to regain management of a fire in extenuating circumstances. District staff anticipates the change of vegetative assemblages over time due to growth and/or restoration and understand that fuel characteristics, models, and resulting fire behavior will also change.

Below is a brief description of each fuel model occurring within the FMUs currently delineated and the associated natural communities. A detailed description of each individual fire management unit and its associated objectives will be included in the individual prescriptions. Some fire management units within the conservation area contain multiple FMs. In these instances, the designated FM is dominant in coverage. Figure 3 illustrates the FM associated with individual fire management units.


Arthur Dunn Airport
Space Coast Regional Airport
John F. Kennedy Space Center
Orlando Internatinal Airport
Merritt Island Airport
Patrick Airforce Base
Melbourne International Airport
River Lakes Conservation Area
Figure 3 - Smoke Managementl Map
7.5
Miles
1 = 430000
Conservation Area
Schools and Healthcare Facilities
1 mile
2 miles
5 miles
10 miles
The St. Johns River Water Management District prepares and uses this information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems Program Management, P.O. Box 1429, 4049 Reid Street Palatka, Florida 32178-1429 Tel: (386) 329-4176


501
520
520
3
519
5
95
9
404
518
518
5054
500
192
River Lakes Conservation Area
Figure 3 - Fuel Model Map
2.5
Miles
1 = 150000
Boundary
Fuel Model 1
Fuel Model 3
The St. Johns River Water Management District prepares and uses this information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting St. Johns River Water Management District, Geographic Information Systems Program Management, P.O Box 1429, 4049 Reid Street Palatka, Florida 32178-1429 Tel: (386) 329-4176

Fuel Models

Fuel Model 1
This category includes fire management units that are best described as improved pasture and floodplain marsh. Fire in these fuel types is spread through herbaceous layer. These areas have a continuous coverage of either sand cordgrass or bahia grass. Given appropriate wind speeds and fuel moisture conditions, fire can spread rapidly. The optimal fire return interval in this fuel model is approximately every 1-4 years with growing season burns being preferred.

Fuel Model 3
This category includes fire management units that are best described as floodplain marsh. Fire in these fuel types is spread through the dense, tall grasses of the groundcover layer. Many of the FMUs with this fuel model designation include broad areas of shrub encroachment. The application of fire at the lowest possible frequency is important for preventing additional shrub encroachment and the control of existing shrubs, particularly after mechanical treatments.

Exhibit 1
Aerial Burn Safety Plan
River Lakes Conservation Area

The hazards associated with this type of burning are related to working with the helicopter, the sphere dispenser, and dealing with active fire. All helicopter safety procedures and all district fireline policies and procedures will be followed.

1. **BRIEFING** - During the operational briefing, the safety plan will be reviewed with all personnel on the burn.
2. **HELICOPTER SAFETY** - The pilot will give a helicopter safety briefing at the morning operational briefing.
3. **IGNITION MACHINE SAFETY –** The operator will review the operation and cleaning procedures for the dispenser at the morning briefing.
4. **PERSONAL PROTECTIVE EQUIPMENT –** The incident commander will ensure that all personnel have the required PPE.
5. **HIGH HAZARD AREAS –** All high hazard areas such as power lines shall be designated on the map and attached to the burn plan.
6. **EMERGENCY LANDING ZONES –** These should be confirmed with the pilot and indicated on the burn map. **Helispot** **Latitude** _____"N
   Longitude _____"W

Crash Rescue Plan

In the event of an accident involving the helicopter the following procedures will be followed.

INCIDENT COMMANDER or BURN BOSS

1. **Notify 911**
2. Notify Brevard County Fire Rescue (321)633-2056
3. Notify Brevard County Sheriff's Office (321) 952-6371
4. Notify Osceola County Fire Rescue (407)742-7000
5. Notify Osceola County Sheriff's Office (407)348-1100
6. Assume responsibility of the Rescue Operation.
7. Notify NTSB (305)957-4610 OR (404)462-1666
8. Delegate responsibility of fire control to the second in command or the most qualified.

SECOND IN COMMAND

1. Assume responsibility of the burn.
2. Assist the IC or Burn Boss with resource and personnel needs for the rescue operation.
3. If the IC is in the helicopter, second in command will assume rescue operation responsibilities and assign the most qualified to fire control.

Level I Trauma Center

1. Holmes Regional-Rockledge 321-434-1913
2. Orlando Regional - 321-841-5210

DIVISION OF FORESTRY

1. Orlando Dispatch 407-892-2963

NTSB

1. Southeast Regional Office **305-957-4610**
2. Southeast Field Office **404-462-1666**

APPENDIX K – MANAGEMENT PROCEDURES OF ARCHAEOLOGICAL AND HISTORICAL SITES

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties
(revised March 2013)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *'Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:

http://www.flheritage.com/preservation/compliance/guidelines.cfm

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward
Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

Phone: (850) 245-6425
Toll Free: (800) 847-7278
Fax: (850) 245-6435

APPENDIX L – COMPREHENSIVE PLAN COMPLIANCE

Brent Bachelder

From: Ball, Jeffrey <Jeffrey.Ball@brevardfl.gov>
Sent: Thursday, April 27, 2023 10:20 AM
To: Brent Bachelder
Cc: Calkins, Tad; Mcgee, Darcie A
Subject: FW: Compliance Review Request - River Lakes Conservation Area
Attachments: 2023_SJRWMD_River Lakes CA_LMP_ARC.pdf

Mr. Bachelder,

At this time Brevard County does not have any comments.

Jeffrey Ball, AICP
Brevard County Planning and Zoning Manager

This office can only provide zoning and comprehensive plan information. You may wish to contact other County agencies to fully determine the development potential of this property. This letter does not establish a right to develop or redevelop the property and does not constitute a waiver to any other applicable land development regulations. At the time of development, this property will be subject to all such regulations. Under Florida law, e-mail addresses are public records. If you do not want your e-mail address released in response to a public records request, do not send electronic mail to this entity. Instead, contact this office by phone or in writing.

From: Calkins, Tad <tad.calkins@brevardfl.gov>
Sent: Thursday, March 2, 2023 12:56 PM
To: Ball, Jeffrey <Jeffrey.Ball@brevardfl.gov>
Subject: FW: Compliance Review Request - River Lakes Conservation Area

Please coordinate the review of this with the appropriate County department and provide Mr. Bachelder comments.

From: Brent Bachelder <BBachelder@sjrwmd.com>
Sent: Thursday, March 2, 2023 8:59 AM
To: Calkins, Tad <tad.calkins@brevardfl.gov>
Cc: James Cannon <JCannon@sjrwmd.com>
Subject: Compliance Review Request - River Lakes Conservation Area

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Dear Mr. Calkins,

1

The St. Johns River Water Management District (District) is in the process of updating the Land Management Plan for the River Lakes Conservation Area, located in western Brevard and eastern Osceola Counties. The update to this plan has undergone review by a variety of stakeholders, the general public and District leadership.

One of the last stages of the planning process, before the plan is considered by the State of Florida's Acquisition and Restoration Council (ARC), is to receive review for compliance with the local comprehensive plan(s). Please find the plan update attached to this message and accept this as a request for review to ensure the District's land management plan complies with Brevard County's comprehensive plan. The District is also coordinating review of the plan by the Osceola County Planning and Design Office. Currently, the schedule for this plan is for consideration by ARC at their meeting on June 9, 2023.

Please provide me with information for a point of contact associated with review of this plan. Any questions regarding details of the management plan can be directed to me (Brent Bachelder) at the contact information below.

Sincerely,
Brent Bachelder

Brent Bachelder
Land Resource Specialist
Bureau of Land Resources
St. Johns River Water Management District
P.O. Box 1429 ● Palatka, FL 32178-1429
Office: 386-643-1973
Email: bbachelder@sjrwmd.com
Website: [www.sjrwmd.com]www.sjrwmd.com
Connect with us: Newsletter, Facebook, Twitter, Instagram, YouTube, Pinterest

www.sjrwmd.com/ePermit

We value your opinion. Please take a few minutes to share your comments on the service you received from the District by clicking this link

1 Courthouse Square, Suite 1400
Kissimmee, FL 34741
osceola.org

DEPARTMENT OF COMMUNITY DEVELOPMENT

O: 407-742-0200
F: 407-742-0206

Raymond C. Stangle
Administrator

Ken Brown
Deputy Administrator

Kelly Haddock
Assistant Administrator

Steven Whitmore
Building Director

Stephen Wood
Customer Care Director

Sandy Bean
Current Planning & Customer Care Director

Jose Gomez, P.E.
Development Review Director

Robert Mindick
Parks and Public Lands Director

Joseph S. Strickland
Extension Services Director

Cori M. Carpenter, LEED® GA
Planning & Design Director

June 5, 2023

Bureau of Land Resources
St. Johns River Water Management District
P.O. Box 1429
Palatka, FL 32178-1429

RE: SR23-00021
Parcel(s):132634000000200000, 242634000000300000, 012634000000300000, and 122634000000200000

Dear Brent Bachelder:

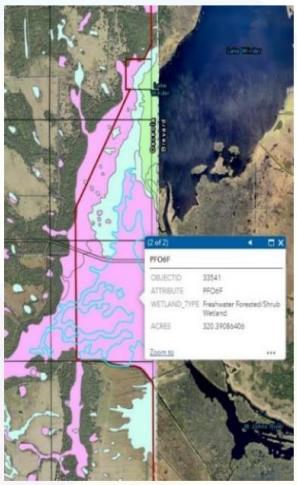
The intended use of the subject area that is comprised of parcels 132634000000200000, 242634000000300000, 012634000000300000, and 122634000000200000 is in compliance with the Future Land Use and Zoning designations of Osceola County. The proceeding pages provide additional information for consideration.

Sincerely,

T Jackson

Talbert Jackson, Planner II
Community Development, Planning and Design
talbert.jackson@osceola.org
407-742-0294

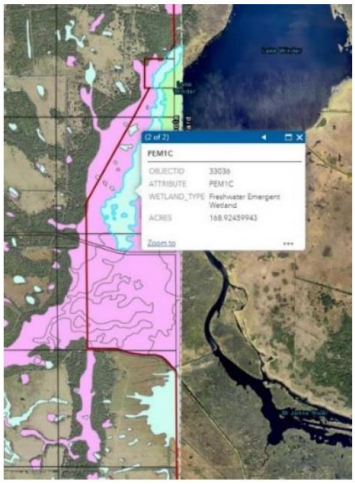
The intended use of the subject area is in compliance with the Future Land Use and Zoning designations of Osceola County. The assemblage of four (4) parcels totals approximately 930 acres with the following parcel identification numbers: 132634000000200000, 242634000000300000, 012634000000300000 122634000000200000 shown on the right. The Future Land Use of the subject area is Rural/Agricultural District and a zoning designation of Agricultural Development and Conservation (AC). It is bordered to the north, south, and west by the Mixed-Use Future Land Use District. The adjacent Mixed Use District, classified as District 11, consists of 133,000 acres of designated future mixed use development per Policy 1-1.3.3.1 of the Osceola County Comprehensive Plan. The adjacent county line, Brevard County, boarders the east side of the subject area wherein Lake Winder and the St. Johns River are located. The parcels contain Freshwater Forested/Shrub and Freshwater Emergent Wetlands. The parcels are within FEMA Flood Zone AE.

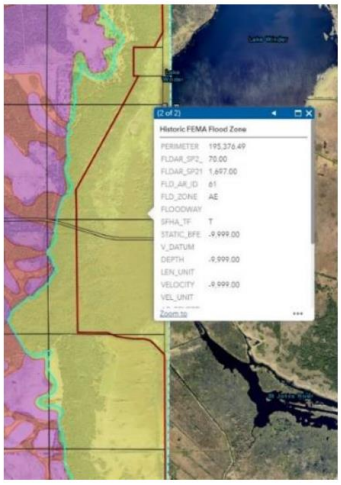


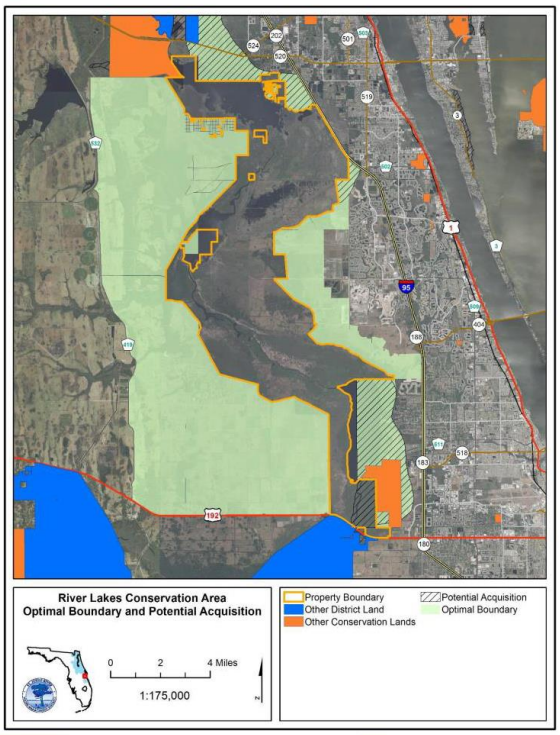
NORTH RANCH MASTER PLAN

The mixed-use future land use area is part of the North Ranch Master Plan that sets development goals into the year 2080. Such goals include significant economic opportunities and job centers, close transportation corridor gaps, and preserve environmental systems and agricultural lands at a landscape scale. Per Objective 5-1.1 of the Osceola County Comprehensive Plan, the area is to be one that *"focuses on the creation of new job centers in employment corridors served by multimodal transportation systems while protecting environmental and agricultural resources."*

The North Ranch Framework Plan shown below indicates the area west of the subject area is proposed for conservation and agricultural land. As it pertains to the Optimal Boundary Map (Figure 19) located on page 54 of the River Lakes Conservation Area Land Management Plan (February 2023), provided by the St. Johns River Water Management District, the optimal boundary area extending from the subject area westward towards County Road 419 encompasses roughly three (3) linear miles. The North Ranch Framework Plan shows roughly two (2) linear miles of acreage planned for agricultural or conservation use. Therefore, the proposed optimal boundary may exceed the conservation and agricultural land uses by roughly one (1) linear acre. If the optimal boundary becomes the potential acquisition for a new property boundary, then a change in the Future Land Use and Zoning will be required to satisfy the St. Johns River Water Management District's need for conservation use within the existing Mixed-Use Future Land Use.

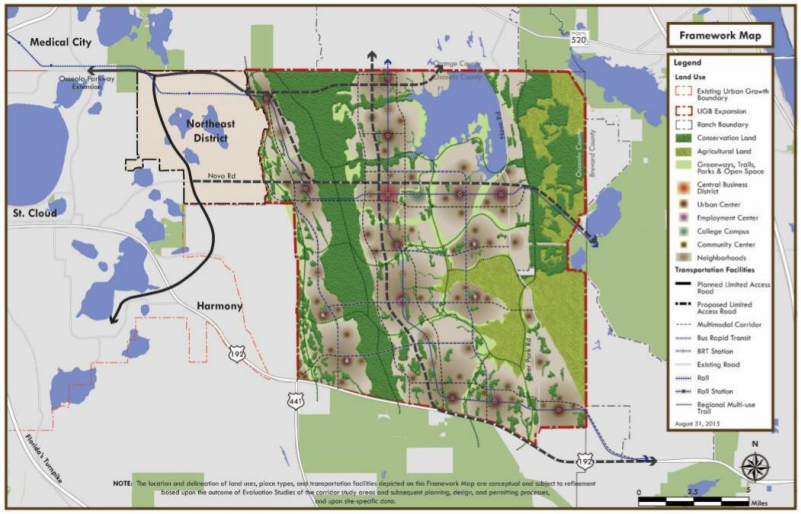






PROPOSED LIMITED ACCESS ROADWAY

Additionally, a limited access road is proposed to traverse through the subject area from the north in a southeastern direction. The road is proposed to traverse outside of the Urban Growth Boundary (UGB) towards Brevard County.



APPENDIX L – BREVARD MOSQUITO CONTROL DISTRICT LETTER

BOARD OF COUNTY COMMISSIONERS

Brevard County Mosquito Control
800 Perimeter Road
Titusville, Florida 32780

March 6, 2023

Brent Bachelder
Land Resource Specialist
St. Johns River Water Management District
P.O. Box 1429
Palatka, FL 32178-1429

RE: River Lakes Conservation Area Arthropod Control/Management Plan

Mr. Bachelder:

Brevard County Mosquito Control (BCMC) does not have an Arthropod Control/Management Plan for River Lakes Conservation Area.

River Lakes Conservation Area is included in BCMC's county wide operations for public health.

Please do not hesitate to contact us at (321) 264-5032 with additional information requests.

Sincerely,

Jonathan Linder, Supervisory Biologist
Brevard County Mosquito Control

Phone (321) 264-5032 • Fax (321) 264-5034
Website: Brevardfl.gov/MosquitoControl