

13 Appendices

13.1 Lease Agreement

CHICAGO TITLE INSURANCE COMPANY

OWNERS FORM
SCHEDULE A, continued

Policy Number:

Commencing at the Southwest corner of Section 30; thence North 0° 35' 0" West along the West line of said Section 30 and the center line of a 200 foot right of way for the Pratt & Whitney Road which is designated State Road 711, as now laid out and in use, a distance of 2,480 feet to the center line of a canal M-1-Q; thence North 89° 25' 0" East along said canal center line, a distance of 100 feet to the East line of said 200 foot road right-of way and to the Point of Beginning; thence North 0° 35' 0" West along the said East right of way line a distance of 250 feet; thence North 89° 25' 0" East a distance of 500 feet to the boundary of the parcel described above; thence South 0° 35' 0" East a distance of 500 feet along the boundary of the parcel described in the paragraph above; thence South 89° 25' 0" West a distance of 500 feet to the East line of the right of way line of State Road 711; thence North 0° 35' 0" West along said Easterly right of way line of State Road 711 a distance of 250 feet to the center line of canal M-1-Q and to the Point of Beginning.

PARCEL 23

A parcel of land lying in Sections 23, 24 and 25, Township 40 South, Range 39 East and Section 18, Township 40 South, Range 40 East, Martin County, Florida and being more particularly described as follows:

The North half (N 1/2) of said Section 18 lying South of the Old Jupiter Grade, LESS AND EXCEPTING THEREFROM the West 150 feet of said Section; Together with the East half (E 1/2) of said Section 23 lying North of State Road 710; Together with all of said Section 24 lying North of State Road 710, LESS AND EXCEPTING THEREFROM the North one quarter (N 1/4) of said Section; Together with all of said Section 25 lying North of State Road 710.

This Policy is valid only if Schedule B is attached

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FI, WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

LAN 06

30 October 2000

Mr. Mark Robson, Regional Director
Fish and Wildlife Conservation Commission
8535 Northlake Boulevard
West Palm Beach, FL 33412

Dear Mr. Robson: *MARK*

SUBJECT: Pal-Mar Management Lease

Enclosed is a copy of the executed management lease, dated October 6, 2000. Please note that it is a requirement of the lease that a management plan be submitted within one year of lease implementation. The District is identified in the lease as being responsible for those portions of the management plan dealing with hydrology and hydrologic restoration. It is District policy that management plans be submitted to our governing board for adoption.

We look forward to working with the Commission on development of the plan. Please let us know when the planning process will begin and how we can assist.

Sincerely,

William M. Helfferich
William M. Helfferich
Supervising Professional
Land Stewardship Department
Vegetation and Land Management Division
Water Resources Operations

c: Fred Davis
Bert Trammell

GOVERNING BOARD

Michael Collins, *Chairman*
Michael D. Minton, *Vice Chairman*
Mitchell W. Berger

Vera M. Carter
Gerardo B. Fernandez
Patrick J. Gleason

Nicolas J. Gutierrez, Jr.
Harkley R. Thornton
Trudi K. Williams

EXECUTIVE OFFICE

Frank R. Finch, P.E., *Executive Director*
James E. Blount, *Chief of Staff*



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

October 9, 2000

Mr. Fred Davis
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

REF: **Board of Trustees/South Florida Water Management
District-Florida Fish & Wildlife Conservation
Commission, Palmar (Trustees Lease No. 4271)**

Dear ^{Fred} Mr. Davis:

Enclosed for your file is a fully executed original of Lease Number 4271 between the Board of Trustees, South Florida Water Management District and the State of Florida Fish and Wildlife Conservation Commission. If you have any questions about the enclosure, call me at Suncom 278-2291.

Sincerely,

David Stevenson
Bureau of Public Land Administration
Mail Station 130

DS/ds
Enclosure

cc: Ms. Patti Doerr, Florida Fish and Wildlife Conservation Commission, with enclosure

RECEIVED

OCT 13 2000

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SAL3

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT
TRUST FUND OF THE STATE OF FLORIDA
7,741.04 Acres

LEASE AGREEMENT
PAL-MAR

Lease Number 4271

This lease is made and entered into this 6th day of October, 2000, between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, (as to its undivided 50% interest), hereinafter referred to as the "TRUSTEES", and the SOUTH FLORIDA WATER MANAGEMENT DISTRICT (as to its undivided 50 % interest), hereinafter referred to as the "DISTRICT", (the TRUSTEES and the DISTRICT are hereinafter collectively referred to as "LESSORS"), and the STATE OF FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, hereinafter referred to as "LESSEE".

WITNESSETH:

WHEREAS, the LESSORS hold title to certain lands and property being utilized by the State of Florida for public purposes, and

WHEREAS, the TRUSTEES are authorized in Section 253.03, Florida Statutes, to enter into leases for the use, benefit and possession of public lands by State agencies which may properly use and possess them for the benefit of the people of the State of Florida;

WHEREAS, the DISTRICT is empowered to enter into contracts with public agencies, private corporations or other persons, pursuant to Section 373.083(1), Florida Statutes;

NOW, THEREFORE, for and in consideration of the mutual covenants and agreements hereinafter contained, LESSORS lease

the below described premises to LESSEE subject to the following terms and conditions:

1. DELEGATIONS OF AUTHORITY: TRUSTEES' responsibilities and obligations herein shall be exercised by the Division of State Lands, Department of Environmental Protection.
2. DESCRIPTION OF PREMISES: The property subject to this lease, is situated in the County of Martin, 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 fifty years, commencing on October 5, 2000, and ending on October 4, 2050, 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 resource based public outdoor recreation which is compatible with the conservation and protection of these public lands, as set forth in subsection 259.032(11) and section AC 373.1391, Florida Statutes, along with other related uses necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 7 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 conformance with this lease.
7. MANAGEMENT PLAN: The LESSEE with the assistance from the DISTRICT shall prepare and submit a Management Plan for the leased premises, in accordance with Section 253.034, Florida Statutes, and subsection 18-2.021(4), Florida Administrative Code, within twelve months of the effective date of this lease. The DISTRICT shall specifically be responsible for the

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development of those portions of the Management Plan dealing with hydrology and hydrologic restoration. The Management Plan shall be submitted to LESSORS for approval through the Division of State Lands, Department of Environmental Protection, and for adoption by the DISTRICT'S Governing Board. 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 LESSORS until the Management Plan is approved. The Management Plan shall emphasize the original management concept as approved by LESSORS 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 the LESSEE, Acquisition and Restoration Council or its successor and LESSORS at least every five 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 LESSORS. 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.

8. RIGHT OF INSPECTION: LESSORS or their duly authorized agents shall have the right at any and all times to inspect the leased premises and the works and operations thereon of LESSEE, in any matter pertaining to this lease.

9. INSURANCE REQUIREMENTS: LESSEE shall procure and maintain fire and extended risk insurance coverage, in accordance with Chapter 284, F.S., for any buildings and improvements located on the leased premises by preparing and delivering to the Division of Risk Management, Department of Insurance, a completed Florida Fire Insurance Trust Fund Coverage Request Form and a copy of this lease immediately upon erection of any structures as allowed by paragraph 4 of this lease. A copy of said form and

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immediate notification in writing of any erection or removal of structures or other improvements on the leased premises and any changes affecting the value of the improvements shall be submitted to the following: Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000 and Procurement Division, SFWMD, Box 24680, West Palm Beach, FL 33461 .

10. LIABILITY: LESSEE shall assist in the investigation of injury or damage claims either for or against LESSOR or the State of Florida pertaining to LESSEE'S respective areas of responsibility under this lease or arising out of LESSEE'S respective management programs or activities and shall contact LESSORS regarding the legal action deemed appropriate to remedy such damage or claims. The LESSEE is responsible for all personal injury, bodily injury, and property damage attributable to the negligent acts or omissions of the LESSEE and its employees to the extent allowable under Section 768.28, Florida Statutes.

11. 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 Section 253.034, Florida Statutes, shall be reviewed by the Division of Historical Resources to insure that adequate measures have been planned to locate, identify, protect and preserve the archaeological and historic sites and properties on the leased premises.

12. EASEMENTS: All easements including, but not limited to, utility easements are expressly prohibited without the prior written approval of LESSORS. Any easements executed after the

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date of this agreement, which are not approved in writing by LESSORS, shall be void and without legal effect.

13. SUBLEASES: This lease is for the purposes specified herein and subleases of any nature are prohibited, without the prior written approval of LESSORS. Any sublease not approved in writing by LESSOR shall be void and without legal effect.

14. POST CLOSING RESPONSIBILITIES: In an effort to define responsibilities of the LESSORS and LESSEE with regard to resolving post closing management issues, the parties agree to the following:

a. After consultation with the LESSEE, LESSORS agree to provide the LESSEE with the title, survey and environmental products procured by the LESSORS, prior to closing.

b. LESSORS shall initiate surveying services to locate and mark boundary lines of specific parcels when necessary for immediate agency management and shall provide a boundary survey of the entire acquisition project at the conclusion of all acquisition within the project boundary. Provided, however, the LESSEE may request individual parcel boundary surveys, if necessary, prior to the conclusion of acquisition activities within the project boundaries.

c. Unless otherwise agreed to by LESSEE, LESSORS shall at their sole cost and expense, make a diligent effort to resolve all issues pertaining to all title defects, survey matters or environmental contamination associated with the leased premises, including but not limited to trash and debris, which were either known or should have been reasonably known by LESSORS at the time LESSORS acquired the leased premises.

Notwithstanding the foregoing, LESSORS shall not be responsible for any of LESSEE'S attorney's fees,

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costs, or liability or damages incurred by the LESSEE in resolving any issue in which the LESSEE is named as a party in any litigation or other legal or administrative proceeding.

- d. With regard to all title defects, survey matters, or environmental contamination associated with the leased premises which were not known or could not have been reasonably known by LESSORS at the time LESSORS acquired the leased premises, LESSORS and LESSEE agree to cooperate in developing an appropriate strategy for jointly resolving these matters. LESSORS acknowledge and understand that LESSEE is unable to commit any substantial amount of their routine operating funds for the resolution of any title defect, survey matter, or environmental contamination associated with the leased premises. Notwithstanding the foregoing, LESSORS will not be responsible for any of LESSEE'S attorney's fees, costs, or liability or damages incurred by the LESSEE in resolving any issue in which the LESSEE is named as a party in any litigation or other legal or administrative proceeding.

15. SURRENDER OF PREMISES: Upon termination or expiration of this lease, LESSEE shall surrender the leased premises to LESSORS. In the event no further use of the leased premises or any part thereof is needed, written notification shall be made to the Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and Land Stewardship Division, SFWMD, Box 24680 West Palm Beach, FL 33461, at least six months prior to the release of all or any part 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 LESSORS through execution of a release of lease instrument with the same

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formality as this lease. Upon release of all or any part of the leased premises or upon expiration or termination of this lease, all permanent improvements, including both physical structures and modifications to the leased premises, shall become the property of LESSORS, unless LESSORS give 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 LESSORS' 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 buildings on the leased premises shall be turned over to the Division. If the leased premises and improvements located thereon do not meet all conditions set forth in paragraphs 18 and 21 herein, LESSEE shall pay all costs necessary to meet the prescribed conditions.

16. BEST MANAGEMENT PRACTICES: LESSEE shall implement applicable Best Management Practices for all activities conducted under this lease in compliance with section 18-2.018(2)(h), Florida Administrative Code, which have been selected, developed, or approved by LESSORS, LESSEE or other land managing agencies for the protection and enhancement of the leased premises.

17. 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 5E-13, Florida Administrative Code, for the purpose of obtaining a public lands arthropod control plan for such lands.

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

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19. ASSIGNMENT: This lease shall not be assigned in whole or in part without the prior written consent of LESSORS. Any assignment made either in whole or in part without the prior written consent of LESSORS shall be void and without legal effect.

20. PLACEMENT AND REMOVAL OF IMPROVEMENTS: All buildings, structures, improvements, and signs shall be constructed at the expense of LESSEE. Removable equipment placed on the leased premises by LESSEE which does not become a permanent part of the leased premises shall remain the property of LESSEE and may be removed by LESSEE upon termination of this lease.

21. MAINTENANCE OF IMPROVEMENTS: LESSEE shall maintain the real property contained within the leased premises and any 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, maintaining all planned improvements as set forth in the approved Management Plan, meeting all building and safety codes in the location situated and maintaining any and all existing roads, canals, ditches, culverts, risers and the like in as good condition as the same may be at the 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.

22. ENTIRE UNDERSTANDING: This lease sets forth the entire understanding between the parties and shall only be amended with the prior written approval of LESSORS.

23. BREACH OF COVENANTS, TERMS, OR CONDITIONS: Should LESSEE breach any of the covenants, terms, or conditions of this lease, LESSORS shall give written notice to LESSEE to remedy such breach within sixty days of such notice. In the event LESSEE fails to remedy the breach to the satisfaction of LESSORS within

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sixty days of receipt of written notice, LESSORS may either terminate this lease and recover from LESSEE all damages LESSORS may incur by reason of the breach including, but not limited to, the cost of recovering the leased premises or maintain this lease in full force and effect and exercise all rights and remedies herein conferred upon LESSORS.

24. NO WAIVER OF BREACH: The failure of any party to this contract 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 and conditions, but the same shall continue in full force and effect, and no waiver of any party of any one of the provisions hereof shall in any event be deemed to have been made unless the waiver is set forth in writing, signed by all parties.

25. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the leased premises is held by LESSORS. LESSEE shall not do or permit anything which 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 LESSORS therein.

26. DAMAGE TO THE PREMISES: (a) LESSEE shall 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. (b) LESSEE shall not generate, store, produce, place, treat, release or discharge any contaminants, pollutants or pollution, including, but not limited to, hazardous or toxic substances, chemicals or other agents on, into, or from the leased premises in any manner not permitted by law. For the purposes of this lease, "hazardous substances" shall mean and include those elements or compounds defined in 42 USC Section 9601 or which are contained in the list of hazardous substances

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adopted by the United States Environmental Protection Agency (EPA) and the list of toxic pollutants designated by the United States Congress or the EPA or defined by any other federal, state or local statute, law, ordinance, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning any hazardous, toxic or dangerous waste, substance, material, pollutant or contaminant. "Pollutants" and "pollution" shall mean those products or substances defined in Chapters 376 and 403, Florida Statutes, and the rules promulgated thereunder, all as amended or updated from time to time. In the event of LESSEE'S failure to comply with this paragraph, LESSEE shall, at its sole cost and expense, promptly commence and diligently pursue any legally required closure, investigation, assessment, cleanup, decontamination, remediation, restoration and monitoring of (1) the leased premises, and (2) all off-site ground and surface waters and lands affected by LESSEE'S such failure to comply, as may be necessary to bring the leased premises and affected off-site waters and lands into full compliance with all applicable federal, state or local statutes, laws, ordinances, codes, rules, regulations, orders and decrees, and to restore the damaged property to the condition existing immediately prior to the occurrence which caused the damage. LESSEE'S obligations set forth in this paragraph shall survive the termination or expiration of this lease. Nothing herein shall relieve LESSEE of any responsibility or liability prescribed by law for fines, penalties and damages levied by governmental agencies, and the cost of cleaning up any contamination caused directly or indirectly by LESSEE's activities or facilities. Upon discovery of a release of a hazardous substance or pollutant, or any other violation of local, state or federal law, ordinance, code, rule, regulation, order or decree relating to the generation, storage, production, placement, treatment, release or discharge of any contaminant, LESSEE shall report such violation to all

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applicable governmental agencies having jurisdiction, and to LESSORS, all within the reporting periods of the applicable governmental agencies. LESSORS AND LESSEE acknowledge and agree that the property shall be used as a Wildlife Management Area, that such use may involve the discharge of firearms and that such use shall not constitute a violation of this paragraph or a breach of this agreement.

27. 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 drainage and special assessments or taxes of every kind and all mechanic's or materialman's liens which may be hereafter lawfully assessed and levied against the leased premises if such mechanic's or materialman's liens are due from the actions of LESSEE.

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

29. NON-DISCRIMINATION: No party shall hereto 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.

30. COMPLIANCE WITH LAWS: Parties agree 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

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United States or of any political subdivision or agency of either.

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

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

33. 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.

34. ADMINISTRATIVE FEE: LESSEE shall pay TRUSTEES an annual administrative fee of \$300. The initial annual administrative fee shall be payable within thirty days from the date of execution of this lease agreement and shall be prorated based on the number of months or fraction thereof remaining in the fiscal year of execution. For purposes of this lease agreement, the fiscal year shall be the period extending from July 1 to June 30. Each annual payment thereafter shall be due and payable on July 1 of each subsequent year.

35. LESSEE'S PROPERTY AT RISK: All of LESSEE'S personal property, equipment, and fixtures located upon the leased premises shall be at the sole risk of the LESSEE and the LESSORS shall not be liable under any circumstances for any damage thereto or theft thereof unless the damage or theft is due to the negligent acts or negligent omissions of the LESSORS or LESSORS' agents and then only to the extent permitted by law such damage or theft is directly caused by such negligent acts or negligent omissions. Nothing contained herein shall be construed, or is intended to expand the waiver of either party's sovereign immunity as limited by Section 768.28, Florida Statutes, or the liability of either party beyond that currently provided in Section 768.28, Florida Statutes.

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36. EXISTING INTERESTS IN LEASED PREMISES: Pursuant to Section 373.099, Florida Statutes, the DISTRICT does not warrant or represent that it has title to the leased premises. The LESSEE'S occupancy of the leased premises shall be subject to the rights of others, including but not limited to existing leases, subleases, easements, restrictions, reservations, and other encumbrances affecting the leased premises.

37. MISCELLANEOUS PROVISIONS:

a. Invalidity of Lease Provision: Should any term or provision of this lease be held, to any extent, invalid or unenforceable, as against any person, entity or circumstance during the term hereof, by force of any statute, law or ruling of any form of competent jurisdiction, such invalidity shall not affect any other term or provision of this lease, to the extent that the lease shall remain operable, enforceable and in full force and effect to the extent permitted by law.

b. Inconsistencies: In the event any provisions of this lease shall conflict, or appear to conflict, the lease, including all exhibits, attachments and all documents specifically incorporated by reference, shall be interpreted as a whole to resolve any inconsistency.

c. Final Agreement: This lease states the entire understanding between the parties hereto and supersedes any written or oral representations, statements, negotiations, or agreements to the contrary. The LESSEE recognizes that any representations, statements or negotiations made by LESSORS' staff do not suffice to legally bind the LESSORS in a contractual relationship unless they have been reduced to writing, authorized, and signed by an authorized representative of the LESSORS. This lease shall bind the parties, their assigns, and successors in interest.

d. Survival: The provisions of paragraphs 14, 26, and

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37(e) shall survive the expiration or termination of this lease. In addition, any covenants, provisions or conditions set forth in this lease which by their terms bind the LESSEE or both the LESSORS and the LESSEE after the expiration or termination of this lease, shall survive the expiration or termination of this lease.

e. Waiver of Trial by Jury Provision: As an inducement to the LESSORS agreeing to enter into this lease, the TRUSTEES, DISTRICT, and LESSEE hereby waive trial by jury in any action or proceeding brought by one party against another party pertaining to any matter whatsoever arising out of or in any way connected with this lease or the LESSEE'S occupancy of the leased premises.

f. Incorporation of Pal-Mar CARL Acquisition Agreement: The Pal-Mar CARL Acquisition Project Agreement of July 10, 1995, as amended, is hereby incorporated into this lease agreement, by reference, and made a part 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

Judy Woodard
Witness

Judy Woodard
Print/Type Witness Name

Florence Davis
Witness

Florence Davis
Print/Type Witness Name

By: Gloria C. Nelson (SEAL)
Gloria C. Nelson, Operations
And Management Consultant
Manager, Bureau of Public Land
Administration, Division of
State Lands, Department of
Environmental Protection

"TRUSTEES"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 16th day of October, 2000, by Gloria C. Nelson, as Operations and Management Consultant Manager, Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida.



Sylvia S. Roberts
MY COMMISSION # 00684057 EXPIRES
July 25, 2001
BONDED THRU TROY FARM INSURANCE, INC.

Sylvia S. Roberts
Notary Public, State of Florida

Print/Type Notary Name

Commission Number:

Commission Expires:

Approved as to Form and Legality

By: Angie Mc-10/9/00
DEP Attorney

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD

By: Michael Collins (SEAL)
MICHAEL COLLINS, CHAIRMAN,

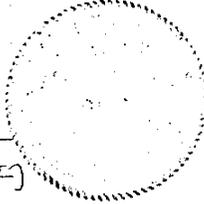
"DISTRICT"

CORPORATE SEAL

Attest:

[Signature]

Its: Asst. Secretary



Legal Form Approved By:

Helen G. Wells
South Florida Water
Management District Counsel

Date: 9/12/00

STATE OF FLORIDA
COUNTY OF PALM BEACH

The foregoing instrument was acknowledged before me this 26th day of September 2000, by Michael Collins and ANTHONY BURNS, as Chairman and Assistant Secretary, respectively, of the Governing Board of the South Florida Water Management District, on behalf of the corporation, who are personally known to me.

Liesette C. Sori
Notary Public, State of Florida

Print/Type Liesette C. Sori
Commission # CC 933741
Expires Aug. 24, 2004
Commission Number: Provided Through Atlantic Bonding Co., Inc.
Commission Expires:

STATE OF FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

Judith W. Poindexter
Witness

By: Sandra L. Porter (SEAL)

JUDITH W. POINDEXTER
Print/Type Witness Name

SANDRA L. PORTER
Type/Print Name

Brenda Collins
Witness

Its: Director, Division of
Administrative Services

Brenda Collins
Print/Type Witness Name

"LESSEE"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this
19th day of June, 2000, by Sandra L. Porter, as
* Dir. Div. of Admin. Services, State of Florida Fish and Wildlife
Conservation Commission, who is personally known to me or who has
produced _____ as identification.

* Delegated authority in
absence of Assistant
Executive Director.

Jimmie C. Bevis
Notary Public, State of Florida
JIMMIE C. BEVIS
Print/Type Notary Name

Commission Number: 122 Jimmie C. Bevis
AN COMMISSIONER LICENSE EXPIRES
December 28, 2001
Commission Expires:

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY
[Signature]
Commission Attorney

EXHIBIT "A"

LEGAL DESCRIPTION OF THE LEASED PREMISES

CHICAGO TITLE INSURANCE COMPANY

OWNERS FORM
SCHEDULE A

Office File Number	Policy Number	Date of Policy	Amount of Insurance
309705674	10-2132-106-000030	April 6, 1999 at 10:34 a.m.	\$4,386,000.00

1. Name of Insured:

THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA and SOUTH FLORIDA WATER MANAGEMENT DISTRICT, a public corporation of the State of Florida

2. The estate or interest in the land described herein and which is covered by this policy is:

Fee Simple

3. The estate or interest referred to herein is at Date of Policy vested in the insured.

4. The land herein described is encumbered by the following mortgage or trust deed, and assignments:

NONE

and the mortgages or trust deeds, if any, shown in Schedule B hereof:

5. The land referred to in this policy is described as follows:

PARCEL 22 - Martin County

A parcel of land lying in Sections 18, 19 and 30, Township 40 South, Range 41 East, Martin County, Florida and being more particularly described as follows:

That portion of Sections 18, 19 and 30, Township 40 South, Range 41 East, lying Easterly of the right of way of Seminole Pratt-Whitney Road (State Road 711). LESS AND EXCEPTING THEREFROM that certain parcel of land described in Official Records Book 596, page 2087, public records of Martin County, Florida.

TOGETHER WITH:

A parcel of land lying in Sections 18 and 19, Township 40 South, Range 41 East and Sections 13, 14, 15, 21, 22, 23, 24, 25 and 28, Township 40 South, Range 40 East, Martin County, Florida and being more particularly described as follows:

G:\OFFICE\CHICAGO\PRODC\MAC\CS705674.POL

CHICAGO TITLE INSURANCE COMPANY

OWNERS FORM
SCHEDULE A, continued

Policy Number:

The Southwest quarter of Section 13; the South half of Section 14; that portion of the West half of Section 15 lying South of Old Jupiter Road; the Southeast quarter of Section 15; the Southeast quarter of Section 21; all of Section 22, LESS that portion of the Northwest quarter North of Old Jupiter Road; all of Sections 23, 24 and 25, LESS AND EXCEPTING THEREFROM right of way of State Road 711; and the East quarter of Section 28; all located in Township 40 South, Range 40 East.

TOGETHER WITH that portion of Sections 18 and 19, Township 40 South, Range 41 East, lying Westerly and Northerly of the right of way of Seminole Pratt-Whitney Road (State Road 711).

TOGETHER WITH that part of Section 28, Township 40 South, Range 40 East contained in the following description:

Commencing at the Southwest corner of Section 33, Township 40 South, Range 40 East, thence Easterly along the South line of said Section 33, a distance of 1,770.18 feet, thence Northerly making an angle with the preceding course of $89^{\circ} 50' 15''$ measured from West to North, a distance of 141.42 feet, at a point in the Northerly right of way of State Road 706 (Indiantown Road). Said point also being the POINT OF BEGINNING and the Southwest corner of the hereinafter described parcel of land:

Thence continuing Northerly along the same course a distance of 8,141.00 feet; thence Easterly making an angle with the preceding course of $89^{\circ} 59' 15''$ measured from South to East, a distance of 2,243.41 feet; thence Southerly making an angle with the preceding course of $90^{\circ} 10' 00''$ measured from West to South, a distance of 8,141.65 feet to a point in said Northerly right of way of State Road 706; thence Westerly along said Northerly right of way line, a distance of 2,244.00 feet to the POINT OF BEGINNING of the herein described property.

TOGETHER WITH:

Land lying situate, and being in Martin County, Florida, being more particularly described as follows:

All of Sections 20 and 29 and those portions of Sections 18, 19 and 30 lying Easterly of a line which is 500 feet Easterly from, measured at right angles to, the Easterly right of way line of State Road 711, in Township 40 South, Range 41 East, and

C:\OFFICE\WORK\WFO\CS\W\1\0715174.POL

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FI, WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

LAN 06

30 October 2000

Mr. Mark Robson, Regional Director
Fish and Wildlife Conservation Commission
8535 Northlake Boulevard
West Palm Beach, FL 33412

Dear Mr. Robson: *MARK*

SUBJECT: Pal-Mar Management Lease

Enclosed is a copy of the executed management lease, dated October 6, 2000. Please note that it is a requirement of the lease that a management plan be submitted within one year of lease implementation. The District is identified in the lease as being responsible for those portions of the management plan dealing with hydrology and hydrologic restoration. It is District policy that management plans be submitted to our governing board for adoption.

We look forward to working with the Commission on development of the plan. Please let us know when the planning process will begin and how we can assist.

Sincerely,

William M. Helfferich
William M. Helfferich
Supervising Professional
Land Stewardship Department
Vegetation and Land Management Division
Water Resources Operations

c: Fred Davis
Bert Trammell

GOVERNING BOARD

Michael Collins, *Chairman*
Michael D. Minton, *Vice Chairman*
Mitchell W. Berger

Vera M. Carter
Gerardo B. Fernandez
Patrick J. Gleason

Nicolas J. Gutierrez, Jr.
Harkley R. Thornton
Trudi K. Williams

EXECUTIVE OFFICE

Frank R. Finch, P.E., *Executive Director*
James E. Blount, *Chief of Staff*



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

October 9, 2000

Mr. Fred Davis
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

REF: **Board of Trustees/South Florida Water Management
District-Florida Fish & Wildlife Conservation
Commission, Palmar (Trustees Lease No. 4271)**

Dear ^{Fred} Mr. Davis:

Enclosed for your file is a fully executed original of Lease Number 4271 between the Board of Trustees, South Florida Water Management District and the State of Florida Fish and Wildlife Conservation Commission. If you have any questions about the enclosure, call me at Suncom 278-2291.

Sincerely,

David Stevenson
Bureau of Public Land Administration
Mail Station 130

DS/ds
Enclosure

cc: Ms. Patti Doerr, Florida Fish and Wildlife Conservation Commission, with enclosure

RECEIVED

OCT 13 2000

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SAL3

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT
TRUST FUND OF THE STATE OF FLORIDA
7,741.04 Acres

LEASE AGREEMENT
PAL-MAR

Lease Number 4271

This lease is made and entered into this 6th day of October, 2000, between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, (as to its undivided 50% interest), hereinafter referred to as the "TRUSTEES", and the SOUTH FLORIDA WATER MANAGEMENT DISTRICT (as to its undivided 50 % interest), hereinafter referred to as the "DISTRICT", (the TRUSTEES and the DISTRICT are hereinafter collectively referred to as "LESSORS"), and the STATE OF FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, hereinafter referred to as "LESSEE".

WITNESSETH:

WHEREAS, the LESSORS hold title to certain lands and property being utilized by the State of Florida for public purposes, and

WHEREAS, the TRUSTEES are authorized in Section 253.03, Florida Statutes, to enter into leases for the use, benefit and possession of public lands by State agencies which may properly use and possess them for the benefit of the people of the State of Florida;

WHEREAS, the DISTRICT is empowered to enter into contracts with public agencies, private corporations or other persons, pursuant to Section 373.083(1), Florida Statutes;

NOW, THEREFORE, for and in consideration of the mutual covenants and agreements hereinafter contained, LESSORS lease

the below described premises to LESSEE subject to the following terms and conditions:

1. DELEGATIONS OF AUTHORITY: TRUSTEES' responsibilities and obligations herein shall be exercised by the Division of State Lands, Department of Environmental Protection.
2. DESCRIPTION OF PREMISES: The property subject to this lease, is situated in the County of Martin, 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 fifty years, commencing on October 5, 2000, and ending on October 4, 2050, 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 resource based public outdoor recreation which is compatible with the conservation and protection of these public lands, as set forth in subsection 259.032(11) and section AC 373.1391, Florida Statutes, along with other related uses necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 7 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 conformance with this lease.
7. MANAGEMENT PLAN: The LESSEE with the assistance from the DISTRICT shall prepare and submit a Management Plan for the leased premises, in accordance with Section 253.034, Florida Statutes, and subsection 18-2.021(4), Florida Administrative Code, within twelve months of the effective date of this lease. The DISTRICT shall specifically be responsible for the

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development of those portions of the Management Plan dealing with hydrology and hydrologic restoration. The Management Plan shall be submitted to LESSORS for approval through the Division of State Lands, Department of Environmental Protection, and for adoption by the DISTRICT'S Governing Board. 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 LESSORS until the Management Plan is approved. The Management Plan shall emphasize the original management concept as approved by LESSORS 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 the LESSEE, Acquisition and Restoration Council or its successor and LESSORS at least every five 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 LESSORS. 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.

8. RIGHT OF INSPECTION: LESSORS or their duly authorized agents shall have the right at any and all times to inspect the leased premises and the works and operations thereon of LESSEE, in any matter pertaining to this lease.

9. INSURANCE REQUIREMENTS: LESSEE shall procure and maintain fire and extended risk insurance coverage, in accordance with Chapter 284, F.S., for any buildings and improvements located on the leased premises by preparing and delivering to the Division of Risk Management, Department of Insurance, a completed Florida Fire Insurance Trust Fund Coverage Request Form and a copy of this lease immediately upon erection of any structures as allowed by paragraph 4 of this lease. A copy of said form and

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immediate notification in writing of any erection or removal of structures or other improvements on the leased premises and any changes affecting the value of the improvements shall be submitted to the following: Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000 and Procurement Division, SFWMD, Box 24680, West Palm Beach, FL 33461 .

10. LIABILITY: LESSEE shall assist in the investigation of injury or damage claims either for or against LESSOR or the State of Florida pertaining to LESSEE'S respective areas of responsibility under this lease or arising out of LESSEE'S respective management programs or activities and shall contact LESSORS regarding the legal action deemed appropriate to remedy such damage or claims. The LESSEE is responsible for all personal injury, bodily injury, and property damage attributable to the negligent acts or omissions of the LESSEE and its employees to the extent allowable under Section 768.28, Florida Statutes.

11. 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 Section 253.034, Florida Statutes, shall be reviewed by the Division of Historical Resources to insure that adequate measures have been planned to locate, identify, protect and preserve the archaeological and historic sites and properties on the leased premises.

12. EASEMENTS: All easements including, but not limited to, utility easements are expressly prohibited without the prior written approval of LESSORS. Any easements executed after the

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date of this agreement, which are not approved in writing by LESSORS, shall be void and without legal effect.

13. SUBLEASES: This lease is for the purposes specified herein and subleases of any nature are prohibited, without the prior written approval of LESSORS. Any sublease not approved in writing by LESSOR shall be void and without legal effect.

14. POST CLOSING RESPONSIBILITIES: In an effort to define responsibilities of the LESSORS and LESSEE with regard to resolving post closing management issues, the parties agree to the following:

a. After consultation with the LESSEE, LESSORS agree to provide the LESSEE with the title, survey and environmental products procured by the LESSORS, prior to closing.

b. LESSORS shall initiate surveying services to locate and mark boundary lines of specific parcels when necessary for immediate agency management and shall provide a boundary survey of the entire acquisition project at the conclusion of all acquisition within the project boundary. Provided, however, the LESSEE may request individual parcel boundary surveys, if necessary, prior to the conclusion of acquisition activities within the project boundaries.

c. Unless otherwise agreed to by LESSEE, LESSORS shall at their sole cost and expense, make a diligent effort to resolve all issues pertaining to all title defects, survey matters or environmental contamination associated with the leased premises, including but not limited to trash and debris, which were either known or should have been reasonably known by LESSORS at the time LESSORS acquired the leased premises.

Notwithstanding the foregoing, LESSORS shall not be responsible for any of LESSEE'S attorney's fees,

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costs, or liability or damages incurred by the LESSEE in resolving any issue in which the LESSEE is named as a party in any litigation or other legal or administrative proceeding.

- d. With regard to all title defects, survey matters, or environmental contamination associated with the leased premises which were not known or could not have been reasonably known by LESSORS at the time LESSORS acquired the leased premises, LESSORS and LESSEE agree to cooperate in developing an appropriate strategy for jointly resolving these matters. LESSORS acknowledge and understand that LESSEE is unable to commit any substantial amount of their routine operating funds for the resolution of any title defect, survey matter, or environmental contamination associated with the leased premises. Notwithstanding the foregoing, LESSORS will not be responsible for any of LESSEE'S attorney's fees, costs, or liability or damages incurred by the LESSEE in resolving any issue in which the LESSEE is named as a party in any litigation or other legal or administrative proceeding.

15. SURRENDER OF PREMISES: Upon termination or expiration of this lease, LESSEE shall surrender the leased premises to LESSORS. In the event no further use of the leased premises or any part thereof is needed, written notification shall be made to the Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and Land Stewardship Division, SFWMD, Box 24680 West Palm Beach, FL 33461, at least six months prior to the release of all or any part 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 LESSORS through execution of a release of lease instrument with the same

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formality as this lease. Upon release of all or any part of the leased premises or upon expiration or termination of this lease, all permanent improvements, including both physical structures and modifications to the leased premises, shall become the property of LESSORS, unless LESSORS give 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 LESSORS' 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 buildings on the leased premises shall be turned over to the Division. If the leased premises and improvements located thereon do not meet all conditions set forth in paragraphs 18 and 21 herein, LESSEE shall pay all costs necessary to meet the prescribed conditions.

16. BEST MANAGEMENT PRACTICES: LESSEE shall implement applicable Best Management Practices for all activities conducted under this lease in compliance with section 18-2.018(2)(h), Florida Administrative Code, which have been selected, developed, or approved by LESSORS, LESSEE or other land managing agencies for the protection and enhancement of the leased premises.

17. 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 5E-13, Florida Administrative Code, for the purpose of obtaining a public lands arthropod control plan for such lands.

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

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19. ASSIGNMENT: This lease shall not be assigned in whole or in part without the prior written consent of LESSORS. Any assignment made either in whole or in part without the prior written consent of LESSORS shall be void and without legal effect.

20. PLACEMENT AND REMOVAL OF IMPROVEMENTS: All buildings, structures, improvements, and signs shall be constructed at the expense of LESSEE. Removable equipment placed on the leased premises by LESSEE which does not become a permanent part of the leased premises shall remain the property of LESSEE and may be removed by LESSEE upon termination of this lease.

21. MAINTENANCE OF IMPROVEMENTS: LESSEE shall maintain the real property contained within the leased premises and any 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, maintaining all planned improvements as set forth in the approved Management Plan, meeting all building and safety codes in the location situated and maintaining any and all existing roads, canals, ditches, culverts, risers and the like in as good condition as the same may be at the 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.

22. ENTIRE UNDERSTANDING: This lease sets forth the entire understanding between the parties and shall only be amended with the prior written approval of LESSORS.

23. BREACH OF COVENANTS, TERMS, OR CONDITIONS: Should LESSEE breach any of the covenants, terms, or conditions of this lease, LESSORS shall give written notice to LESSEE to remedy such breach within sixty days of such notice. In the event LESSEE fails to remedy the breach to the satisfaction of LESSORS within

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sixty days of receipt of written notice, LESSORS may either terminate this lease and recover from LESSEE all damages LESSORS may incur by reason of the breach including, but not limited to, the cost of recovering the leased premises or maintain this lease in full force and effect and exercise all rights and remedies herein conferred upon LESSORS.

24. NO WAIVER OF BREACH: The failure of any party to this contract 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 and conditions, but the same shall continue in full force and effect, and no waiver of any party of any one of the provisions hereof shall in any event be deemed to have been made unless the waiver is set forth in writing, signed by all parties.

25. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the leased premises is held by LESSORS. LESSEE shall not do or permit anything which 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 LESSORS therein.

26. DAMAGE TO THE PREMISES: (a) LESSEE shall 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. (b) LESSEE shall not generate, store, produce, place, treat, release or discharge any contaminants, pollutants or pollution, including, but not limited to, hazardous or toxic substances, chemicals or other agents on, into, or from the leased premises in any manner not permitted by law. For the purposes of this lease, "hazardous substances" shall mean and include those elements or compounds defined in 42 USC Section 9601 or which are contained in the list of hazardous substances

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adopted by the United States Environmental Protection Agency (EPA) and the list of toxic pollutants designated by the United States Congress or the EPA or defined by any other federal, state or local statute, law, ordinance, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning any hazardous, toxic or dangerous waste, substance, material, pollutant or contaminant. "Pollutants" and "pollution" shall mean those products or substances defined in Chapters 376 and 403, Florida Statutes, and the rules promulgated thereunder, all as amended or updated from time to time. In the event of LESSEE'S failure to comply with this paragraph, LESSEE shall, at its sole cost and expense, promptly commence and diligently pursue any legally required closure, investigation, assessment, cleanup, decontamination, remediation, restoration and monitoring of (1) the leased premises, and (2) all off-site ground and surface waters and lands affected by LESSEE'S such failure to comply, as may be necessary to bring the leased premises and affected off-site waters and lands into full compliance with all applicable federal, state or local statutes, laws, ordinances, codes, rules, regulations, orders and decrees, and to restore the damaged property to the condition existing immediately prior to the occurrence which caused the damage. LESSEE'S obligations set forth in this paragraph shall survive the termination or expiration of this lease. Nothing herein shall relieve LESSEE of any responsibility or liability prescribed by law for fines, penalties and damages levied by governmental agencies, and the cost of cleaning up any contamination caused directly or indirectly by LESSEE's activities or facilities. Upon discovery of a release of a hazardous substance or pollutant, or any other violation of local, state or federal law, ordinance, code, rule, regulation, order or decree relating to the generation, storage, production, placement, treatment, release or discharge of any contaminant, LESSEE shall report such violation to all

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applicable governmental agencies having jurisdiction, and to LESSORS, all within the reporting periods of the applicable governmental agencies. LESSORS AND LESSEE acknowledge and agree that the property shall be used as a Wildlife Management Area, that such use may involve the discharge of firearms and that such use shall not constitute a violation of this paragraph or a breach of this agreement.

27. 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 drainage and special assessments or taxes of every kind and all mechanic's or materialman's liens which may be hereafter lawfully assessed and levied against the leased premises if such mechanic's or materialman's liens are due from the actions of LESSEE.

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

29. NON-DISCRIMINATION: No party shall hereto 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.

30. COMPLIANCE WITH LAWS: Parties agree 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

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United States or of any political subdivision or agency of either.

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

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

33. 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.

34. ADMINISTRATIVE FEE: LESSEE shall pay TRUSTEES an annual administrative fee of \$300. The initial annual administrative fee shall be payable within thirty days from the date of execution of this lease agreement and shall be prorated based on the number of months or fraction thereof remaining in the fiscal year of execution. For purposes of this lease agreement, the fiscal year shall be the period extending from July 1 to June 30. Each annual payment thereafter shall be due and payable on July 1 of each subsequent year.

35. LESSEE'S PROPERTY AT RISK: All of LESSEE'S personal property, equipment, and fixtures located upon the leased premises shall be at the sole risk of the LESSEE and the LESSORS shall not be liable under any circumstances for any damage thereto or theft thereof unless the damage or theft is due to the negligent acts or negligent omissions of the LESSORS or LESSORS' agents and then only to the extent permitted by law such damage or theft is directly caused by such negligent acts or negligent omissions. Nothing contained herein shall be construed, or is intended to expand the waiver of either party's sovereign immunity as limited by Section 768.28, Florida Statutes, or the liability of either party beyond that currently provided in Section 768.28, Florida Statutes.

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36. EXISTING INTERESTS IN LEASED PREMISES: Pursuant to Section 373.099, Florida Statutes, the DISTRICT does not warrant or represent that it has title to the leased premises. The LESSEE'S occupancy of the leased premises shall be subject to the rights of others, including but not limited to existing leases, subleases, easements, restrictions, reservations, and other encumbrances affecting the leased premises.

37. MISCELLANEOUS PROVISIONS:

a. Invalidity of Lease Provision: Should any term or provision of this lease be held, to any extent, invalid or unenforceable, as against any person, entity or circumstance during the term hereof, by force of any statute, law or ruling of any form of competent jurisdiction, such invalidity shall not affect any other term or provision of this lease, to the extent that the lease shall remain operable, enforceable and in full force and effect to the extent permitted by law.

b. Inconsistencies: In the event any provisions of this lease shall conflict, or appear to conflict, the lease, including all exhibits, attachments and all documents specifically incorporated by reference, shall be interpreted as a whole to resolve any inconsistency.

c. Final Agreement: This lease states the entire understanding between the parties hereto and supersedes any written or oral representations, statements, negotiations, or agreements to the contrary. The LESSEE recognizes that any representations, statements or negotiations made by LESSORS' staff do not suffice to legally bind the LESSORS in a contractual relationship unless they have been reduced to writing, authorized, and signed by an authorized representative of the LESSORS. This lease shall bind the parties, their assigns, and successors in interest.

d. Survival: The provisions of paragraphs 14, 26, and

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37(e) shall survive the expiration or termination of this lease. In addition, any covenants, provisions or conditions set forth in this lease which by their terms bind the LESSEE or both the LESSORS and the LESSEE after the expiration or termination of this lease, shall survive the expiration or termination of this lease.

e. Waiver of Trial by Jury Provision: As an inducement to the LESSORS agreeing to enter into this lease, the TRUSTEES, DISTRICT, and LESSEE hereby waive trial by jury in any action or proceeding brought by one party against another party pertaining to any matter whatsoever arising out of or in any way connected with this lease or the LESSEE'S occupancy of the leased premises.

f. Incorporation of Pal-Mar CARL Acquisition Agreement: The Pal-Mar CARL Acquisition Project Agreement of July 10, 1995, as amended, is hereby incorporated into this lease agreement, by reference, and made a part 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

Judy Woodard
Witness

Judy Woodard
Print/Type Witness Name

Florence Davis
Witness

Florence Davis
Print/Type Witness Name

By: Gloria C. Nelson (SEAL)
Gloria C. Nelson, Operations
And Management Consultant
Manager, Bureau of Public Land
Administration, Division of
State Lands, Department of
Environmental Protection

"TRUSTEES"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 16th day of October, 2000, by Gloria C. Nelson, as Operations and Management Consultant Manager, Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida.



Sylvia S. Roberts
MY COMMISSION # 00684027 EXPIRES
July 25, 2001
BONDED THRU TROY FARM INSURANCE, INC.

Sylvia S. Roberts
Notary Public, State of Florida

Print/Type Notary Name

Commission Number:

Commission Expires:

Approved as to Form and Legality

By: Angie Mc-10/9/00
DEP Attorney

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD

By: Michael Collins (SEAL)
MICHAEL COLLINS, CHAIRMAN,

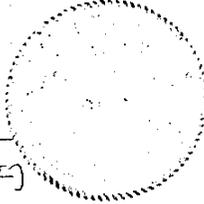
"DISTRICT"

CORPORATE SEAL

Attest:

[Signature]

Its: Asst. Secretary



Legal Form Approved By:

Heidi G. Walter
South Florida Water
Management District Counsel

Date: 9.12.00

STATE OF FLORIDA
COUNTY OF PALM BEACH

The foregoing instrument was acknowledged before me this 26th day of September 2000, by Michael Collins and Heidi G. Walter as Chairman and Assistant Secretary, respectively, of the Governing Board of the South Florida Water Management District, on behalf of the corporation, who are personally known to me.

Liesette C. Sori
Notary Public, State of Florida

Print/Type Liesette C. Sori
Commission # CC 933741
Expires Aug. 24, 2004
Commission Number: Provided Through Atlantic Bonding Co., Inc.
Commission Expires:

STATE OF FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

Judith W. Poin Dexter
Witness

By: Sandra L. Porter (SEAL)

JUDITH W. POIN DEXTER
Print/Type Witness Name

SANDRA L. PORTER
Type/Print Name

Brenda Collins
Witness

Its: Director, Division of
Administrative Services

Brenda Collins
Print/Type Witness Name

"LESSEE"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this
19th day of June, 2000, by Sandra L. Porter, as
* Dir. Div. of Admin. Services, State of Florida Fish and Wildlife
Conservation Commission, who is personally known to me or who has
produced _____ as identification.

* Delegated authority in
absence of Assistant
Executive Director.

Jimmie C. Bevis
Notary Public, State of Florida
JIMMIE C. BEVIS

Print/Type Notary Name

Commission Number: _____

Jimmie C. Bevis
AN COMMISSIONER'S LICENSE EXPIRES
December 28, 2001
REVISED PROVISIONS TO COMMISSIONING

Commission Expires: _____

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY
[Signature]
Commission Attorney

EXHIBIT "A"

LEGAL DESCRIPTION OF THE LEASED PREMISES

CHICAGO TITLE INSURANCE COMPANY

OWNERS FORM
SCHEDULE A

Office File Number	Policy Number	Date of Policy	Amount of Insurance
309705674	10-2132-106-000030	April 6, 1999 at 10:34 a.m.	\$4,386,000.00

1. Name of Insured:

THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA and SOUTH FLORIDA WATER MANAGEMENT DISTRICT, a public corporation of the State of Florida

2. The estate or interest in the land described herein and which is covered by this policy is:

Fee Simple

3. The estate or interest referred to herein is at Date of Policy vested in the insured.

4. The land herein described is encumbered by the following mortgage or trust deed, and assignments:

NONE

and the mortgages or trust deeds, if any, shown in Schedule B hereof:

5. The land referred to in this policy is described as follows:

PARCEL 22 - Martin County

A parcel of land lying in Sections 18, 19 and 30, Township 40 South, Range 41 East, Martin County, Florida and being more particularly described as follows:

That portion of Sections 18, 19 and 30, Township 40 South, Range 41 East, lying Easterly of the right of way of Seminole Pratt-Whitney Road (State Road 711). LESS AND EXCEPTING THEREFROM that certain parcel of land described in Official Records Book 596, page 2087, public records of Martin County, Florida.

TOGETHER WITH:

A parcel of land lying in Sections 18 and 19, Township 40 South, Range 41 East and Sections 13, 14, 15, 21, 22, 23, 24, 25 and 28, Township 40 South, Range 40 East, Martin County, Florida and being more particularly described as follows:

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CHICAGO TITLE INSURANCE COMPANY

OWNERS FORM
SCHEDULE A, continued

Policy Number:

The Southwest quarter of Section 13; the South half of Section 14; that portion of the West half of Section 15 lying South of Old Jupiter Road; the Southeast quarter of Section 15; the Southeast quarter of Section 21; all of Section 22, LESS that portion of the Northwest quarter North of Old Jupiter Road; all of Sections 23, 24 and 25, LESS AND EXCEPTING THEREFROM right of way of State Road 711; and the East quarter of Section 28; all located in Township 40 South, Range 40 East.

TOGETHER WITH that portion of Sections 18 and 19, Township 40 South, Range 41 East, lying Westerly and Northerly of the right of way of Seminole Pratt-Whitney Road (State Road 711).

TOGETHER WITH that part of Section 28, Township 40 South, Range 40 East contained in the following description:

Commencing at the Southwest corner of Section 33, Township 40 South, Range 40 East, thence Easterly along the South line of said Section 33, a distance of 1,770.18 feet, thence Northerly making an angle with the preceding course of $89^{\circ} 50' 15''$ measured from West to North, a distance of 141.42 feet, at a point in the Northerly right of way of State Road 706 (Indiantown Road). Said point also being the POINT OF BEGINNING and the Southwest corner of the hereinafter described parcel of land:

Thence continuing Northerly along the same course a distance of 8,141.00 feet; thence Easterly making an angle with the preceding course of $89^{\circ} 59' 15''$ measured from South to East, a distance of 2,243.41 feet; thence Southerly making an angle with the preceding course of $90^{\circ} 10' 00''$ measured from West to South, a distance of 8,141.65 feet to a point in said Northerly right of way of State Road 706; thence Westerly along said Northerly right of way line, a distance of 2,244.00 feet to the POINT OF BEGINNING of the herein described property.

TOGETHER WITH:

Land lying situate, and being in Martin County, Florida, being more particularly described as follows:

All of Sections 20 and 29 and those portions of Sections 18, 19 and 30 lying Easterly of a line which is 500 feet Easterly from, measured at right angles to, the Easterly right of way line of State Road 711, in Township 40 South, Range 41 East, and

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Revised 2/22/2000

CHICAGO TITLE INSURANCE COMPANY

OWNERS FORM
SCHEDULE A, continued

Policy Number:

Commencing at the Southwest corner of Section 30; thence North 0° 35' 0" West along the West line of said Section 30 and the center line of a 200 foot right of way for the Pratt & Whitney Road which is designated State Road 711, as now laid out and in use, a distance of 2,480 feet to the center line of a canal M-1-Q; thence North 89° 25' 0" East along said canal center line, a distance of 100 feet to the East line of said 200 foot road right-of way and to the Point of Beginning; thence North 0° 35' 0" West along the said East right of way line a distance of 250 feet; thence North 89° 25' 0" East a distance of 500 feet to the boundary of the parcel described above; thence South 0° 35' 0" East a distance of 500 feet along the boundary of the parcel described in the paragraph above; thence South 89° 25' 0" West a distance of 500 feet to the East line of the right of way line of State Road 711; thence North 0° 35' 0" West along said Easterly right of way line of State Road 711 a distance of 250 feet to the center line of canal M-1-Q and to the Point of Beginning.

PARCEL 23

A parcel of land lying in Sections 23, 24 and 25, Township 40 South, Range 39 East and Section 18, Township 40 South, Range 40 East, Martin County, Florida and being more particularly described as follows:

The North half (N 1/2) of said Section 18 lying South of the Old Jupiter Grade, LESS AND EXCEPTING THEREFROM the West 150 feet of said Section; Together with the East half (E 1/2) of said Section 23 lying North of State Road 710; Together with all of said Section 24 lying North of State Road 710, LESS AND EXCEPTING THEREFROM the North one quarter (N 1/4) of said Section; Together with all of said Section 25 lying North of State Road 710.

This Policy is valid only if Schedule B is attached

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13.2 Public input

13.2.1 Management Advisory Group Meeting Results

**John C. and Mariana Jones/Hungryland Wildlife and Environmental Area
(JCMJHWEA)
Management Advisory Group (MAG)
Consensus Meeting Results**

November 7, 2012 in Jensen Beach, Florida

The intent of convening a consensus meeting is to involve a diverse group of stakeholders in assisting the Florida Fish and Wildlife Conservation Commission (FWC) in development of a **rational management concept for lands within the agency’s managed area system**. FWC does this by asking spokespersons for these stakeholders to participate in a half-day meeting to provide ideas about how FWC-managed lands should be protected and managed.

The JCMJHWEA consensus meeting was held on the morning of November 7, 2012 at **Indian River Side Park’s Mansion at Tuckahoe, in Jensen Beach, Florida in Martin County**. The ideas found below were provided by stakeholders for consideration in the 2013 - 2023 Management Plan (MP) for JCMJHWEA with priority determined by vote. These ideas represent a valuable source of information to be used by biologists, planners, administrators, and others during the development of the MP. Upon approval by FWC, the Acquisition and Restoration Council (ARC), and the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), the JCMJHWEA MP will guide the activities of FWC personnel over the ten-year duration of the management plan and will help meet agency, state, and federal planning requirements.

Numbers to the left of **bold-faced ideas** listed below represent the total number of votes and the score of each idea. Rank is first determined by the number of votes (vote cards received for each idea) and then by score. Score is used to break ties when two or more ideas have the same number of votes. A lower score indicates higher importance because **each voter’s most important idea (recorded on card #1) received a score of 1**, and their fifth most important idea (recorded on card #5) received a score of 5. Ideas not receiving any votes are listed, and were considered during the development of the MP, but carry no judgment with regard to priority.

Statements following the bold-faced ideas represent a synopsis of the clarifying discussion of ideas as transcribed and interpreted by the FWC recorder at the meeting. As indicated above, the ideas below are presented in priority order:

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
1.	[13]	[22]	1. Bring area into 3-4 year burn rotation and considering burn season and mechanical removal of palmetto as preparation. Three years is a good goal for burn rotation, some areas have not been burned at this time.
2.	[11]	[24]	11. Get the water right. Coordinate with other adjacent public areas and conduct hydrological study. The hydrology of the area needs to be understood and maintained/restored appropriately.

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
3.	[8]	[28]	18. Educate the public including adding signage and clarifying public use rules. Self explanatory
4.	[7]	[19]	4. Continue to be aggressive with exotic vegetative removal. Property is in pretty good shape; we need to keep it that way.
5.	[5]	[16]	22. Provide more interior road access for hunting and safety. Provide road access for emergencies and for removal of game.
6.	[5]	[20]	17. Provide linkage and coordinate with adjacent native areas. The public does not care who the manager is. To the public its all public lands.
7.	[4]	[10]	26. Increased Law Enforcement capability. There is just not enough law enforcement presence in the area. Need more boots on the ground.

Two items of equal rank:

T8.	[3]	[11]	24. Control litter and vandalism including controlling vehicle access. Self explanatory.
T8.	[3]	[11]	33. Coordinate user group activity. Different user groups are using the property at the same time. Horses are off the trail during hunting season. It could become a safety issue. Groups need to be coordinated.
10.	[2]	[6]	2. Conduct cultural resource survey. We need to be proactive and identify the cultural resources we have on site. If we have interpretive sites it will help people to identify with the area.

Two items of equal rank:

T11.	[2]	[8]	5. Delineate boundaries between Hungryland WEA and private property. We need to have signage on our boundaries and possibly fire breaks. This would make law enforcement's job much easier.
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<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
T11.	[2]	[8]	8. Coordinate and clarify management responsibility. The area can be confusing to the general public and it is not clear to the various agencies what each of their management responsibilities are.
13.	[2]	[10]	10. Open access for general public. Maintain open access for the general public as much as possible.

Two items of equal rank:

T14.	[1]	[2]	6. Manage for and restore native plants. Self explanatory.
T14.	[1]	[2]	14. Integrate exotic control and fire programs. The programs need to be talking to each other.
16.	[1]	[3]	12. Youth hunt program. The area has a hog problem. Youth hunts should be used as a method to help reduce the hog population.

Five items of equal rank:

T17.	[1]	[5]	9. Timber management. Timber management is overlooked as a tool to help improve habitat management.
T17.	[1]	[5]	13. Maintain the integrity of water infrastructure of 298 Conservancy District. This is a safety issue. Maintain the infrastructure that is in place.
T17.	[1]	[5]	15. Coordinate with other existing management plans. Self explanatory.
T17.	[1]	[5]	30. Public outreach for management activities. We need to educate the public to what we do.
T17.	[1]	[5]	34. Develop non-profit "Friends" volunteer group. Such a group could help with funding and provide volunteers to assist with management activities.

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
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The following item received no votes. All ideas represent valuable input, and are considered in development of the JCMJHWEA MP, but carry no rank with regard to the priority perceptions of the MAG.

- 3. **Manage and improve habitat for imperiled species.** Self explanatory
- 7. **Improve trail maintenance.** Trails need to be maintained to keep horses from tripping. Safety issue for horse and rider. Improve access for equestrian users.
- 23. **Aggressively optimize the footprint.** Need to acquire more property to aid in management.
- 32. **Develop funding prospectus.** We need to look for other funding sources.
- 36. **Investigate commercial opportunities to generate revenue.** Possibly guided hunts or user fees.
- 37. **Manage game species appropriately.** Make sure the area is promoted and managed for the species. Until the area is brought back into a healthy burn rotation, more liberal harvests may be appropriate.

**John C. and Mariana Jones/Hungryland Wildlife and Environmental Area
MAG Meeting Participants**

Name

Affiliation

Active Participants

Pamela Boody	FWC Habitat and Species Conservation (HSC), Area Biologist
Lt. Mike Orndol	FWC Law Enforcement
Commissioner Patrick Hayes	Martin County Commissioner
Derek Alkire	National Wild Turkey Federation
John Marshall	Florida Forest Service
Bryan Davis	Palm Beach County Planning Department
Robert Pelio	Palm Beach Hounds
Jeff Schmidt	Natural Resources Conservation Service
Mike Melton	Treasure Coast 15k Sailfish Striders
Jim Schuette	South Florida Water Management District
Kraig Krum	Palm Beach County Environmental Resources Mgmt
Bill Miller	US Fish and Wildlife Service (USFWS)
Lynn Sweetay	Florida Native Plant Society
Jason Pierman	Hobe-St. Lucie Conservation District
Paul Hickman	Florida Sportsmen’s Conservation Association
Baret Barry	Martin County Engineering Department

Supportive Participants

Michael Anderson	FWC HSC, Regional Biologist
Linda King	FWC HSC, District Biologist
Lindsay Nester	FWC HSC, Conservation Biologist
Richard Noyes	FWC Office of Public Access and Wildlife Viewing Services (OPAWVS)
Tom M. Matthews	FWC OPAWVS
Ray Woolrich	FWC Law Enforcement
Wesley Seitz	FWC Hunting and Game Management
Michael Yustin	Martin County Engineering Department

Invited but Unable to Attend

Fran Stewart	Martin County Audubon Society
Mike Wisenbaker	Division of Historical Resources
Jorge Gutierrez	Everglades Coordinating Council
Ernest Cowan	Department of Environmental Protection, Jonathan Dickinson State Park
Vickie Lambie	Florida Trails Association
Dan Hipes	Florida Natural Areas Inventory
Commissioner Karen Marcus	Palm Beach County Commissioner
Ruth Haggerty	Acreage Horseman’s Association
Todd Kersey	Angling Stakeholder
Tom McWatters	Florida Sportsman Conservation Association
Chuck Russo	Landowner

FWC Planning Personnel

Michael Hallock-Solomon
Tom Houston
Gary Cochran

Meeting facilitator
Recorder
FWC HSC, Land Conservation and Planning
Administrator

13.2.2 Public Hearing Notice and Press Release

NOTICE

The Florida Fish and Wildlife Conservation Commission (FWC)
Announces Two

PUBLIC HEARINGS

For the

FWC Lead Managed Portions of
John C. and Mariana Jones/Hungryland
Wildlife and Environmental Area
Management Plan

Martin and Palm Beach Counties, Florida

7:00 P.M. Wednesday, January 9, 2013
Palm Beach County Commission Chambers
301 N. Olive Ave
West Palm Beach, FL. 33401

7:00 P.M. Thursday, January 10, 2013
Martin County Commission Chambers
2401 SE Monterey Drive
Stuart, FL 34996

PURPOSE: To receive public comment regarding considerations for the FWC ten-year Land Management Plan for the FWC Lead Managed Portions of John C. and Mariana Jones/Hungryland Wildlife and Environmental Area (WEA). This hearing is being held **EXCLUSIVELY** for discussion of the **DRAFT** John C. and Mariana Jones/Hungryland WEA Management Plan. This meeting is not being held to discuss area hunting or fishing regulations. For more information on the process for FWC rule and regulation development go online to: myfwc.com/about/rules-regulations/rule-changes/ or call (850) 487-1764.

A Management Prospectus for the John C. and Mariana Jones/Hungryland WEA is available upon request. For a copy, please contact Rebecca Shelton, Florida Fish and Wildlife Conservation Commission, Land Conservation and Planning, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Telephone: (850) 487-9982.

For immediate release: December 14, 2012
Contact: Carli Segelson, (561) 882-5703

Public hearing to outline 10-year management plans for FWC Lead Managed Portions of John C. and Mariana Jones/Hungryland Wildlife and Environmental Area

The Florida Fish and Wildlife Conservation Commission (FWC) will hold two public hearings in Martin and Palm Beach Counties to present the 10-year draft land management plan for the FWC Lead Managed Portions of John C. and Mariana Jones/Hungryland Wildlife and Environmental Area (WEA). The first meeting will be held on January 9, 2013 starting at 7 p.m. at the Palm Beach County Commission Chambers, 301 N. Olive Ave, West Palm Beach, FL. 33401. The second meeting will be held on January, 10, 2013 starting at 7:00pm at the Martin County Commission Chambers, 2401 SE Monterey Drive, Stuart, Fl 34996.

After the presentation, the public is encouraged to comment and ask questions about the specifics in the draft plan.

All lands purchased with public funds must have a management plan that ensures the property will be managed in a manner that is consistent with the intended purposes of the purchase.

“John C. and Mariana Jones/Hungryland WEA was purchased in order to ensure the preservation of fish and wildlife resources, other natural and cultural resources, and for fish and wildlife-based public outdoor recreation,” said Rebecca Shelton, FWC land conservation biologist. “This draft plan will specify how we intend to do that.”

She added that hunting and fishing regulations are not included in this plan or meeting; those are addressed through a separate public process.

To obtain a copy of the draft land management prospectus for John C. and Mariana Jones/Hungryland WEA please call Rebecca Shelton at 850-487-9982 or David Alden at 850-487-9588, or email Rebecca.Shelton@MyFWC.com.

For background on [management plans](#) and their goals, visit MyFWC.com/Conservation and select “Terrestrial Programs” then “Management Plans” for more information.

RS/HSC

13.2.3 Martin County Public Hearing Report

PUBLIC HEARING REPORT
FOR THE
HUNGRYLAND WILDLIFE AND ENVIRONMENTAL AREA
MANAGEMENT PLAN
HELD BY THE
HUNGRYLAND WEA MANAGEMENT ADVISORY GROUP
AND THE
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
JANUARY 10, 2013 – MARTIN COUNTY, FLORIDA

The following report documents the public input that was received at the Hungryland Wildlife and Environmental Area (HWEA) Management Advisory Group's (MAG) Public Hearing for the Draft HWEA Management Plan for that was held at 7:00-9:00 PM, on January 10, 2013, at the Martin County Commission Chambers in Stuart, Florida.

HWEA Management Advisory Group Introduction:

The meeting was introduced by Mr. Mike Melton, a HWEA MAG participant, who represented the Marathon Stakeholder group. Mr. Melton indicated that he was one of sixteen stakeholders that attended the Florida Fish and Wildlife Conservation Commission (FWC) facilitated MAG meeting held on November 7, 2012. Mr. Melton stated that the draft Management Plan was being presented tonight by FWC staff, and that hardcopies of the draft plan and the MAG meeting report were available at the front door for the public's review. Mr. Melton thanked everyone for attending and then introduced FWC staff member Mr. Gary Cochran, Land Conservation and Planning Administrator, FWC, to facilitate and coordinate the presentation of an overview of HWEA; FWC's planning process, and the draft components of the Management Plan.

Presentation on an Overview of HWEA and the FWC Planning Process: Mr. Cochran welcomed everyone and thanked the public for their attendance. Mr. Cochran then went over an orientation of the material and explained that the purpose of the public hearing was to solicit public input regarding the draft Management Plan for HWEA, and not hunting and fishing regulations, indicating there is a separate public input process for FWC rule and regulation development. Mr. Cochran then described the materials that were available at the door for public review, including the draft Management Plan and the HWEA MAG Meeting Report and Accomplishment Report. Mr. Cochran then presented the agenda for the public hearing and facilitated the introduction of all FWC staff in attendance to the audience. Mr. Cochran then presented an overview and orientation of HWEA, including a description of the natural communities, data about park visitors, money generated for the state by the park, wildlife species, recreational opportunities found on the

area, surrounding conservation lands, surrounding Florida Forever lands, acquisition history, etc. He also explained FWC's planning process and asked if there were any questions regarding that process.

Questions, Answers and Discussion on the HWEA Overview and FWC's Planning

Process: Mr. Cochran facilitated an informal question and answer session where members of the public in attendance, without necessarily identifying themselves, could ask questions of the FWC staff, and discuss the answers. Mr. Cochran again emphasized that the exclusive purpose for the public hearing was to collect public input regarding the draft Management Plan for HWEA, and not to discuss area hunting, fishing and use regulations.

Presentation of the HWEA Draft Management Plan

At this point, Ms. Pam Boody, the HWEA Area Biologist/Manager provided the presentation of the draft management plan. Ms. Boody, the Area Biologist then completed and concluded the presentation of the HWEA Draft Management Plan.

Questions and Comments on the HWEA Draft Management Plan Presentation

Mr. Cochran encouraged everyone to fill out a speaker card for public testimony. He informed them that all cards will be considered uniformly.

Public Question: An anonymous gentleman had a question regarding challenge number 8. He wanted to know how we would pursue funding for increased law enforcement.

FWC Response: Mr. Cochran informed the gentleman that they'll mention it in the plan, recommend it through the agency, and through their upper-level management, like they do with their other areas. Mr. Cochran informed the gentleman that this sort of issue gets brought up in the legislative appropriation budget request and that is where the determination will be when the proposed budget gets brought to the Florida Legislature and it will be the decision of the Florida Legislature if they provide additional funding for staffing.

Public Question: An anonymous gentleman wanted to know why we couldn't move law enforcement from the water to monitor what's happening on dry land, for purposes like this. He said that just because their money comes from the ocean and the water, doesn't mean the state of Florida doesn't have responsibility to provide aid and protection to natural resources. He understands that there are only so many law enforcement officers and there's a large area for them to monitor, yet they need more officers for both water and dry land.

FWC Response: Mr. Cochran indicated that FWC has a responsibility to patrol the land and waters of Florida and that the agency attempts to maintain a good effective balance of both.

Public Testimony on the HWEA Draft Management Plan: No members of the public audience submitted speaker cards indicating their intention to provide formal public testimony. Mr. Cochran again emphasized that the public hearing was for taking input regarding the HWEA Draft Management Plan, and asked if anyone wanted to make provide any public testimony and fill out a speaker card after the meeting.

Adjournment: Mr. Cochran asked if there were any other members of the public that wished to give public testimony. None was offered. Mr. Cochran then declared the public hearing adjourned.

13.2.4 Palm Beach County Public Hearing Report

PUBLIC HEARING REPORT
FOR THE
HUNGRYLAND WILDLIFE AND ENVIRONMENTAL AREA
MANAGEMENT PLAN
HELD BY THE
HUNGRYLAND WEA MANAGEMENT ADVISORY GROUP
AND THE
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
JANUARY 9, 2013 – PALM BEACH COUNTY, FLORIDA

The following report documents the public input that was received at the Hungryland Wildlife and Environmental Area (HWEA) Management Advisory Group's (MAG) Public Hearing for the the HWEA Draft Management Plan that was held at 7:00-9:00 PM, on January 9, 2013, at the Palm Beach County Commission Chambers in West Palm Beach, Florida.

HWEA Management Advisory Group Introduction:

The meeting was introduced by Mr. Mike Melton, a HWEA MAG participant, who represented the Marathon stakeholder group. Mr. Melton indicated that he was one of sixteen stakeholders that attended the Florida Fish and Wildlife Conservation Commission (FWC) facilitated MAG meeting held on November 7, 2012. Mr. Melton stated that the draft Management Plan was being presented tonight by FWC staff, and that hardcopies of the draft plan and the MAG meeting report were available at the front door for the public's review. Mr. Melton thanked everyone for attending and then introduced FWC staff, Mr. Gary Cochran, Land Conservation Planner Administrator, FWC, to facilitate and coordinate the presentation of an overview of HWEA; FWC's planning process, and the draft components of the Management Plan.

Presentation on an Overview of HWEA and the FWC Planning Process: Mr.

Cochran welcomed everyone and thanked the public for their attendance. Mr. Cochran then went over an orientation of the material and explained that the purpose of the public hearing was to solicit public input regarding the draft Management Plan for HWEA, and not hunting and fishing regulations, indicating there is a separate public input process for FWC rule and regulation development. Mr. Cochran then described the materials that were available at the door for public review, including the draft Management Plan and the HWEA MAG Meeting Report and Accomplishment Report. Mr. Cochran then presented the agenda for the public hearing and facilitated the introduction of all FWC staff in attendance to the audience. Mr. Cochran then presented an overview and orientation of HWMA, including a description of the natural communities, data about park visitors, money

generated for the state by the park, wildlife species, recreational opportunities found on the area, surrounding conservation lands, surrounding Florida Forever lands, acquisition history, etc. He also explained FWC's planning process and asked if there were any questions regarding that process.

Questions, Answers and Discussion on the HWEA Overview and FWC's Planning

Process: Mr. Cochran facilitated an informal question and answers session where members of the public in attendance, without necessarily identifying themselves, could ask questions of the FWC staff, and discuss the answers. Mr. Cochran again emphasized that the exclusive purpose for the public hearing was to collect public input regarding the draft Management Plan for HWEA, and not to discuss area hunting, fishing and use regulations.

Presentation of the HWEA Draft Management Plan

At this point, Ms. Pam Boody, the HWEA Area Biologist/Manager provided the presentation of the draft management plan. Ms. Boody, the Area Biologist then completed and concluded the presentation of the HWEA Draft Management Plan.

Questions and Comments on the HWEA Draft Management Plan Presentation

Mr. Gary Cochran encouraged everyone to fill out a speaker card for public testimony. He informed them that all cards will be considered equally.

Public Question: An anonymous gentleman asked about wild hogs being exotic species and what FWC is planning to do about them.

FWC Response: Mr. Cochran informed him that right now, hunting is their primary means of dealing with the hogs.

Public Question: The same anonymous gentleman also asked about their timetable for restoring the disturbed areas on Hungryland, or more specifically the Mitigation Bank.

FWC Response: Mr. Cochran informed the gentleman that there is a proposal and approval for a mitigation bank (Lemon Wetlands Mitigation Bank) for that area. Mr. Cochran informed him that the goal will be to restore it but the reason we have not done any restoration since that area was acquired was because of prior reserved rights for mitigation which prevented us from moving forward and once that's resolved we should have a clear path. Mr. Cochran informed him that at this date, the mitigation bank is not implemented or operational for that area. He explained that there was a statutory change in legislation last year prohibiting mitigation banks on public lands and it's always been a state policy to not allow mitigation banks but that since the law was passed after the rights were reserved the mitigation bank may still continue on the area. Mr. Cochran informed him that in this particular case there were rights reserved by the owners of the land at that time which resulted in an attempt to pursue a wetlands mitigation bank. Prior to legislature, recently

implementing prohibition on mitigation banks on public land, the plan was that through the development operation of the mitigation bank, the area would be restored. Now, it is uncertain if that is going to occur. Mr. Cochran informed him that FWC hasn't had the formal notice of that yet, but once we formally establish whether that contract is still viable, then we will start developing our own plan but that they cannot move forward until the legal issues have been resolved.

Public Question: The same gentleman then wanted to know if there were any access points in that area.

FWC Response: Ms. Boody informed him that there is only one access point and it's through road 7 south.

Public Question: An anonymous woman asked about 'the removal of some levees' and what exactly that meant.

FWC Response: Mr. Cochran informed her that what this is referring to is the overall, Comprehensive Everglades Restoration Plan which covers the entire Everglades Basin in south Florida and under that plan there's an indication that some of those levees might be restored. Mr. Cochran informed her that the levees are on the William H. Lee unit which is on the overall Hungryland WEA land but part of the cooperative area and is not part of the area FWC has lead management authority on; so Martin County will be the primary manager of any restoration there since they own title to those lands. There are no immediate plans that FWC is aware of to undertake any action on the levees.

Public Testimony on the HWEA Draft Management Plan: Nine members of the public audience submitted speaker cards indicating their intention to provide formal public testimony. Mr. Gary Cochran again emphasized that the public hearing was for taking input regarding the HWEA Draft Management Plan, and called the first speaker to the podium.

Public Testimony Comment: Mr. Bill Imboden, a member of the Florida Sportsman Association in West Palm Beach made the comment that he wants the agency to provide a broader range of recreational opportunities on the management area. One idea is to spread out this pressure from existing areas to improve the quality of the experience.

Public Testimony Comment: Mr. Joseph Cawthon made the comment that he believes that there needs to be increased recreational opportunities and the recreational pressure that's being put on a certain areas should be spread out more.

Public Testimony Comment: Mr. Newton Cook, a member of the United Water Fowlers of Florida and Future Hunting in Florida spoke. Mr. Cook made the comment that almost 12

years ago the first public meeting he attended on hunting access and conservation was for Hungryland. At that time, he was not very impressed with the area because the land was not very well developed for those recreational activities. Since then, he said that the area has changed tremendously for hunting, hiking, angling, equestrian riding, etc and he is thrilled with the results. Mr. Cook made the comment that he wants to thank everyone who was involved. Now, he believes that the issue is the ability to move around the area, hunters are having a hard time because there's a three hour drag on anything taken back in that area. He said that he believes they need help when it comes to being able to move around within the Hungryland. Otherwise, hogs are there, people can take their guns and go out any time and go hog hunting. There are plenty of hikers, campers, fishers, etc and it's a wonderful example of what you can do with a piece of public land. So he wants to thank everyone who is involved.

Public Testimony Comment: Mr. Bob Berman, President of Palm Beach Heights Landowners Coalition and a real estate broker. Mr. Berman made the comment that adjacent to Hungryland area is Palm Beach heights subdivision and he either personally owns or controls 1500 of those acres. He represents, either through the coalition or the realty company, approximately 3000 owners of lots in the area. Mr. Berman made the comment that he appreciates the information that was distributed in advance for this meeting because it was good to see that the issue that he had was addressed in the planning process. He was unaware of the MAG meeting in November but said it was encouraging that in the scoring system his issue was one of the major issues discussed which was the issue of delineating the boundaries between Hungryland WEA and private property. The response was that they needed signage on boundary line which would make Law Enforcement's job much easier. He said that the reason he was there at the hearing was because of what he's seen over the past four or five years, which was accidental trespassing by people utilizing Hungryland area and not knowing they wandered into private property. He's here to tonight to request the area needs additional signage, fences, and fire breaks that need to be maintained. And also he believes that through increased use of Hungryland, there will probably be additional instances of accidental trespassing. So as either part of plan or another project he requests that there will be an increased effort to clearly mark boundaries to inform people that they're leaving the Hungryland area and entering private property.

Public Testimony Comment: Mr. Stephen Cawthon stated he does not have anything to say at the time.

Public Testimony Comment: Mr. Eric Martin stated that he agrees with Mr. Berman that HWEA does need better signage on the area so people are not trespassing. He was hoping to maybe open up better public access where it's easier to get in and out of certain areas. He said that he agrees with everything going on.

Public Testimony Comment: Mr. Coleman Baker stated he had nothing to add at the time.

Public Testimony Comment: Mr. Bishop Wright Jr stated that he thinks HWEA is a wonderful area that gets a lot of traditional use. He said that he's pleased with the access points at the beginning and would like to see more access points to the areas that have been added. Mr. Wright wanted to add that he applauds the Commission and FWC staff for making access one of the key components to the property and said to just keep up the overall management of the area.

Public Testimony Comment: Mr. Tom McWatters, President of the Florida Sportsman Conservation Association wanted to say that he thinks FWC is doing a great job managing the property and that they have a great plan and the only thing he'd like to see is more access.

Adjournment: Mr. Cochran asked if there were any other members of the public that wished to give public testimony. None was offered. Mr. Cochran then declared the public hearing adjourned.

13.2.5 Management Prospectus

Management Prospectus

JOHN C. AND MARIANA JONES/HUNGRYLAND WILDLIFE AND ENVIRONMENTAL AREA

December 2012

Florida Fish and Wildlife Conservation Commission



• Introduction

Named after conservation lobbyists, John C. and Mariana Jones, the John C. and Mariana Jones/Hungryland Wildlife and Environmental Area (JCMJHWEA) is set within some of the highest quality, relatively undisturbed pine flatwoods that remain in South Florida. JCMJHWEA is a 16,969 acre management area that is part of a mosaic of protected conservation lands in Florida's South Region. Conserving one of the larger of remaining ecotones or transition zones between the pine flatwoods of interior Southeast Florida and the sawgrass marshes of the Everglades, JCMJHWEA provides vital habitat for imperiled, rare and more common wildlife, while simultaneously protecting important wetlands that are a part of the larger Everglades ecosystem.

Located within the FWC's South Region, the JCMJHWEA consists of three disjunct areas, combining five different parcels, separated by private land, that are managed as one unit. JCMJHWEA straddles the boundary between Martin and Palm Beach counties. It is situated five miles southeast of Indiantown, eight miles west of Jupiter, 15 miles northwest of Palm Beach Gardens, and one half mile east of the J.W. Corbett Wildlife Management Area. The main entrance is located along CR 711 (Pratt-Whitney Road) about two miles north of its intersection with SR 706 (Indiantown Road).

JCMJHWEA is located just seven miles inland from the coastal city of Jupiter. Residential development is rapidly expanding westward along Indiantown Road and other major roads. The interstate and turnpike exits at Indiantown Road make JCMJHWEA easily accessible to tourists and to communities in Martin and Palm Beach counties. The JCMJHWEA property is in multiple sections of Township 40 South, and Ranges 39, 40, and 41 East, in Martin and Palm Beach Counties as shown in Figure 1.

The Florida Fish and Wildlife Conservation Commission (FWC) is currently assigned lead management authority for approximately 12,735 acres of JCMJHWEA. This lead managed area is composed of approximately 7,741 acres, jointly owned by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Board of Trustees) and the South Florida Water Management District (SFWMD), 2,553 acres solely owned by the SFWMD and 2,441 acres solely owned by the Board of Trustees.

Additionally, FWC leases approximately 4,234 acres from Martin County and the SFWMD for cooperative management. Both the SFWMD and Martin County lands are included within the established boundary for JCMJHWEA to provide recreational hunting and other cooperative management opportunities. This cooperative management unit has been

established as the William H. Lee unit of JCMJHWEA. Totaled together with the lands for which FWC is the lead managing agency, there are a total of approximately 16,969 acres encompassed within the Establishment Order for JCMJHWEA. The boundary and managing interests on JCMJHWEA are shown in Figure 1.

The SFWMD and Martin County are the lead managing agencies for those portions of the JCMJHWEA, the cooperative management unit, that have been leased to FWC. Therefore, this management prospectus covers only the approximately 12,735 acres of JCMJHWEA on which FWC is the lead managing agency. Consequently, the SFWMD and Martin County lands are not the primary focus of this prospectus, which JCMJHWEA is managed by the Florida Fish and Wildlife Conservation Commission (FWC) to conserve habitat for an array of imperiled and other native wildlife including the Florida black bear, gopher tortoise and Florida sandhill crane, among others, while also providing stellar opportunities for wildlife viewing and other fish and wildlife based public outdoor fish and wildlife based recreational opportunities such as hunting, biking, horseback riding, camping and hiking.

The unique ecological qualities, general location and the accessibility to the general public make JCMJHWEA extremely valuable for the multiple-use, restoration and improvement of relatively unaltered fish and wildlife resources and their habitats, as well as its important hydrologic function in the South Region of Florida.

Adjacent Public and Private Conservation Lands and Florida Forever Projects

As shown in Figure 2, the JCMJHWEA is located in the vicinity of a large number of publicly owned conservation areas and several Florida Forever projects. Tables 1 and 2 list the Florida Forever projects and conservation lands within a 20-mile radius of the JCMJHWEA, including lands managed by public and private entities, that conserve cultural and natural resources within this region of Florida.

Most of the conservation lands listed in Table 2 are owned in full-fee by a public entity. However, some of these areas fall within a less-than-fee ownership classification where the land is owned and being managed by a private landowner while a public agency or not-for-profit organization holds a conservation easement on the land.

Table 1. Florida Forever Projects in Vicinity of the JCMJHWEA

Project Name	GIS Acres
Indian River Lagoon Blueway	28,060
Atlantic Ridge Ecosystem	14,403
Pal-Mar	36,229

Table 2. Conservation Lands in Vicinity of the JCMJHWEA

Federal Government	Managing Agency
Arthur R. Marshall Loxahatchee National Wildlife Refuge	USFWS
Hobe Sound National Wildlife Refuge	USFWS
Jupiter Inlet Lighthouse Outstanding Natural Area	BLM
State of Florida	Managing Agency
Atlantic Ridge Preserve State Park	DEP
J. W. Corbett Wildlife Management Area	FWC
John D. MacArthur Beach State Park	DEP
Jonathan Dickinson State Park	DEP
Savannas Preserve State Park	DEP
Seabranh Preserve State Park	DEP
St. Lucie Inlet Preserve State Park	DEP
Water Management District	Managing Agency
Allapattah Flats	SFWMD
Atlantic Ridge Ecosystem	SFWMD
C-44 Stormwater Treatment Area	SFWMD
C-51 and L-8 Reservoir	SFWMD
Cypress Creek/Loxahatchee	SFWMD
Dupuis Reserve	SFWMD
Gentle Ben Flowage Easement	SFWMD
Herbert Hoover Dike	SFWMD
Hungryland/SFWMD Parcels	SFWMD
Lake Okeechobee Watershed Water Quality Treatment Facilities	SFWMD
Lakeside Ranch Stormwater Treatment Area	SFWMD
River of Grass	SFWMD
Stormwater Treatment Areas	SFWMD
County/City	Managing Agency
Acreage Pines Natural Area	Palm Beach County
Alex's Beach Park	Martin County
Atlantic Ridge Parcels	Martin County
Banner Lake Park Conservation Area	Martin County
Bathtub Beach Park	Martin County
Beachwalk Pasley	Martin County
Bluefield Ranch	St. Lucie County
Bob Graham Beach Park	Martin County
Bryn Mawr Beach	Martin County
C-18 Triangle Natural Area	Palm Beach County
C-44 Park Parcel	Martin County

Table 2. Conservation Lands in Vicinity of the JCMJHWEA

Carlin Park	Palm Beach County
Chastain Beach Park	Martin County
Clifton S. Perry Beach	Martin County
Coral Cove Park	Palm Beach County
County Line Scrub Conservation Area	Martin County
Curtis Beach Park	Martin County
Cypress Creek Natural Area	Palm Beach County
Danforth Park	Martin County
Delaplane Peninsula Blueway Preserve	Martin County
Delaware Scrub Natural Area	Palm Beach County
Dollman Tract	St. Lucie County
DuBois Park	Palm Beach County
Dutcher	Martin County
Frenchman's Forest	Palm Beach County
Gables	Martin County
Glasscock Beach Park	Martin County
Gomez	Martin County
Grassy Waters Preserve	City of West Palm Beach
Halpatiokee Regional Park Conservation Area	Martin County
Hawks Hammock	Martin County
House of Refuge Park	Martin County
Hungryland Slough Natural Area	Palm Beach County
Indian Riverside Park Conservation Area	Martin County
J. W. Corbett to Loxahatchee NWR Connector	Palm Beach County
Jackson Riverfront Pines Natural Area	Palm Beach County
Jensen Beach Impoundment	Martin County
Jensen Beach Park	Martin County
Jensen Beach West	Martin County
Jimmy Graham Park	Martin County
Joe's River Park	Martin County
Juno Dunes Natural Area	Palm Beach County
Juno Park	Palm Beach County
Jupiter Beach Park	Palm Beach County
Jupiter Mangroves Natural Area	Palm Beach County
Jupiter Ridge Natural Area	Palm Beach County
Kiplinger	Martin County
Kitching Creek	Martin County
Lake Okeechobee Ridge	Martin County
Lake Park Scrub Natural Area	Palm Beach County
Limestone Creek Natural Area	Palm Beach County
Loggerhead Park	Palm Beach County
Lost Trailhead	Palm Beach County

Table 2. Conservation Lands in Vicinity of the JCMJHWEA

Loxahatchee River Park	Martin County
Loxahatchee Slough Natural Area	Palm Beach County
Martin County Spoil Islands	Martin County
Muscara	Martin County
North Jupiter Flatwoods Natural Area	Palm Beach County
Oak Hammock Park	City of Port St. Lucie
Okeehetee Park North	Palm Beach County
Olson Property	Martin County
Orchid Island	Martin County
Oxbow	Martin County
Pahokee Marina and Campground	City of Pahokee
Palm City Park Conservation Area	Martin County
Paw-Paw Preserve	Palm Beach County
Peck Lake Park	Martin County
Pendarvis Cove Park	Martin County
Phipp's Park Conservation Area	Martin County
Pine Glades Natural Area	Palm Beach County
Pond Cypress Natural Area	Palm Beach County
Project 10B	St. Lucie County
Radnor	Palm Beach County
Rio Nature Park	Martin County
Riverbend Park	Palm Beach County
Rocky Point Hammock Park	Martin County
Royal Palm Beach Pines Natural Area	Palm Beach County
Santa Lucea	Martin County
Scrub Oak	Martin County
Sea Turtle Park	Martin County
South Fork Addition	Martin County
Spruce Bluff	St. Lucie County
Stuart Beach Addition	Martin County
Stuart Beach Park	Martin County
Sundial	Martin County
Sweetbay Natural Area	Palm Beach County
Tiger Shores Beach	Martin County
Tilton	Martin County
Timer Powers Park Conservation Area	Martin County
Twin Rivers Park	Martin County
Virginia Forrest Beach Park	Martin County
Westmoreland	City of Port St. Lucie
Winding Waters Natural Area	Palm Beach County
South Fork Addition	Martin County
Spruce Bluff	St. Lucie County

Table 2. Conservation Lands in Vicinity of the JCMJHWEA

Stuart Beach Addition	Martin County
Stuart Beach Park	Martin County
Sundial	Martin County
Sweetbay Natural Area	Palm Beach County
Tiger Shores Beach	Martin County
Tilton	Martin County
Timer Powers Park Conservation Area	Martin County
Twin Rivers Park	Martin County
Virginia Forrest Beach Park	Martin County
Westmoreland	City of Port St. Lucie
Winding Waters Natural Area	Palm Beach County

Private/Public Conservation Organization	Managing Agency
Barley Barber Swamp	FP&L
Blowing Rocks Preserve	TNC
Bluefield Ranch Mitigation Bank	Bluefield Ranch Mitigation Bank
Citrus Boulevard Nature Sanctuary	Audubon of Martin County, Inc.
Four Rivers Nature Sanctuary	Audubon of Martin County, Inc.
Hidden Bay Nature Sanctuary	Audubon of Martin County, Inc.
Maplewood Nature Sanctuary	Audubon of Martin County, Inc.
Possum Long Nature Center	Audubon of Martin County, Inc.

Acronym	Acronym Legend
BLM	Bureau of Land Management
DEP	Florida Department of Environmental Protection
FP&L	Florida Power and Lights
FWC	Florida Fish and Wildlife Conservation Commission
SFWMD	South Florida Water Management District
TNC	The Nature Conservancy
USFWS	United States Fish and Wildlife Service

• **Acquisition History and the Purpose for Acquisition**

In the late 1960s, the area known as Pal Mar, which includes the area now designated as JCMJHWEA, was ditched to drain the property for development. Local citizens groups opposed the development and, ultimately, Martin County filed a successful lawsuit that ended the project. Following that action, the Pal-Mar Acquisition Project was approved and initiated with the lands comprising JCMJHWEA being acquired in 1994 and 1997 under the Save Our Rivers program (SOR), and in 1999 under the Conservation and Recreation Lands (CARL) program respectively.

Subsequently, JCMJHWEA was initially established and opened to the public as a 10,294 acre WEA in June 2001. An additional 2,441 acres located in Palm Beach County were

acquired by FWC under its Preservation 2000 Additions and Inholdings Acquisition Program and incorporated into the area in September 2004. The lands acquired by Martin County and the SFWMD were incorporated into the JCMJHWEA in 2010 and 2011. As noted above, this area is now leased to FWC as a cooperative management unit and established as the William H. Lee unit of JCMJHWEA.

The lands acquired within the Pal-Mar Acquisition Project, that now comprise JCMJHWEA, were purchased as a multiple use property to accomplish the following: 1) Conserve and protect environmentally unique and irreplaceable lands that contain native, relatively unaltered flora and fauna; 2) Conserve and protect significant habitat for native, endangered and threatened species; 3) Conserve, protect, manage, or restore important ecosystems, landscapes and forests; and 4) Provide areas for natural resource-based public outdoor recreation.

Natural Resources

JCMJHWEA contains a diverse assemblage of natural communities that sustain a large variety of wildlife. Extensive wet flatwoods and wet prairies in association with depression marshes creates good habitat conditions for far-ranging species and allows seasonal movement of animals in response to fluctuating water levels and food supplies.

Depression marshes, wet flatwoods, and wet prairies encompass over 80 percent of the JCMJHWEA. The area was historically a mix of pine flatwoods interspersed with sloughs draining east toward the Loxahatchee River and the Atlantic Ocean. In many places sloughs have been channelized and diked so that what remain today are isolated cypress strands, seasonal ponds, and wet prairies. Some areas of former Everglades’ marsh are now wet prairie.

FWC through the services of The Florida Natural Areas Inventory (FNAI) has mapped and described 16 community and altered landcover types that occur on JCMJHWEA currently. These communities are: artificial pond; baygall; clearing/regeneration; depression marsh; dome swamp; developed, ditch/canal; invasive exotic monoculture; mesic flatwoods; mesic hammock; pasture- improved; pasture – semi-improved; road; spoil area; wet flatwoods; and wet prairie. Table 3 below lists community types known to occur on the JCMJHWEA. The FNAI communities map is displayed in Figure 3. The extensively altered communities have been combined and classified as ruderal on the map for simplification.

FNAI found six rare species and a number of invasive exotic species on the JCMJHWEA. The rare species that were documented on the area are listed in Table 4. Invasive exotic plant species found on the JCMJHWEA are listed in Table 5.

Table 3. Community Types Known to Occur on the JCMJHWEA

Community Type	Acres	Percentage of Area
Baygall	35.9	0.21%

Community Type	Acres	Percentage of Area
Depression Marsh	4715.7	27.75%
Dome Swamp	487.7	2.87%
Mesic flatwoods	2300.0	13.53%
Mesic hammock	1.0	0.00%
Pasture-improved	1139.0	6.70%
Pasture-semi-improved	119.73	0.70%
Ruderal	1173.23	6.90%
Wet Flatwoods	3835.33	22.57%
Wet Prairie	3187.18	18.75%

Table 4. Rare Plant Species Found on the JCMJHWEA

Common Name	Scientific Name
Banded wild-pine	<i>Tillandsia flexuosa</i>
Florida threeawn	<i>Aristida rhizomophora</i>
Many-flowered Grass-pink	<i>Calopogon multiflorus</i>
Giant wild pine	<i>Tillandsia utriculata</i>
Strap fern	<i>Campyloneuron phyllitidis</i>
Stiff-leaved wild pine	<i>Tillandsia fasciculata</i>

Table 5. Invasive Exotic Plant Species Found on the JCMJHWEA

Common Name	Scientific Name
Australian pine	<i>Casuarina spp.</i>
Brazilian pepper	<i>Schinus terebinthifolius</i>
Burma reed	<i>Neyraudia reynaudiana</i>
Caesar's weed	<i>Urena lobata</i>
Castor bean	<i>Ricinus communis</i>
Cogon grass	<i>Imperata cylindrica</i>
Downy rose-myrtle	<i>Rhodomyrtus tomentosa</i>
Dwarf papyrus	<i>Cyperus prolifer</i>
Earleaf acacia	<i>Acacia auriculiformis</i>
Guinea grass	<i>Panicum maximum</i>
Java plum	<i>Syzygium cumini</i>
Lantana	<i>Lantana camara</i>
Melaleuca	<i>Melaleuca quinquenervia</i>
Natal grass	<i>Rhynchelytrum repens</i>
Old world climbing fern	<i>Lygodium microphylla</i>
Para grass	<i>Urochloa mutica</i>
Punk tree	<i>Melaleuca quinquenervia</i>
Rose myrtle	<i>Rhodomyrtus tomentosa</i>
Rosary pea	<i>Abrus precatorius</i>

Seaside mahoe	<i>Talipariti tiliaceum</i>
Torpedo grass	<i>Panicum repens</i>
Tropical soda apple	<i>Solanum viarum</i>
Water spangles	<i>Salvinia minima</i>
Water-lettuce	<i>Pistia stratiotes</i>
Wedelia	<i>Wedelia trilobata</i>

Table 6. Native Plant Species Found on the JCMJHWEA

Common Name	Scientific Name
Adam's needle	<i>Yucca filamentosa</i>
Airplant	<i>Tillandsia sp.</i>
Alligatorflag	<i>Thalia geniculata</i>
American beautyberry	<i>Callicarpa americana</i>
Arrowhead	<i>Sagittaria sp.</i>
Aster	<i>Aster sp.</i>
Balbis' airplant	<i>Tillandsia balbisiana</i>
Baldwin's milkwort	<i>Polygala baldwinii</i>
Baldwin's nutrush	<i>Scleria baldwinii</i>
Baldwin's spikerush	<i>Eleocharis baldwinii</i>
Ball moss	<i>Tillandsia recurvata</i>
Bartram's rose-gentian	<i>Sabatia bartramii</i>
Beaksedge	<i>Rhynchospora sp.</i>
Bearded grass-pink	<i>Calopogon barbatus</i>
Beggarticks	<i>Bidens sp.</i>
Big carpetgrass	<i>Axonopus furcatus</i>
Black bogrush	<i>Schoenus nigricans</i>
Blackroot	<i>Pterocaulon pycnostachyum</i>
Bladderwort	<i>Utricularia sp.</i>
Blaspheme vine	<i>Smilax laurifolia</i>
Blazing star	<i>Liatris sp.</i>
Blue curls	<i>Trichostema dichotomum</i>
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>
Blue waterhyssop	<i>Bacopa caroliniana</i>
Blue-eyed grass	<i>Sisyrinchium sp.</i>
Bluejoint panicum	<i>Panicum tenerum</i>
Bluestem	<i>Andropogon sp.</i>
Bog white violet	<i>Viola lanceolata</i>
Bogbuttons	<i>Lachnocaulon sp.</i>
Bottlebrush threeawn	<i>Aristida spiciformis</i>
Bracken fern	<i>Pteridium aquilinum</i>
Broomsedge bluestem	<i>Andropogon virginicus</i>
Bunched beaksedge	<i>Rhynchospora cephalantha</i>
Bush mint	<i>Hyptis elatus</i>

Bushy bluestem	<i>Andropogon glomeratus</i>
Butterwort	<i>Pinguicula sp.</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
Cabbage palm	<i>Sabal palmetto</i>
Camphorweed	<i>Pluchea sp.</i>
Candyroot	<i>Polygala nana</i>
Carolina redroot	<i>Lachnanthes caroliniana</i>
Carolina willow	<i>Salix caroliniana</i>
Carolina yellow-eyed grass	<i>Xyris caroliniana</i>
Carpetgrass	<i>Axonopus sp.</i>
Chaffhead	<i>Caraphephorus sp.</i>
Chalky bluestem	<i>Andropogon virginicus var. glaucus</i>
Cinnamon fern	<i>Osmunda cinnamomea</i>
Climbing hempvine	<i>Mikania scandens</i>
Clubmoss	<i>Lycopodium sp.</i>
Clustered mille grains	<i>Oldenlandia uniflora</i>
Coastalplain staggerbush	<i>Lyonia fruticosa</i>
Coastalplain tickseed	<i>Coreopsis gladiata</i>
Coastalplain willow	<i>Salix caroliniana</i>
Coastalplain yellow-eyed grass	<i>Xyris ambigua</i>
Coco plum	<i>Chrysobalanus icaco</i>
Colicwood	<i>Rapanea punctata</i>
Combleaf mermaidweed	<i>Proserpinaca pectinata</i>
Common buttonbush	<i>Cephalanthus occidentalis</i>
Common reed	<i>Phragmites australis</i>
Corkwood	<i>Stillingia aquatica</i>
Creeping primrosewillow	<i>Ludwigia repens</i>
Creeping rush	<i>Juncus repens</i>
Crowngrass	<i>Paspalum sp.</i>
Dahoon	<i>Ilex cassine</i>
Dayflower	<i>Commelina sp.</i>
Dog fennel	<i>Eupatorium capillifolium</i>
Dotted smartweed	<i>Polygonum punctatum</i>
Downy rose myrtle	<i>Rhodomyrtus tomentosa</i>
Drumheads	<i>Polygala cruciata</i>
Dwarf live oak	<i>Quercus minima</i>
Dwarf sundew	<i>Drosera brevifolia</i>
Earleaf acacia	<i>Acacia auriculiformis</i>
Earleaf greenbrier	<i>Smilax auriculata</i>
Early whitetop fleabane	<i>Erigeron vernus</i>
Eastern purple bladderwort	<i>Utricularia purpurea</i>
Elliott's milkpea	<i>Galactia elliotii</i>
Elliott's yellow-eyed grass	<i>Xyris elliotii</i>

False foxglove	<i>Agalinis sp.</i>
Falsefennel	<i>Eupatorium leptophyllum</i>
Fascicled beaksedge	<i>Rhynchospora fascicularis</i>
Fetterbush	<i>Lyonia lucida</i>
Fewflower milkweed	<i>Asclepias lanceolata</i>
Fimbry	<i>Fimbristylis sp.</i>
Fireflag	<i>Thalia geniculata</i>
Fireweed	<i>Erechtites hieraciifolius</i>
Flatsedge	<i>Cyperus sp.</i>
Flattened pipewort	<i>Eriocaulon compressum</i>
Flattop goldenrod	<i>Euthamia minor</i>
Floating hearts	<i>Nymphoides aquatica</i>
Florida dropseed	<i>Sporobolus floridana</i>
Florida purple bladderwort	<i>Utricularia amethystina</i>
Florida threeawn	<i>Aristida rhizomophora</i>
Florida tickseed	<i>Coreopsis floridana</i>
Four-petal St. John's-wort	<i>Hypericum tetrapetalum</i>
Fringed nutrush	<i>Scleria ciliata</i>
Fringed yellow stargrass	<i>Hypoxis juncea</i>
Fringed yellow-eyed grass	<i>Xyris fimbriata</i>
Gallberry	<i>Ilex glabra</i>
Giant cane	<i>Arundinaria gigantea</i>
Giant leather fern	<i>Acrostichum danaeifolium</i>
Goldenrod	<i>Solidago sp.</i>
Gopher apple	<i>Licania michauxii</i>
Grassleaf silkgrass	<i>Pityopsis graminifolia</i>
Grass-pink	<i>Calopogon sp.</i>
Grassy arrowhead	<i>Sagittaria graminea</i>
Groundsel tree	<i>Baccharis halimifolia</i>
Gulf coast spikerush	<i>Eleocharis cellulosus</i>
Hairawn muhly	<i>Muhlenbergia capillaris</i>
Heliotrope	<i>Heliotropium sp.</i>
Highbush blueberry	<i>Vaccinium corymbosum</i>
Horned beaksedge	<i>Rhynchospora corniculata</i>
Horned bladderwort	<i>Utricularia cornuta</i>
Humped bladderwort	<i>Utricularia gibba</i>
Jointgrass	<i>Coelorachis sp.</i>
Justiceweed	<i>Eupatorium leucolepis</i>
Knotted spikerush	<i>Eleocharis interstincta</i>
Ladies'-tresses	<i>Spiranthes sp.</i>
Lance-leaved arrowhead	<i>Sagittaria lancifolia</i>
Large whitetop sedge	<i>Dichromena sp.</i>
Large-flower rose-gentian	<i>Sabatia grandiflora</i>

Laurel greenbrier	<i>Smilax laurifolia</i>
Leavenworth's tickseed	<i>Coreopsis leavenworthii</i>
Lemon bacopa	<i>Bacopa caroliniana</i>
Little bluestem	<i>Schizachyrium scoparium</i>
Live oak	<i>Quercus virginiana</i>
Lobelia	<i>Lobelia sp.</i>
Loblolly bay	<i>Gordonia lasianthus</i>
Longleaf threeawn	<i>Aristida palustris</i>
Lopsided indiagrass	<i>Sorghastrum secundum</i>
Love vine	<i>Cassytha filiformis</i>
Lovegrass	<i>Eragrostis sp.</i>
Maidencane	<i>Panicum hemitomon</i>
Manyflower marshpennywort	<i>Hydrocotyle umbellata</i>
Marsh threeawn	<i>Aristida palustris</i>
Meadowbeauty	<i>Rhexia sp.</i>
Mermaidweed	<i>Proserpinaca pectinata</i>
Mohr's thoroughwort	<i>Eupatorium mohrii</i>
Muscadine	<i>Vitis rotundifolia</i>
Myrsine	<i>Rapanea punctata</i>
Myrtle-leaf St. John's-wort	<i>Hypericum myrtifolium</i>
Narrowfruit horned beaksedge	<i>Rhynchospora inundata</i>
Narrowleaf blue-eyed grass	<i>Sisyrinchium angustifolium</i>
Narrowleaf silkgrass	<i>Pityopsis graminifolia</i>
Narrowleaf yellowtops	<i>Flaveria linearis</i>
Needleleaf airplant	<i>Tillandsia setacea</i>
Netted nutrush	<i>Scleria reticularis</i>
Netted pawpaw	<i>Asimina reticulata</i>
Nutrush	<i>Scleria sp.</i>
Nuttall's meadowbeauty	<i>Rhexia nuttallii</i>
Orange milkwort	<i>Polygala lutea</i>
Pale meadowbeauty	<i>Rhexia mariana</i>
Panic grass	<i>Panicum sp.</i>
Partridge pea	<i>Chamaecrista fasciculata</i>
Paspalum grass	<i>Paspalum sp.</i>
Peelbark St. John's wort	<i>Hypericum fasciculatum</i>
Peppervine	<i>Ampelopsis arborea</i>
Peruvian primrosewillow	<i>Ludwigia peruviana</i>
Pickerelweed	<i>Pontederia cordata</i>
Pineland chaffhead	<i>Carphephorus carnosus</i>
Pineland daisy	<i>Chaptalia tomentosa</i>
Pineland rayless goldenrod	<i>Bigelovia nudata</i>
Pink sundew	<i>Drosera capillaris</i>
Pipewort	<i>Eriocaulon compressum</i>

Pitted stripeseed	<i>Piriqueta cistoides ssp. caroliniana</i>
Poison ivy	<i>Toxicodendron radicans</i>
Pond apple	<i>Annona glabra</i>
Pond cypress	<i>Taxodium ascendens</i>
Primrosewillow	<i>Ludwigia sp.</i>
Procession flower	<i>Polygala incarnata</i>
Purple bluestem	<i>Andropogon glomeratus var. glaucopsis</i>
Purple lovegrass	<i>Eragrostis spectabilis</i>
Purple thistle	<i>Cirsium horridulum</i>
Rabbitbells	<i>Crotalaria rotundifolia</i>
Rattlesnake master	<i>Eryngium yuccifolium</i>
Red bay	<i>Persea palustris</i>
Red maple	<i>Acer rubrum</i>
Redroot	<i>Lachnanthes caroliniana</i>
Redtop panicum	<i>Panicum rigidulum</i>
Richard's yellow-eyed grass	<i>Xyris jupicai</i>
Rose-gentian	<i>Sabatia sp.</i>
Rose-of-Plymouth	<i>Sabatia stellaris</i>
Rosy camphorweed	<i>Pluchea rosea</i>
Roundleaf bluet	<i>Houstonia procumbens</i>
Roundpod St. John's wort	<i>Hypericum cistifolium</i>
Royal fern	<i>Osmunda regalis</i>
Saltmarsh umbrellasedge	<i>Fuirena breviseta</i>
Sand cordgrass	<i>Spartina bakeri</i>
Sand laurel oak	<i>Quercus hemisphaerica</i>
Sandweed St. John's wort	<i>Hypericum fasciculatum</i>
Sandweed St. John's-wort	<i>Hypericum fasciculatum</i>
Savannah milkweed	<i>Asclepias pedicellata</i>
Savannah yellow-eyed grass	<i>Xyris flabelliformis</i>
Saw grass	<i>Cladium jamaicense</i>
Saw palmetto	<i>Serenoa repens</i>
Sedge	<i>Cyperus sp.</i>
Shaggy hedgehyssop	<i>Gratiola pilosa</i>
Shiny dwarf blueberry	<i>Vaccinium myrsinites</i>
Shiny fetterbush	<i>Lyonia lucida</i>
Shortleaf rosegentian	<i>Sabatia brevifolia</i>
Shortleaf yellow-eyed grass	<i>Xyris brevifolia</i>
Shortspike bluestem	<i>Andropogon brachystachyus</i>
Showy milkwort	<i>Polygala grandiflora</i>
Slash pine	<i>Pinus elliottii</i>
Slender flattop goldenrod	<i>Euthamia caroliniana</i>
Small butterwort	<i>Pinguicula pumila</i>
Small purple bladderwort	<i>Utricularia resupinata</i>

Small's bogbutton	<i>Lachnocaulon minus</i>
Smutgrass	<i>Sporobolus indicus</i>
Snow squarestem	<i>Melanthera nivea</i>
Soft pipewort	<i>Eriocaulon compressum</i>
Soft rush	<i>Juncus effusus ssp. solutus</i>
South Florida slash pine	<i>Pinus elliottii var. densa</i>
Southeastern sneezeweed	<i>Helenium pinnatifidum</i>
Southern beaksedge	<i>Rhynchospora microcarpa</i>
Southern cattail	<i>Typha domingensis</i>
Southern needleleaf	<i>Tillandsia setacea</i>
Southern umbrellasedge	<i>Fuirena scirpoidea</i>
Spadeleaf	<i>Centella asiatica</i>
Spanish moss	<i>Tillandsia usneoides</i>
Sphagnum moss	<i>Sphagnum sp.</i>
Spikerush	<i>Eleocharis sp.</i>
Spreading air-plant	<i>Tillandsia utriculata</i>
St. Andrew's cross	<i>Hypericum hypericoides</i>
St. John's-wort	<i>Hypericum cistifolium</i>
Starrush white-top	<i>Rhynchospora colorata</i>
Star-rush whitetop sedge	<i>Dichromena colorata</i>
Starry rose-gentian	<i>Sabatia stellaris</i>
Stiff yellow flax	<i>Linum medium</i>
Strangler fig	<i>Ficus aurea</i>
String lily	<i>Crinum americanum</i>
Sugarcane plumegrass	<i>Saccharum giganteum</i>
Sunbonnets	<i>Chaptalia tomentosa</i>
Sundew	<i>Drosera capillaris</i>
Sunflower	<i>Helianthus sp.</i>
Swamp bay	<i>Persea palustris</i>
Swamp fern	<i>Blechnum serrulatum</i>
Swamp laurel oak	<i>Quercus laurifolia</i>
Swampforest beaksedge	<i>Rhynchospora decurrens</i>
Sweet bay	<i>Magnolia virginiana</i>
Sweet goldenrod	<i>Solidago odora</i>
Sweet gum	<i>Liquidambar styraciflua</i>
Switchgrass	<i>Panicum virgatum</i>
Sword fern	<i>Nephrolepis exaltata</i>
Tall elephant's foot	<i>Elephantopus elatus</i>
Tall gallberry	<i>Ilex coriacea</i>
Tall jointweed	<i>Polygonella gracilis</i>
Tall pinebarren milkwort	<i>Polygala cymosa</i>
Tall yellow-eyed grass	<i>Xyris platylepis</i>
Tar-flower	<i>Befaria racemosa</i>

Tenangle pipewort	<i>Eriocaulon decangulare</i>
Ten-angle pipewort	<i>Eriocaulon decangulare</i>
Threadleaf arrowhead	<i>Sagittaria filiformis</i>
Tickseed	<i>Coreopsis sp.</i>
Toadfruit	<i>Lippia nodiflora</i>
Toothache grass	<i>Ctenium aromaticum</i>
Toothed midsorus fern	<i>Blechnum serrulatum</i>
Tracy's beaksedge	<i>Rhynchospora tracyi</i>
Virginia chain fern	<i>Woodwardia virginica</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Water cowbane	<i>Oxypolis filiformis</i>
Water pimpernel	<i>Samolus ebracteatus</i>
Water toothleaf	<i>Stillingia aquatica</i>
Waterlily	<i>Nymphaea sp.</i>
Wax myrtle	<i>Myrica cerifera</i>
West indian dropseed	<i>Sporobolus indicus var. pyramidalis</i>
West indian meadow beauty	<i>Rhexia cubensis</i>
White waterlily	<i>Nymphaea odorata</i>
Whitehead bogbutton	<i>Lachnocaulon anceps</i>
Whitetop aster	<i>Aster reticulata</i>
Whitetop sedge	<i>Dichromena sp.</i>
White-top sedge	<i>Rhynchospora latifolia</i>
Wild pennyroyal	<i>Piloblephis rigida</i>
Wild petunia	<i>Ruellia sp.</i>
Wiregrass	<i>Aristida stricta var. beyrichiana</i>
Witchgrass	<i>Dichanthelium sp.</i>
Yaupon	<i>Ilex vomitoria</i>
Yellow colicroot	<i>Aletris lutea</i>
Yellow hatpins	<i>Syngonanthus flavidulus</i>
Yellow milkwort	<i>Polygala rugellii</i>
Yellow nutgrass	<i>Cyperus esculentus</i>
Yellow pondlily	<i>Nuphar advena</i>
Yellow spatterdock	<i>Nuphar lutea</i>
Yellow stargrass	<i>Hypoxis sp.</i>
Yellow-eyed grass	<i>Xyris sp.</i>
Zigzag jointvetch	<i>Aeschynomene rudis</i>

JCMJHWEA Community Descriptions

Baygall

Baygalls are forested wetlands that occur in irregular depressions or lower slopes where water seepage is present. On JCMJHWEA, baygall generally occurs as “islands” within, or on the edges of, depression and basin marshes where organic material has built up. The dominant canopy species is red bay. Slash pine may be present in the canopy, but is not a

characteristic component of the community. There is typically a moderately dense tall shrub layer composed of red bay, loblolly bay, dahoon holly, wax myrtle, or myrsine. The short shrub layer is often dense and composed of saw palmetto, shiny lyonia, and coco plum. The herbaceous layer is generally represented by ferns, usually swamp fern or Virginia chain fern. Vine species are common and include laurel greenbriar, muscadine, and poison ivy.

Depression marsh

Depression marshes are typically small, circular or oval shaped isolated wetlands situated in shallow depressions where sand has slumped around or over a sinkhole. Depression marshes are abundant on JCMJHWEA, and occur in association with all of the other communities. The substrate is usually acid sand with deepening peat toward the center. Hydrological conditions vary, with most depression marshes drying in most years. On JCMJHWEA, there is usually an inner, central zone occupied by sawgrass, fireflag, or occasionally cattail. Larger depressions may have a small shrubby island of pond apple, willow, or wax myrtle. The zone encircling the center is often dominated by maidencane, spikerush, or Tracy's beaksedge, followed by an outer herbaceous zone that often includes dense to scattered sandweed, St. John's-wort and corkwood. The diverse herbaceous layer of this outer zone includes nutrush, yellow-eyed grass, salt-marsh umbrella sedge, marsh threeawn, bladderwort, hatpins, panic grass, blue maidencane, redroot, sundew, beakrush and milkworts. Algal mats, composed of many species of blue-green algae, frequently occur around the perimeter of depression marshes at JCMJHWEA.

Dome swamp

Dome swamps are typically small, circular or oval shaped isolated forested wetlands situated in shallow depressions. The substrate of dome swamps is usually acid sand with deepening peat toward the center. Dome swamps are infrequent on JCMJHWEA, and occur in association with depression or basin marshes.

On JCMJHWEA, dome swamps are dominated by pond cypress. The tall shrub layer, when present, consists of myrsine, wax myrtle, dahoon, buttonbush, willow, and pond apple. Sawgrass, swamp fern, and sword ferns are usually common. Herbaceous species, such as hatpins, tall milkwort, bladderwort, maidencane, blue maidencane, Tracy's beaksedge, umbrella sedge, and white-topped sedge, are diverse around the sunnier edges but become less frequent toward the center. Airplants are common.

Mesic flatwoods

Mesic flatwoods are upland, pine-dominated forests on poorly drained to moderately well drained soils. On JCMJHWEA, mesic flatwoods occur in association with wet flatwoods, wet prairie, and depression marshes. There is typically an open slash pine canopy, occasionally with a subcanopy of cabbage palm. There is frequently a tall shrub layer of dahoon holly, loblolly bay, wax myrtle, or myrsine, and saw palmetto. Saw palmetto dominates the short shrub layer; other characteristic short shrubs include gallberry, shiny

lyonia, stagger bush, and coco plum. Dwarf shrubs include St. John's wort, shiny blueberry, and dwarf live oak.

In the herbaceous layer characteristic species of high quality mesic flatwoods on JCMJHWEA are wiregrass, Florida threeawn, toothache grass, blue maidencane, muhly grass, beaksedges, sawgrass, bracken fern, rattlesnake-master, Leavenworth's tickseed, wild petunia, and chaffhead. Weedy species include slender flattop goldenrod, rosy camphorweed, dog fennel, and witch grasses. Woody vines include wild grape and green briar.

Mesic Hammock

Mesic hammocks are closed-canopy forests of temperate hardwood species occurring along wetlands or as islands within wetlands where they are sheltered from fire. Fire is rare, and when mesic hammocks burn they may convert to the community they border. One occurrence of mesic hammock is present at JCMJHWEA. This habitat has formed in a fire-shadowed site of historic mesic flatwoods and is less than one acre in size. This mesic hammock is simply represented by a nearly closed canopy community of live oak with saw palmetto in the understory.

Pasture – Improved

Improved pastures are defined as natural areas that have been stripped of most or all native vegetation and replanted in pasture grasses. At JCMJHWEA, improved pasture accounts for 1,134 acres of the addition. Improved pasture at JCMJHWEA contains scattered groups and individual trees, typically represented by slash pine. This community is characterized by weedy and invasive exotic herbaceous species commonly including bahia grass, broomsedge, West Indian dropseed, Caesar's weed, para grass, bluestem, chalky bluestem, dog fennel, and slender flattop goldenrod.

Pasture – Semi-improved

Semi-improved pasture is defined as natural areas that have been stripped of a significant percentage of their native vegetation and seeded in pasture grasses, but still retain some natural structure. Semi-improved pasture at JCMJHWEA occurs in the northern half of the addition on former mesic flatwoods, wet flatwoods, wet prairie, and depression marsh communities. Clearing in these areas was minimal, but seeding of bahia grass, invasive exotic establishment and past cattle disturbances are evident.

Ruderal- Ruderal communities are areas where the natural community has been overwhelmingly altered as a result of human activity. Typical examples of ruderal community sites are housing areas, office complexes, parking lots, roads, maintenance and equipment yards, roads, canals and similar substantially altered areas.

Wet Flatwoods – wetland forests on poorly drained sands over clay or limestone. On Hungryland Wildlife and Environmental Area, wet flatwoods may occur as large flats or as transitional areas between mesic flatwoods and wet prairie. They are inundated for at

least a month each year, with soils saturated to the surface for 3 to 4 months in most years. Wet flatwoods have a sparse canopy of widely scattered slash pine usually less than 25% coverage. Because of the lack of recent prescribed fire, there is typically a moderately dense (35 - 65% cover) tall shrub layer dominated by wax myrtle. Myrsine and dahoon holly are occasionally present. The short shrub cover is sparse to moderately dense, dominated by wax myrtle and sandweed St. John's wort. Saw palmetto occurs in isolated clumps. Wet flatwoods support a rich layer of grasses, and sedges; characteristic species include wiregrass, Florida threeawn, bottlebrush threeawn, muhly grass, blue maidencane, toothache-grass, beaksedges, umbrella-sedges, white-topped sedges, nutrushes, and plumegrass.

Wet Prairies – are wet grasslands on poorly drained sands over clay or limestone. On Hungryland Wildlife and Environmental Area, wet prairies may occur as large flats or as transitional areas between wet flatwoods and marshes. As with wet flatwoods, they are dependent on frequent fire, every 2 to 4 years, to prevent shrub invasion. Wet prairies share many of the same species as wet flatwoods. Major differences include the following: (1) wet prairies have less than 5% cover of slash pine, which tend to be small and stunted; (2) saw palmetto is typically absent or limited to infrequent small clumps; (3) wiregrass and Florida threeawn are typically absent except on the upper edges of the community; and (4) the cover of sandweed St. John's-wort and corkwood is typically less than half that of the surrounding wet flatwoods. Beaksedges, and nutrushes dominate the herbaceous groundcover.

- **Fish and Wildlife**
- **Rare and Imperiled Species**

The JCMJHWEA currently supports many wildlife species. Active wildlife management practices, limited access, and a diversity of natural communities make JCMJHWEA an excellent place to view wildlife. The depression marshes and wet prairie provide valuable wetlands for many transient and resident bird species, including endangered and threatened species. Table 6 lists the rare and imperiled wildlife species that have been documented as occurring on or in the vicinity of the JCMJHWEA.

In May 2009, a completed Wildlife Conservation Prioritization and Recovery (WCPR) strategy was approved for the JCMJHWEA. Of the 62 focal species, 16 were modeled to have potential habitat on JCMJHWEA. One additional species was identified by the area manager as having been documented on the property, and in need of conservation consideration. The focal species for JCMJHWEA are listed in Table 7. Other observed fish and wildlife species are listed in Tables 8 – 11.

Table 6. Rare and Imperiled Wildlife Species Occurring On or Near the JCMJHWEA

Common Name	Scientific Name	Status
American alligator*	<i>Alligator mississippiensis</i>	FT(S/A)

Table 6. Rare and Imperiled Wildlife Species Occurring On or Near the JCMJHWEA

Common Name	Scientific Name	Status
Burrowing Owl	<i>Athene cunicularia</i>	SSC
Eastern Indigo Snake	<i>Drymarchon corais couperi</i>	FT
Eastern Kestrel	<i>Pandion haliaetus</i>	NL
Florida Black Bear	<i>Ursus americanus floridanus</i>	ST
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>	SSC
Florida Sandhill Crane	<i>Grus canadensis pratensis</i>	ST
Gopher Frog	<i>Lithobates capito</i>	SSC
Gopher Tortoise	<i>Gopherus polyphemus</i>	ST
Limpkin	<i>Aramus guarauna</i>	SSC
Little Blue Heron	<i>Egretta caerulea</i>	SSC
Marsh Hawk	<i>Circus cyaneus</i>	NL
Migrant Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	NL
Osprey	<i>Falco sparverius sparverius</i>	SSC
Red-cockaded Woodpecker	<i>Picoides borealis</i>	FE
River Otter	<i>Lutra canadensis</i>	NL
Snail Kite	<i>Rostrhamus sociabilis</i>	FE
Snowy Egret	<i>Egretta thula</i>	SSC
Striped mud turtle	<i>Kinosternon baurii</i>	ST
Swallow-Tailed Kite	<i>Elanoides forficatus</i>	NL
Tricolor Heron	<i>Egretta tricolor</i>	SSC
Wood Stork	<i>Mycteria americana</i>	FE

Abbreviation	Status
FE	Federal Endangered
FT	Federal Threatened
FT(S/A)	Federal Threatened due to similarity of appearance
SSC	State Species of Special Concern
ST	State Threatened
NL	Not Listed

¹The alligator in Florida is classified as threatened due to similarity of appearance. This special designation is used because, although the alligator in Florida is no longer biologically endangered, it is necessary to maintain restrictions on commercial activities to ensure the conservation of alligator populations in other states and of similar-looking threatened or endangered crocodylian species such as the American crocodile.

Table 7. Other Rare and Imperiled Wildlife Species Identified as having Potential Habitat on JCMJHWEA

Common Name	Scientific Name	Status
American swallow-tailed kite	<i>Elanoides forficatus</i>	NL

Bachman's sparrow	<i>Aimophila aestivalis</i>	NL
Crested caracara	<i>Caracara cheriway</i>	NL
Florida black bear*	<i>Ursus americanus floridanus</i>	ST
Florida mottled duck	<i>Anas fulvigula</i>	NL
Florida sandhill crane	<i>Grus canadensis pratensis</i>	ST
Gopher tortoise*	<i>Gopherus polyphemus</i>	ST
Limpkin	<i>Aramus guarauna</i>	SSC
Northern bobwhite	<i>Colinus virginianus</i>	NL
Red-cockaded woodpecker	<i>Picoides borealis</i>	FE
Round-tailed muskrat	<i>Neofiber alleni</i>	NL
Sherman's fox squirrel*	<i>Sciurus niger shermani</i>	SSC
Short-tailed hawk	<i>Buteo brachyurus</i>	NL
Snail kite	<i>Rostrhamus sociabilis</i>	FE
Southeastern American kestrel*	<i>Falco sparverius paulus</i>	ST
Southern bald eagle	<i>Haliaeetus leucocephalus</i>	NL

Abbreviation	Status
FE	Federal Endangered
SSC	State Species of Special Concern
ST	State Threatened
NL	Not Listed

* Indicates a species was modeled to have potential habitat on the area; however there is little opportunity to manage for these species on the area.

All abbreviations and status determinations were derived from *Florida's Endangered and Threatened Species List* published by FWC in May 2011. FWC maintains the state list of animals designated as Federally-designated endangered or threatened, State-designated threatened, or State-designated species of special concern, in accordance with Rules 68A-27.003 and 68A-27.005, respectively, of the F.A.C. <https://www.flrules.org/>.

On November 8, 2010 new threatened species rules approved by the Commission went into effect. The list of wildlife presented here reflects those changes to the rules. All federally listed species that occur in Florida are now included on Florida's list as Federally-designated endangered or Federally-designated threatened species. In addition, the state has a listing process to identify species that are not federally listed but at risk of extinction. These species will be called State-designated threatened. All State-designated species that have recently undergone status reviews were presented and approved at the June 2011 Commission meeting. FWC will continue to maintain a separate species of special concern category until all the species have been reviewed and those species are either designated as State-threatened and given a management plan or removed from the list. More detailed descriptions and management prescriptions are available on the FWC website: <http://www.myfwc.com/wildlifehabitats/profiles/>.

Table 8. Exotic Mammal Species documented on the JCMJHWEA

Common Name	Scientific Name
Black Rat or Roof Rat	<i>Rattus rattus</i>
Eastern Harvest Mouse	<i>Reithrodontomys humilis</i>
House Mouse	<i>Mus musculus</i>
Nine-banded Armadillo	<i>Dasypus novemcinctus</i>
Norway Rat	<i>Rattus norvegicus</i>
Wild Boar, Feral Pig	<i>Sus scrofa</i>

Table 9. Mammal Species documented on the JCMJHWEA

Common Name	Scientific Name
Beach or Oldfield Mouse	<i>Peromyscus polionotus</i>
Big brown bat	<i>Eptesicus fuscus</i>
Black Bear	<i>Ursus americanus</i>
Bobcat	<i>Lynx rufus</i>
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
Cotton Mouse	<i>Peromyscus gossypinus</i>
Coyote	<i>Canis latrans</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Eastern Fox Squirrel	<i>Sciurus niger</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Eastern Mole	<i>Scalopus aquaticus</i>
Eastern pipistrelle (Tricolored bat)	<i>Perimyotis subflavus</i>
Eastern Spotted Skunk	<i>Spilogale putorius</i>
Eastern Yellow Bat	<i>Lasiurus intermedius</i>
Evening Bat	<i>Nycticeius humeralis</i>
Florida Mouse	<i>Peromyscus floridanus</i>
Florida Panther	<i>Felis concolor coryi</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Hispid Cotton Rat	<i>Sigmodon hispidus</i>
Least Shrew	<i>Cryptotis parva</i>
Long-tailed Weasel	<i>Mustela frenata</i>
Marsh Rabbit	<i>Sylvilagus palustris</i>
Marsh Rice Rat	<i>Oryzomys palustris</i>
Mink	<i>Mustela vison</i>
Northern yellow bat	<i>Lasiurus intermedius</i>
Nutria	<i>Myocastor coypus</i>
Opossum	<i>Didelphis marsupialis</i>
Raccoon	<i>Procyon lotor</i>
Rafinesque's Big-eared Bat	<i>Plecotus rafinesquii</i>

Red Fox	<i>Vulpes vulpes</i>
River Otter	<i>Lutra canadensis</i>
Round-tailed Muskrat	<i>Neofiber alleni</i>
Seminole Bat	<i>Lasiurus seminolus</i>
Southeastern Big-Eared Bat	<i>Corynorhinus rafinesquii</i>
Southern Flying Squirrel	<i>Glaucomys volans</i>
Southern Short-tailed Shrew	<i>Blarina carolinensis</i>
Striped Skunk	<i>Mephitis mephitis</i>
Wagner's Mastiff Bat	<i>Eumops glaucinus</i>
White-tailed Deer	<i>Odocoileus virginianus</i>

Table 10. Reptile and Amphibian Species documented on JCMJHWEA

Common Name	Scientific Name
Alligator Snapping Turtle	<i>Macroclmys temminckii</i>
American Alligator	<i>Alligator mississippiensis</i>
Brown Anole	<i>Anolis sagrei</i>
Brown Water Snake	<i>Nerodia taxispilota</i>
Common Musk Turtle	<i>Sternotherus odoratus</i>
Corn Snake	<i>Elaphe guttata guttata</i>
Dusky Pygmy Rattlesnake	<i>Sistrurus miliarius barbouri</i>
Eastern Coachwhip	<i>Masticophis flagellum flagellum</i>
Eastern Coral Snake	<i>Micrurus fulvius fulvius</i>
Eastern Diamondback Rattlesnake	<i>Crotalus adamanteus</i>
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>
Eastern Glass Lizard	<i>Ophisaurus ventralis</i>
Eastern Hognose Snake	<i>Heterodon platirhinos</i>
Eastern Indigo Snake	<i>Drymarchon corais couperi</i>
Eastern Kingsnake	<i>Lampropeltis getula getula</i>
Eastern Mud Snake	<i>Farancia abacura abacura</i>
Eastern Slender Glass Lizard	<i>Ophisaurus attenuatus longicaudus</i>
Florida Box Turtle	<i>Terrapene carolina bauri</i>
Florida Brown Snake	<i>Storeria dekayi victa</i>
Florida Chicken Turtle	<i>Deirochelys reticularia chrysea</i>
Florida Cottonmouth	<i>Agkistrodon piscivorus conanti</i>
Florida Green Water Snake	<i>Nerodia floridana</i>
Florida Kingsnake	<i>Lampropeltis getula floridana</i>
Florida Mud Turtle	<i>Kinosternon subrubrum steindachneri</i>
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>
Florida Redbelly Turtle	<i>Pseudemys nelsoni</i>
Florida Scarlet Snake	<i>Cemophora coccinea coccinea</i>
Florida Snapping Turtle	<i>Chelydra serpentina osceola</i>

Florida Softshell	<i>Apalone ferox</i>
Florida Water Snake	<i>Nerodia fasciata pictiventris</i>
Gopher Tortoise	<i>Gopherus polyphemus</i>
Great Green Iguana	<i>Iguana iguana</i>
Green Anole	<i>Anolis c. carolinensis</i>
Ground Skink	<i>Scincella lateralis</i>
Indo-Pacific Gecko	<i>Hemidactylus garnotti</i>
Island Glass Lizard	<i>Ophisaurus compressus</i>
Northern Curlytail Lizard	<i>Leiocephalus carinatus armouri</i>
Peninsula Cooter	<i>Pseudemys floridana peninsularis</i>
Peninsula Mole Skink	<i>Eumeces egregius onocrepis</i>
Peninsula Ribbon Snake	<i>Thamnophis sauritus sackenii</i>
Rough Green Snake	<i>Opheodrys aestivus</i>
Scarlet Kingsnake	<i>Lampropeltis triangulum elapsoides</i>
Six-lined Racerunner	<i>Cnemidophorus sexlineatus sexlineatus</i>
South Florida Swamp Snake	<i>Seminatrix pygaea cyclas</i>
Southeastern Five-lined Skink	<i>Eumeces inexpectatus</i>
Southern Black Racer	<i>Coluber constrictor priapus</i>
Southern Ringneck Snake	<i>Diadophis punctatus punctatus</i>
Striped Crayfish Snake	<i>Regina alleni</i>
Striped Mud Turtle	<i>Kinosternon bauri</i>
Yellow Rat Snake	<i>Elaphe obsoleta quadrivittata</i>

Table 11. Observed Bird Species on JCMJHWEA

Common Name	Scientific Name
Alder Flycatcher	<i>Empidonax alnorum</i>
America Woodcock	<i>Scolopax minor</i>
American Bittern	<i>Botaurus lentiginosus</i>
American Coot	<i>Fulica americana</i>
American Crow	<i>Corvus brachyrhynchos</i>
American Goldfinch	<i>Carduelis tristis</i>
American Kestrel	<i>Falco sparverius</i>
American Redstart	<i>Setophaga ruticilla</i>
American Robin	<i>Turdus migratorius</i>
Anhinga	<i>Anhinga anhinga</i>
Bachmans Sparrow	<i>Aimophila aestivalis</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Baltimore Oriole	<i>Icterus galbula</i>
Barn Owl	<i>Tyto alba</i>
Barn Swallow	<i>Hirundo rustica</i>
Barred Owl	<i>Strix varia</i>
Belted Kingfisher	<i>Ceryle alcyon</i>

Black Vulture	<i>Coragyps atratus</i>
Black-and-White Warbler	<i>Mniotilta varia</i>
Black-bellied Whistling Ducks	<i>Dendrocygna autumnalis</i>
Blackburnian Warbler	<i>Dendroica fusca</i>
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>
Black-necked Stilt	<i>Himantopus mexicanus</i>
Blackpoll Warbler	<i>Dendroica striata</i>
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>
Black-throated Green Warbler	<i>Dendroica virens</i>
Blue Jay	<i>Cyanocitta cristata</i>
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
Blue-winged Teal	<i>Anas discors</i>
Blue-winged Warbler	<i>Vermivora pinus</i>
Boat-tailed Grackle	<i>Quiscalus major</i>
Brewster's Warbler	<i>Vermivora chrysoptera</i>
Brown Thrasher	<i>Toxostoma rufum</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Brown-headed Nuthatch	<i>Sitta pusilla</i>
Bufflehead	<i>Bucephala albeola</i>
Cape May Warbler	<i>Dendroica tigrina</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
Cattle Egret	<i>Bubulcus ibis</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Chimney Swift	<i>Chaetura pelagica</i>
Chipping Sparrow	<i>Spizella passerina</i>
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Ground Dove	<i>Columbina passerina</i>
Common Moorhen	<i>Gallinula chloropus</i>
Common Nighthawk	<i>Chordeiles minor</i>
Common Snipe	<i>Gallinago gallinago</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Crested Caracara	<i>Caracara plancus</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Eastern Bluebird	<i>Sialia sialis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Eastern Wood Pewee	<i>Contopus virens</i>
Eastern Phoebe	<i>Saynoris phoebe</i>
Eastern Screech Owl	<i>Otus asio</i>

Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Eurasian Collared Dove	<i>Streptopelia decaocto</i>
European Starling	<i>Sturnus vulgaris</i>
Field Sparrow	<i>Spizella pusilla</i>
Fish Crow	<i>Corvus ossifragus</i>
Glossy Ibis	<i>Plegadis falcinellus</i>
Golden-winged Warbler	<i>Vermivora chrysoptera</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Gray-cheeked Thrush	<i>Catharus minimus</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Great Egret	<i>Ardea alba</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Great-horned Owl	<i>Bubo virginianus</i>
Green Heron	<i>Butorides virescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Hermit Thrush	<i>Catharus guttatus</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Hooded Warbler	<i>Wilsonia citrina</i>
House Sparrow	<i>Passer domesticus</i>
House Wren	<i>Troglodytes aedon</i>
Indigo Bunting	<i>Passerina cyanea</i>
Kentucky Warbler	<i>Oporornis formosus</i>
Killdeer	<i>Charadrius vociferus</i>
King Rail	<i>Rallus elegans</i>
Least Bittern	<i>Ixobrychus exilis</i>
Least Flycatcher	<i>Empidonax minimus</i>
Least Sandpiper	<i>Calidris minutilla</i>
Least Tern	<i>Sterna antillarum</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Limpkin	<i>Aramus guaranauna</i>
Little Blue Heron	<i>Egretta caerulea</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Louisiana Waterthrush	<i>Seirus motacilla</i>
Magnolia Warbler	<i>Dendroica magnolia</i>
Mallard	<i>Anas platyrhynchos</i>
Marsh Wren	<i>Cistothorus palustris</i>
Merlin	<i>Falco columbarius</i>
Monk Parakeet	<i>Myiopsitta monachus</i>
Mottled Duck	<i>Anas fulvigula</i>
Mourning Dove	<i>Zenaida macroura</i>
Mourning Warbler	<i>Oporornis philadelphia</i>

Nashville Warbler	<i>Vermivora ruficapilla</i>
Northern Bobwhite	<i>Colinus virginianus</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Northern Flicker	<i>Colaptes auratus</i>
Northern Harrier	<i>Circus cyaneus</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Northern Parula	<i>Parula americana</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>
Orange-crowned Warbler	<i>Vermivora celata</i>
Osprey	<i>Pandion haliaetus</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Painted Bunting	<i>Passerina ciris</i>
Palm Warbler	<i>Dendroica palmarum</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Philadelphia Vireo	<i>Vireo philadelphicus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Pine Warbler	<i>Dendroica pinus</i>
Prairie Warbler	<i>Dendroica discolor</i>
Prothonotary Warbler	<i>Protonotaria citrea</i>
Purple Gallinule	<i>Porphyryla martinica</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Red-cockaded Woodpecker	<i>Picoides borealis</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Ring-necked Duck	<i>Aythya collaris</i>
Rock Dove	<i>Columba livia</i>
Roseate Spoonbill	<i>Ajaja ajaja</i>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Sandhill Crane	<i>Grus canadensis</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Scarlet Tanager	<i>Piranga olivacea</i>
Sedge Wren	<i>Cistothorus platensis</i>
Semi-palmated Sandpiper	<i>Calidris pusilla</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Short-tailed Hawk	<i>Buteo brachyurus</i>
Smooth-billed Ani	<i>Crotophaga ani</i>
Snail Kite	<i>Rostrhamus sociabilis</i>

Snowy Egret	<i>Egretta thula</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Song Sparrow	<i>Melospiza melodia</i>
Sora	<i>Porzana carolina</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Summer Tanager	<i>Piranga rubra</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Swallow-tailed Kite	<i>Elanoides forficatus</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Tennessee Warbler	<i>Vermivora peregrina</i>
Thick-billed Vireo	<i>Vireo crassirostris</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Tricolored Heron	<i>Egretta tricolor</i>
Turkey Vulture	<i>Cathartes aura</i>
Veery	<i>Catharus fuscescens</i>
Virginia Rail	<i>Rallus limicola</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Western Sandpiper	<i>Calidris mauri</i>
Western Spindalis (olive backed)	<i>Spindalis zena</i>
Whip-poor-will	<i>Caprimulgus vociferus</i>
White Ibis	<i>Eudocimus albus</i>
White Pelican	<i>Pelecanus erythrorhynchos</i>
White-eyed Vireo	<i>Vireo griseus</i>
White-tailed Kite	<i>Elanus leucurus</i>
White-winged Dove	<i>Zenaida asiatica</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Wood Duck	<i>Aix sponsa</i>
Wood Stork	<i>Mycteria americana</i>
Worm-eating Warbler	<i>Helmitheros vermivorum</i>
Yellow Warbler	<i>Dendroica petechia</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Yellow-crowned Night Heron	<i>Nyctanassa violacea</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Yellow-throated Vireo	<i>Vireo flavifrons</i>
Yellow-throated Warbler	<i>Dendroica dominica</i>

- **Management Intent**

The JCMJHWEA is managed by FWC as a Wildlife and Environmental Area in conformance with the original purposes for acquisition noted above in order to ensure the preservation of fish and wildlife resources, other natural and cultural resources, and for fish and wildlife based public outdoor recreation. The FWC uses a comprehensive resource

management approach to managing FWC-managed areas. Restoring the form and function of Florida's natural communities is the foundation of this management philosophy. FWC uses Objective-based Vegetation Management (OBVM) to monitor how specific vegetative parameters are responding to FWC management. OBVM includes the delineation of management units and quantification of the desired future condition for the natural community.

In addition, FWC uses the WCPR program to ensure management is having the desired effect on wildlife as another important component of FWC's comprehensive resource management approach to managing FWC-managed areas. The goal of WCPR is to provide assessment, recovery and planning support for FWC-managed areas to enhance management of focal species and recovery of imperiled species. The WCPR program objectives include prioritizing what FWC does for imperiled and focal species on FWC-managed areas; ensuring the actions taken on these areas are part of statewide conservation programs and priorities; and informing others about the work accomplished on lands FWC manages. As noted above, the WCPR strategy for the JCMJHWEA was completed in 2009.

- **Conditions Affecting Intensity of Management**

Resources described in this management prospectus indicate conditions affecting intensity of management. These include natural community types, topography and soils, surface and ground water conditions, extent of historic disturbance and already existing improvements. Environmentally sensitive areas, such as erosion-prone sites, important habitats and outstanding natural areas and wetlands shall be identified, appropriately managed and protected.

The FWC conducts analysis of historic vegetation of natural community types when necessary to determine appropriate desired future conditions. Upland wildlife management concentrates on appropriate vegetative manipulations, primarily the application of prescribed fire, to achieve conditions acceptable to a broad range of wildlife species. Areas sometimes require ecological restoration of ground cover, control of invasive species and reforestation. Such resource management projects may be necessary to accomplish restoration objectives to attain the desired future condition. This is especially important for conservation of habitats and populations of imperiled or rare species. Landscape ecology is also important. Land use changes in the vicinity of a managed area may affect attainment of resource conservation goals for the area and effectiveness of necessary resource management projects.

- **Timetable for Implementing Management Provisions**

A management plan has been developed by FWC describing the management goals and objectives, along with short-term (2 years) and long-term (3-10 years) completion timelines, necessary to implement future resource management. The management plan also establishes the current and future roles of cooperating entities including governmental agencies, non-governmental organizations and other stakeholders.

Long-range plans will stress ecosystem management and the protection and management of focal, species of special concern, rare and imperiled species. Historic analysis of natural communities and vegetation types may be conducted if deemed necessary. Quantified vegetation management objectives shall be developed. The FWC shall continue to assess the condition of wildlife resources and provide planning support to enhance management of focal species and recovery of imperiled species on the JCMJHWEA. Use of prescribed fire and other essential resource management activities have been implemented to maintain and restore natural communities and vegetation types to benefit native wildlife resources.

- **Estimate of Revenue-Generating Potential**

The revenue generating potential of the JCMJHWEA will depend upon future uses to be approved in the management plan. However, revenue from JCMJHWEA may include sales of various permits and recreational user fees and ecotourism activities, if such projects could be economically developed. Additional revenue may be generated from potential timber sales. The annual area regulations can be consulted to clarify the necessary and required permits, fees and regulations. The long-term values of ecosystem services to local and regional land and water resources, and to human health, are expected to be significant. The Legislature appropriates funds for land management.

- **Recommendations as to Other Governmental Agency Involvement**

FWC will cooperate with other state and local governmental agencies including Martin County, Palm Beach County, DEP, and SFWMD, and Florida Forest Service among others, in the continuing management of the property.

- **Estimate of Costs**

Following is an estimate of costs to operate and manage the JCMJHWEA under the JCMJHWEA Management Plan. Optimal management of the JCMJHWEA would require three full-time equivalent (FTE) positions to optimally manage the area. Salary requirements for these FTE positions, as well as those of other needed FWC staff, and costs to operate and manage the JCMJHWEA are reflected in the cost estimates below. All land management funding is dependent upon annual legislative appropriations.

John C. and Mariana Jones/Hungryland WEA Management Plan Cost Estimate

Maximum expected one year expenditure

<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	<u>Priority schedule:</u>
Exotic Species Control	\$177,589	(1)	(1) Immediate (annual)
Prescribed Burning	\$42,550	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$751	(1)	(3) Other (5+ years)
Timber Management	\$0	(1)	
Hydrological Management	\$35,761	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$120,602	(1)	
Subtotal	\$377,252		
<u>Administration</u>			
General administration	\$13,517	(1)	
<u>Support</u>			
Land Management Planning	\$19,376	(1)	
Land Management Reviews	\$0	(3)	
Training/Staff Development	\$5,570	(1)	
Vehicle Purchase	\$0	(2)	
Vehicle Operation and Maintenance	\$19,707	(1)	
Other (Technical Reports, Data Management, etc.)	\$1,739	(1)	
Subtotal	\$46,393		
<u>Capital Improvements</u>			
New Facility Construction	\$241,371	(2)	
Facility Maintenance	\$82,058	(1)	
Subtotal	\$323,429		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$16,542	(1)	
<u>Law Enforcement</u>			
Resource protection	\$10,033	(1)	
Total	\$787,167 *		

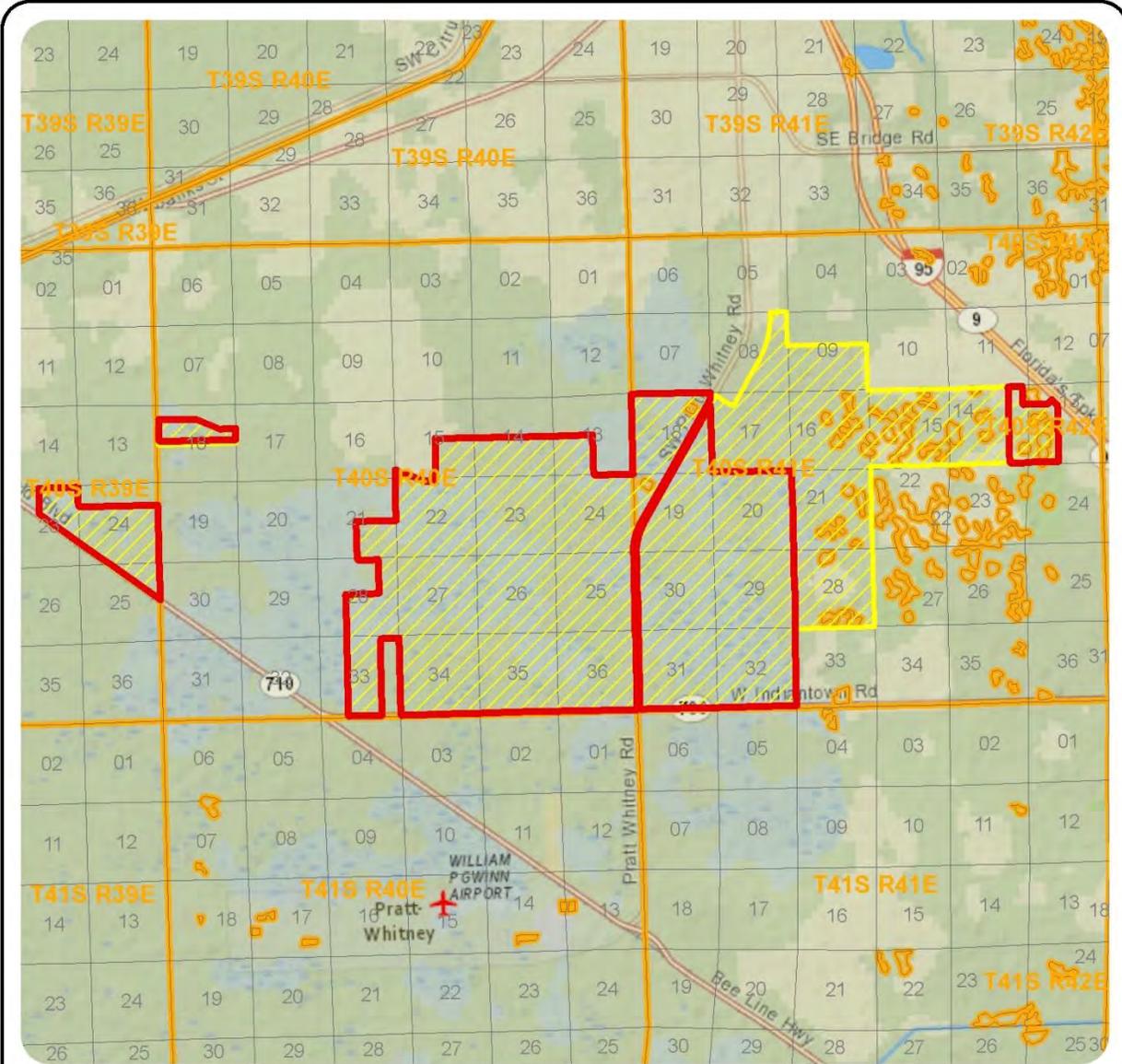
* Based on the characteristics and requirements of this area, three FTE positions would be optimal to fully manage this area. All land management funding is dependent upon annual legislative appropriations.

John C. and Mariana Jones/Hungryland WEA Management Plan Cost Estimate

Ten-year projection

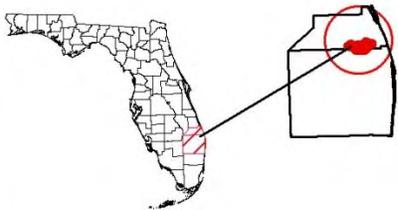
<u>Resource Management</u>	<u>Expenditure</u>	<u>Priority</u>	<u>Priority schedule:</u>
Exotic Species Control	\$1,808,833	(1)	(1) Immediate (annual)
Prescribed Burning	\$433,392	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$7,650	(1)	(3) Other (5+ years)
Timber Management	\$0	(1)	
Hydrological Management	\$364,244	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$1,228,388	(1)	
Subtotal	\$3,842,507		
<u>Administration</u>			
General administration	\$137,679	(1)	
<u>Support</u>			
Land Management Planning	\$197,358	(1)	
Land Management Reviews	\$5,235	(3)	
Training/Staff Development	\$56,732	(1)	
Vehicle Purchase	\$163,768	(2)	
Vehicle Operation and Maintenance	\$200,730	(1)	
Other (Technical Reports, Data Management, etc.)	\$17,710	(1)	
Subtotal	\$641,535		
<u>Capital Improvements</u>			
New Facility Construction	\$455,827	(2)	
Facility Maintenance	\$835,802	(1)	
Subtotal	\$1,291,628		
<u>Visitor Services/Recreation</u>			
Info./Education/Operations	\$168,492	(1)	
<u>Law Enforcement</u>			
Resource protection	\$102,195	(1)	
Total	\$6,184,035 *		

* Based on the characteristics and requirements of this area, three FTE positions would be optimal to fully manage this area. All land management funding is dependent upon annual legislative appropriations.





**John C and Mariana Jones
Hungryland WEA**
Martin and Palm Beach
Counties, Florida



**John C and Mariana Jones/Hungryland WEA
Proximity Map**

Created in ArcGIS 9.3 by the Florida Fish and Wildlife Conservation Commission October, 2012.

Legend

- John C and Mariana Jones/Hungryland WEA FWC Lead Managed Area
- John C and Mariana Jones/Hungryland WEA Entire Established Area
- Township/Range
- Section

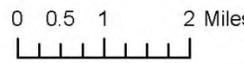



Figure 1. JCMJHWEA Proximity Map with Section, Township and Range

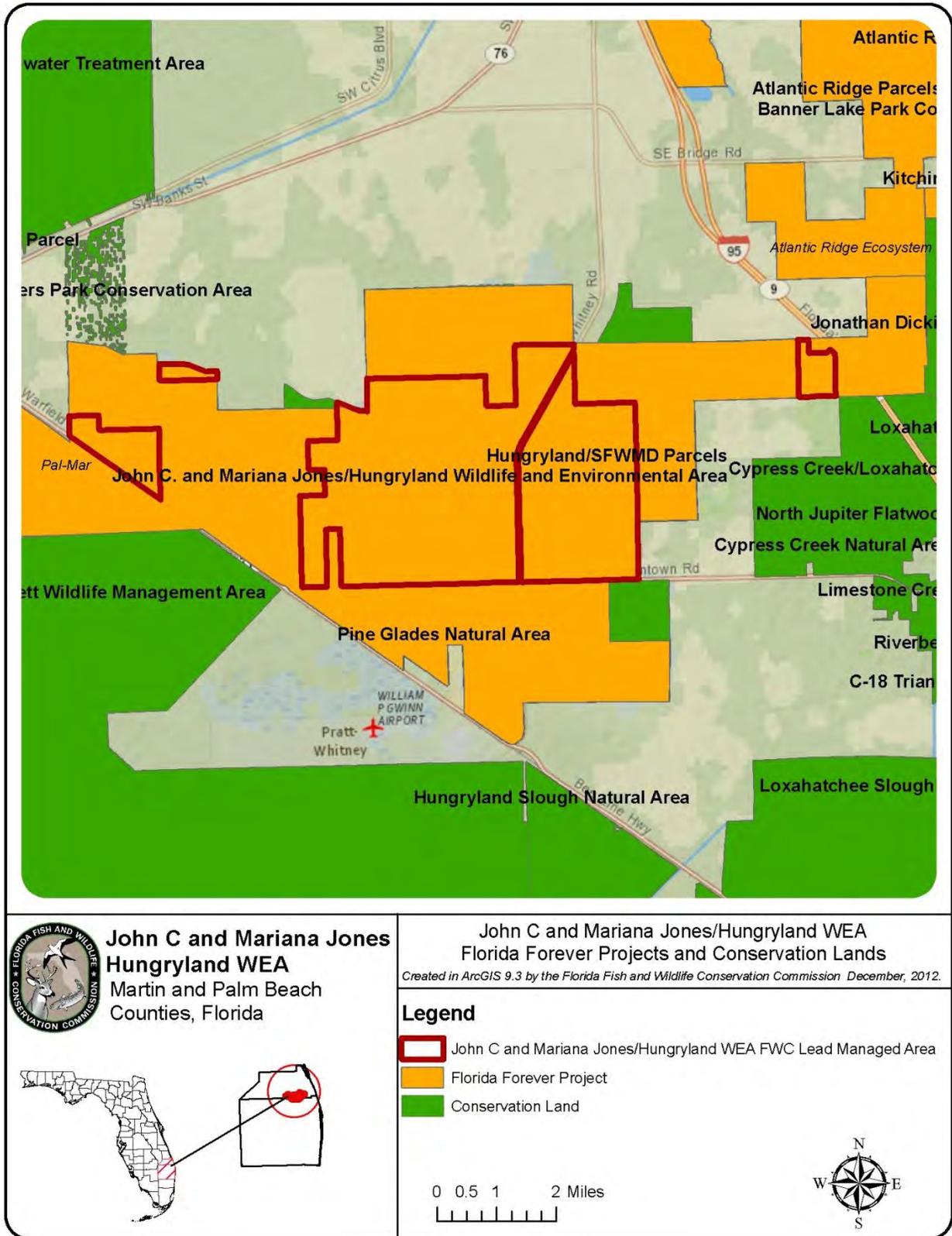


Figure 2. Vicinity Map with Conservation Land and Florida Forever Projects

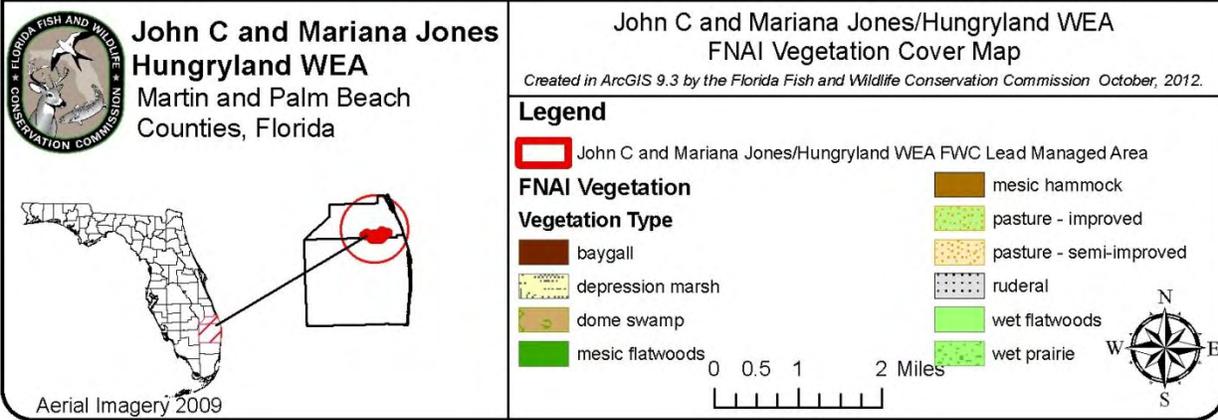
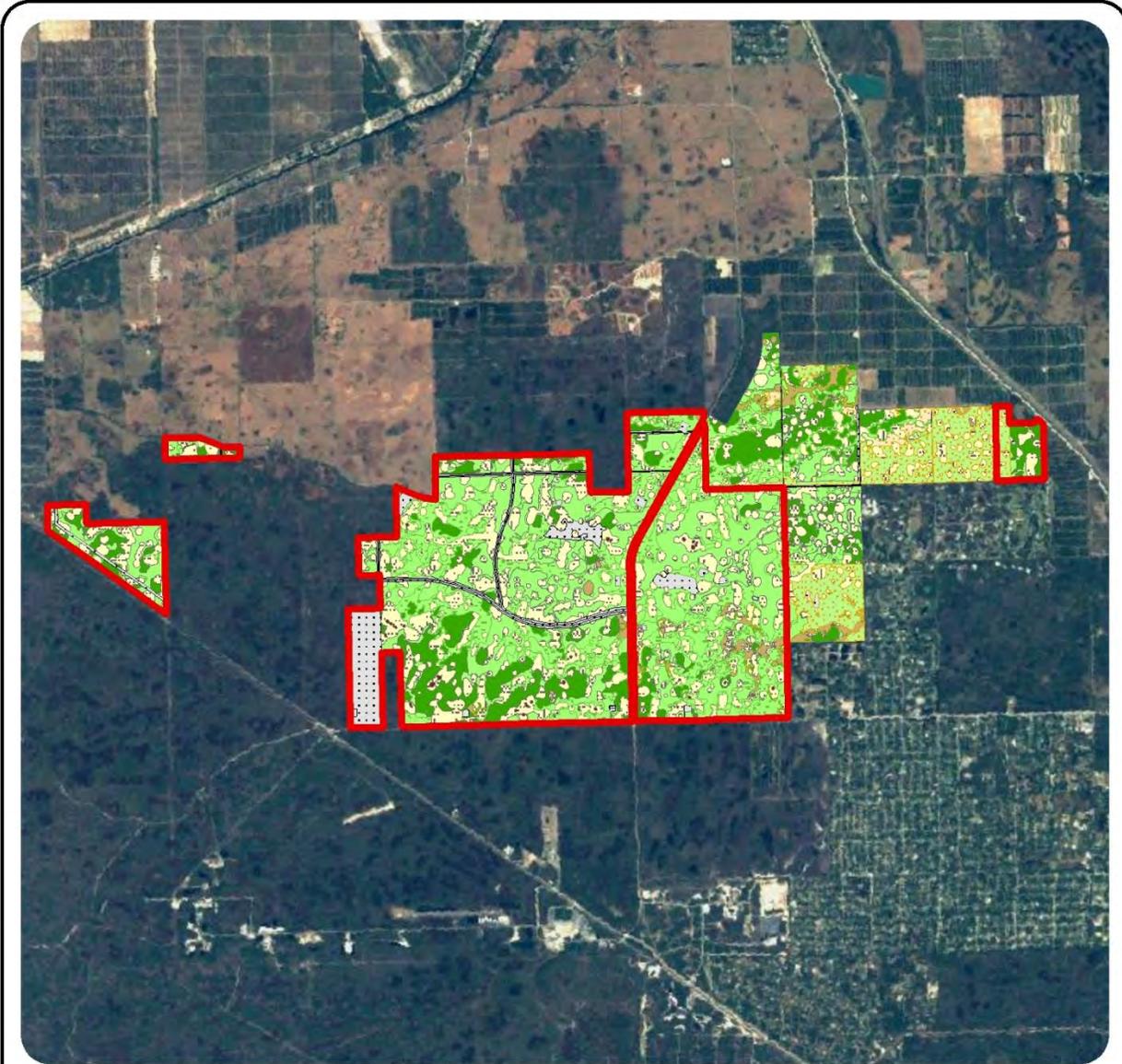
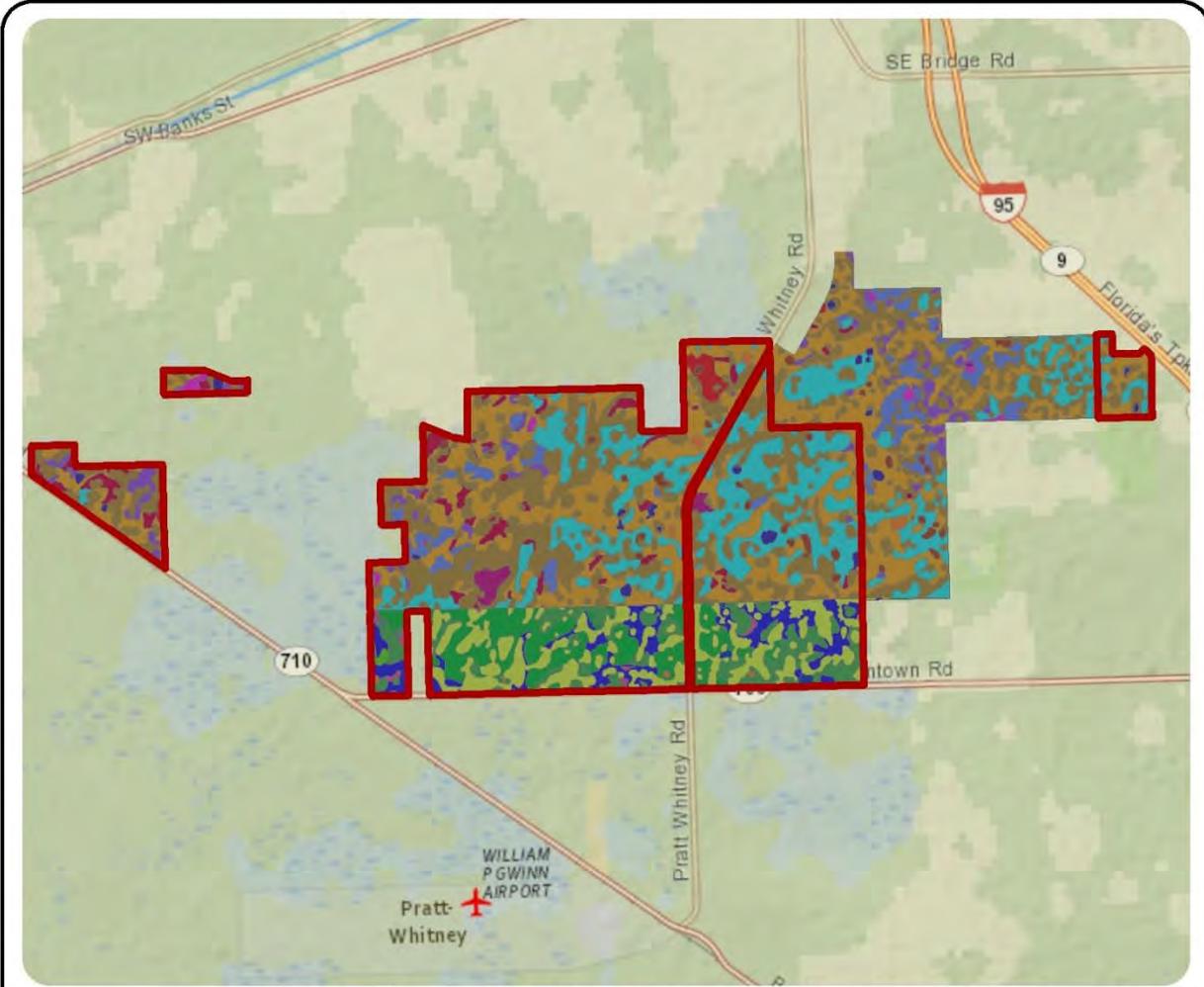


Figure 3. JCMJHWEA Natural Communities



Figure 4. FWC Wildlife Observations and FNAI Element Occurrences



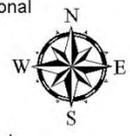
**John C and Mariana Jones
Hungryland WEA**
Martin and Palm Beach
Counties, Florida



**John C and Mariana Jones/Hungryland WEA
FNAI Soils Type Map**

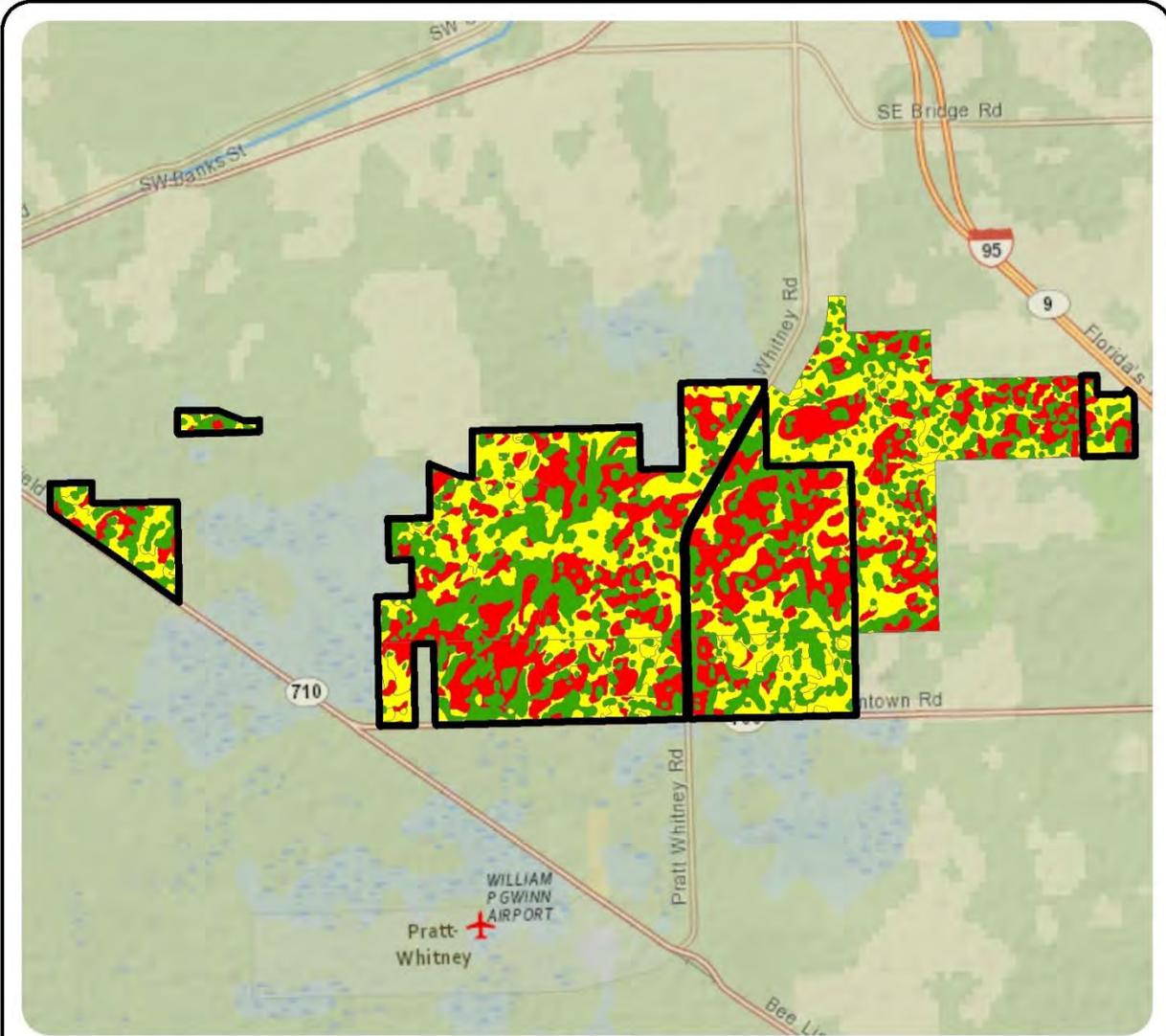
Legend

- John C and Mariana Jones/Hungryland WEA FWC Lead Managed Area
- Soil Type**
- Map Symbol, Soil Type**
- 10, Boca fine sand
- 16, Hallandale fine sand
- 16, Oldsmar fine sand
- 17, Wabasso sand
- 19, Winder sand, depressional
- 21, Pineda and Riviera fine sands
- 24, Okeelanta muck
- 29, Pineda fine sand
- 30, Pinellas fine sand
- 36, Riviera fine sand
- 37, Riviera fine sand, depressional
- 38, Floridana fine sand, depressional
- 42, Hallandale sand
- 44, Boca fine sand
- 47, Pinellas fine sand
- 49, Riviera fine sand, depressional
- 49, Wabasso fine sand
- 52, Malabar fine sand, high
- 58, Gator and Tequesta mucks
- 99, Water

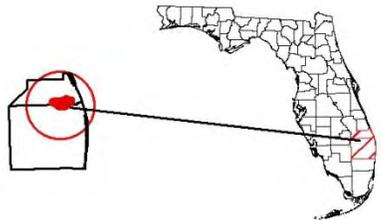


Created in ArcGIS 9.3 by the Florida Fish and Wildlife Conservation Commission December, 2012.

Figure 5. JCMJHWEA Soils




John C and Mariana Jones Hungryland WEA
 Martin and Palm Beach Counties, Florida



John C and Mariana Jones/Hungryland WEA
 Depth to Water Table Map

Legend

 John C and Mariana Jones/Hungryland WEA FWC Lead Managed Area

Depth to Water Table (cm)

-  0
-  15
-  31




*Created in ArcGIS 9.3 by the Florida Fish and Wildlife Conservation Commission
 December, 2012.*

Figure 6. Soils – Depth to Water Table

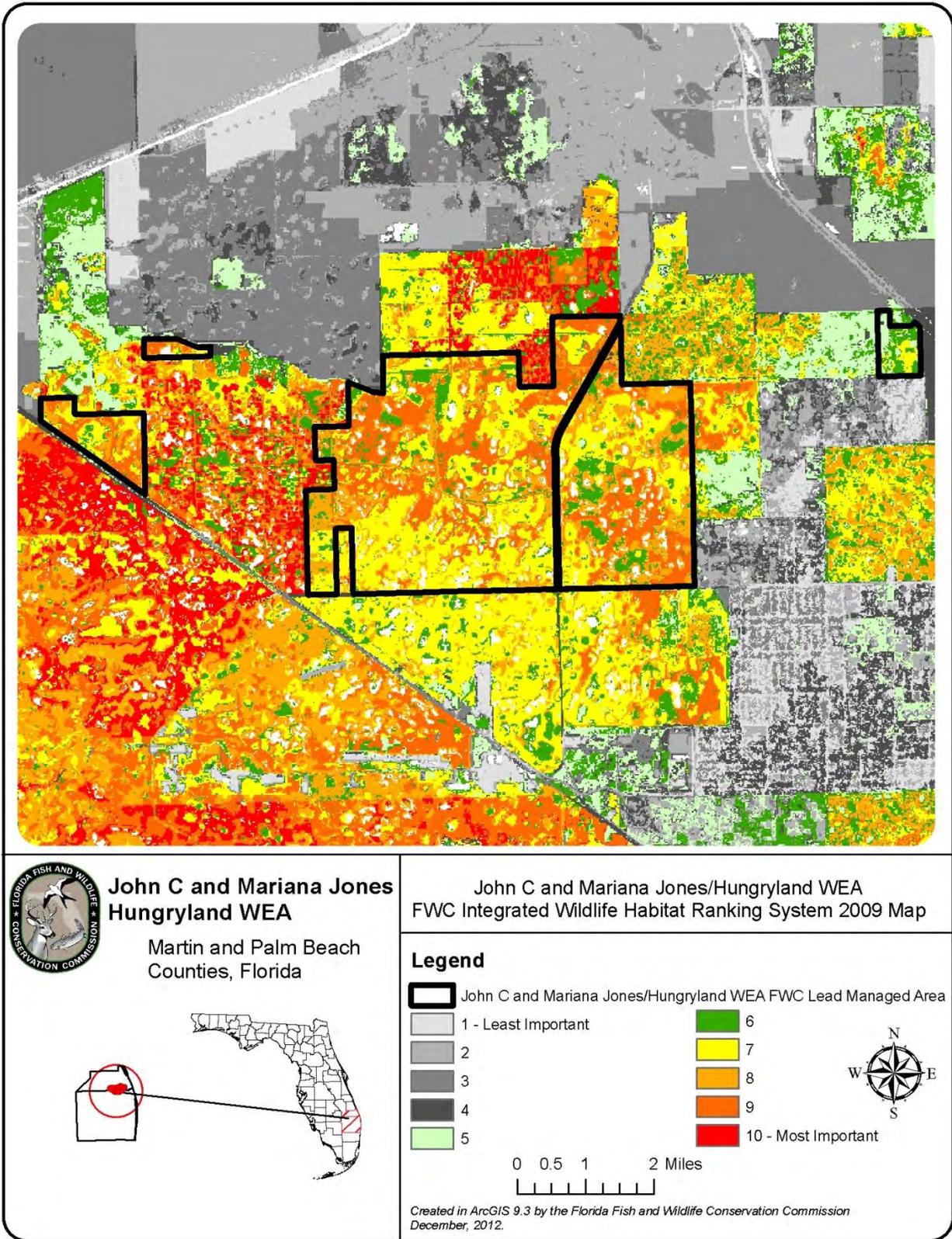


Figure 7. FWC Integrated Wildlife Habitat Ranking System 2009

13.3 Land Management Review

Name of Site: Jones-Hungryland WEA

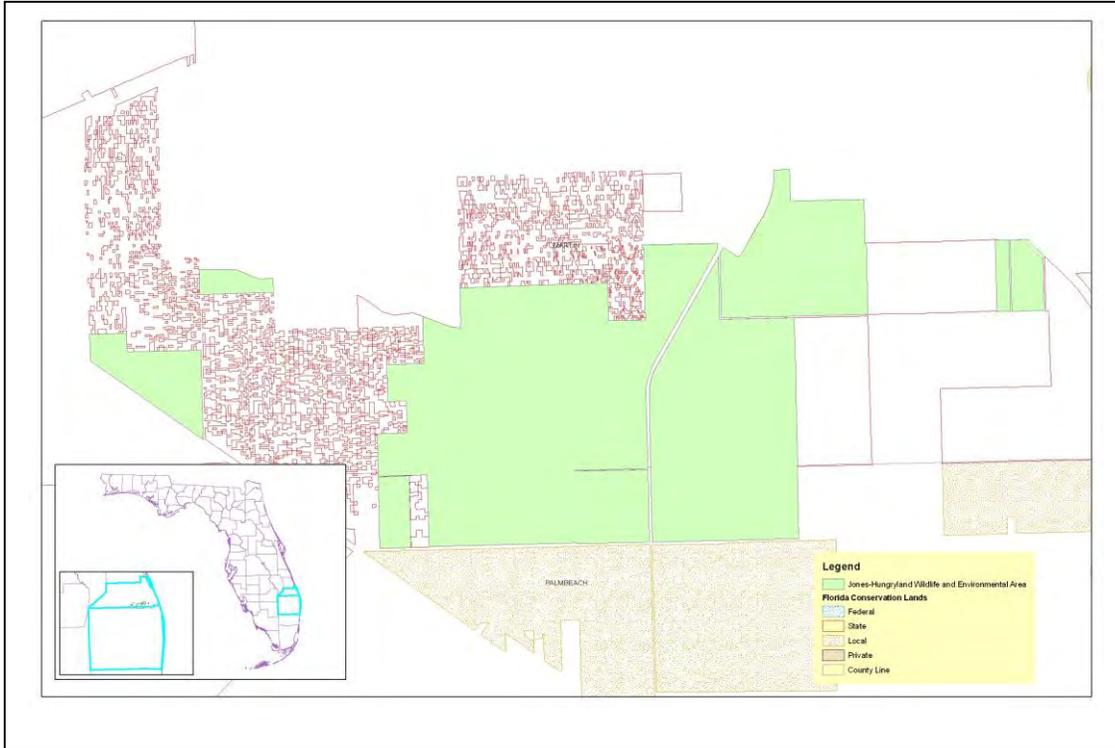
County: Martin/Palm Beach Counties

Managed by: Fish and Wildlife Conservation Commission

Acres: 12,735 Acres
Area Reviewed: Entire tract

Review Date: 03/15/11

Management Plan Approval Date: 4/25/02



Review Team Determination

Managed in accordance with Acquisition purpose? Yes =6, No = 0



Management practices, including public access, in compliance with the management plan? Yes =6, No = 0



Categories	Plan Review	Field Review
Natural Communities	0.60	3.57
Listed Species	0.58	3.00
Natural Resource Survey	0.60	3.68
Cultural Resources	0.75	4.10
Prescribed Fire	0.67	2.46
Restoration	1.00	4.20
Exotic Species	0.55	3.42
Hydrology	0.68	3.20
Surface Water Monitoring	0.50	3.20
Resource Protection	0.54	3.18
Adjacent Property Concerns	0.70	3.67
Public Access & Education	0.73	3.65
Management Resources	N/A	3.67
Managed Area Uses	0.94	N/A
Buildings, Equipment, Staff & Funding	N/A	2.35

Consensus Commendations to the Managing Agency

The following commendations resulted from discussion and vote of the review team members.

1. The team commends the FWC for doing an outstanding job of treating and monitoring non-native invasive plants with the limited available funds. (VOTE: 6+, 0-)



2. The team commends the FWC for the recent improvements to recreation facilities and trailheads to encourage public use. (VOTE: 6+, 0-)



3. The team commends the FWC on their installation of low-water crossings in the Jupiter-Indiantown Grade, which contributes to regional hydrologic restoration goals of the Loxahatchee River watershed. (VOTE: 6+, 0-)



Consensus Recommendations to the Managing Agency

The following recommendations resulted from a discussion and vote of review team members. The management plan must include responses to the recommendations identified below.

1. The team recommends coordination with SFWMD CERP project managers to ensure FWC can plan and implement management based upon accurate hydrologic information. (VOTE: 6+, 0-)



Managing Agency Response: FWC will continue to coordinate and cooperate with the SFWMD on implementation of the CERP project to reduce impacts on the Jones-Hungryland Wildlife and Environmental Area (JHWEA).

2. The team recommends FWC pursue coordination efforts with local conservation organizations, such as Florida Native Plant Society and Audubon Society to assist in locating, identifying and protecting rare species on the WEA. (VOTE: 6+, 0-)



Managing Agency Response: FWC will explore opportunities to coordinate with local conservation organizations such as the Florida Native Plant Society and Audubon Society to assist in locating, identifying, and protecting rare species along with implementation of development of the Wildlife Conservation Prioritization and Recovery strategy for the area that specifically describes the need for monitoring, surveys, and habitat management activities related to imperiled species management.

3. The team recommends FWC make a priority their efforts to increase the burning frequency in the fire dependent communities on the WEA. (VOTE: 6+, 0-)



Managing Agency Response: Overall resource management activities will be through continuing implementation of FWC's Objective-based Vegetation Management (OBVM) desired future conditions and associated monitoring protocols. FWC will continue to implement prescribed fire in order to implement OBVM objectives and achieve desired future conditions.

4. The team recommends that FWC take more aggressive actions to control the feral hog population at Hungryland WEA, due to the adverse impacts to natural communities. (VOTE: 6+, 0-)



Managing Agency Response: FWC will evaluate the need to expand hog hunting opportunities on the area to address adverse impacts from the hog population. FWC will continue to monitor the impacts of hog populations on natural communities within the area.

Field Review Checklist Findings

The following items received high scores on the review team checklist, which indicates that management actions exceeded expectations.

- Natural Communities, regarding depression marsh, wet prairie, dome swamp, basin marsh, and baygall.
- Natural Resources Survey, regarding listed species or habitat monitoring, other non-game species or habitat monitoring, fire effects monitoring, other habitat management effects monitoring, and invasive species survey/monitoring.
- Cultural Resources, regarding the cultural resource survey, protection and preservation of those resources.
- Restoration of Ruderal Areas, regarding spoil mounds.
- Non-native, Invasive and Problem Species, regarding the prevention and control of plants.
- Hydrologic/Geologic Function, regarding roads and culverts.
- Resource Protection, regarding gates, fencing and signage.
- Adjacent Property Concerns, regarding expanding development, inholdings and additions.
- Public Access & Education, regarding roads, parking, interpretive facilities and signs, recreational opportunities, and the management of visitor impacts.
- Management Resources, regarding sanitary facilities.

Items Requiring Improvement Actions in the Management Plan

The following items received low scores on the review team checklist, which indicates that the text noted in the Management Plan Review does not sufficiently address this issue (less than .5 score on average.). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The management plan must include responses to the checklist items identified below:

1. Increased protection of listed species, specifically in plant inventory, with documentation in the management plan.

Managing Agency Response: FWC notes that pages 6-9 of the current management plan provides information on listed species and a plant inventory. FWC will expand discussion in the update to the management plan.

2. Discussion regarding the deficiencies relating to the natural resources survey, specifically other non-game species or habitat monitoring, fire effects monitoring, other habitat management effects monitoring, with documentation in the management plan.

Managing Agency Response: FWC notes that page 10 of the current management plan is a map of the natural communities of the area; appendix 5 describes in detail the natural communities. FWC has implemented WCPR and OBVM to address wildlife and vegetation monitoring. FWC will expand discussion in the update to the management plan.

3. Discussion regarding deficiencies with non-native, invasive and problem species, more specifically the prevention of plants and animals and prevention and control of pests/pathogens, with documentation in the management plan.

Managing Agency Response: FWC notes that page 9 of the current plan contains an inventory of invasive exotic plant species of the area. FWC will expand discussion of this topic in the update to the management plan. Use of the terminology "pests/pathogen" is not clear since it is not a required element of

management plans. FWC will evaluate the need to address the issue of pests/pathogens in the management plan update.

4. The need for surface water monitoring, specifically with the quality of the water, with documentation in the management plan.

Managing Agency Response: Regional hydrological monitoring is within the jurisdiction and responsibility of the SFWMD. FWC notes that page 21 of the current plan discusses the need for hydrological management objectives. FWC complete a hydrological assessment of the area as funding permits. FWC will expand the discussion of this topic in the update to the management plan.

5. Increased resource protection on the property, specifically law enforcement presence, with documentation in the management plan.

Managing Agency Response: FWC notes that page 22 of the current plan addresses law enforcement activities. FWC Law Enforcement staff will continue to evaluate and provide the appropriate level of law enforcement presence as funding and resources allow. Additionally, FWC will assess the need for additional gates, fences, signs for additional protection efforts. FWC will expand the discussion of these issues in the update of the management plan.

6. Discussion regarding adjacent property concerns, specifically the surplus lands that have been identified, with documentation in the management plan.

Managing Agency Response: FWC notes that page 19 of the current plan addresses surplus lands. In addition, FWC has developed a comprehensive optimal conservation planning boundary protocol that will be developed, which will include an analysis of adjacent land use, property concerns, conservation acquisitions, as well as the further review of potential surplus land designations and will be incorporated in the management plan update.

7. Discussion regarding public access & education, specifically wildlife, invasive species and habitat management activities, with documentation in the management plan.

Managing Agency Response: FWC notes that these issues are addressed on pages 3, 5, 9, 17, 19-23 of the current management plan. FWC will expand discussion on all of these management issues in the update of the management plan.

PLAN REVIEW		1	2	3	4	5	6	AVERAGE
Natural Communities (I.A)								
Mesic Flatwoods	I.A.1		0	1	1	1	0	0.60
Wet Flatwoods	I.A.2		0	1	1	1	0	0.60
Depression Marsh	I.A.3		0	1	1	1	0	0.60
Wet Prairie	I.A.4		0	1	1	1	0	0.60
Dome Swamp	I.A.5		0	1	1	1	0	0.60
Basin Marsh	I.A.6		0	1	1	1	0	0.60
Baygall	I.A.7		0	1	1	1	0	0.60
Listed species:Protection & Preservation (I.B)								
Animal Inventory	I.B.1	0	1	1	1	1	1	0.83
Plant Inventory	I.B.2	0	1	0	1	0	0	0.33

Natural Resources Survey/Management Resources (I.C)								
Sport fish or habitat monitoring	I.C.1		0	1	1	1	0	0.60
Listed species or habitat monitoring	I.C.2		1	1		1	0	0.75
Other non-game species or habitat monitoring	I.C.3		0	1		1	0	0.50
Fire effects monitoring	I.C.4		0	1		1	0	0.50
Other habitat management effects monitoring	I.C.5		0	1		1	0	0.50
Invasive species survey / monitoring	I.C.6		1	1		1	0	0.75
Cultural Resources (Archeological & Historic sites) (II.A,II.B)								
Cultural Res. Survey	II.A	1	0	1	1	1	0	0.67
Protection and preservation	II.B	1	0	1	1	1	1	0.83
Resource Management, Prescribed Fire (III.A)								
Area Being Burned (no. acres)	III.A.1		1	1	1	1	0	0.80
Frequency	III.A.2		0	1	1	1	0	0.60
Quality	III.A.3		0	1	1	1	0	0.60
Restoration of Ruderal Areas (III.B)								
Spoil Mounds	III.B.1		1	1	1		1	1.00
Non-Native, Invasive & Problem Species (III.E)								
Prevention								
prevention - plants	III.E.1.a	1	0	1	1	0	0	0.50
prevention - animals	III.E.1.b		0	1	1	0	0	0.40
prevention - pests/pathogens	III.E.1.c		0	1	1	0	0	0.40
Control								
control - plants	III.E.2.a	1	1	1	1	1	1	1.00
control - animals	III.E.2.b		0	1	1	1	0	0.60
control - pest/pathogens	III.E.2.c		0	1	1	0	0	0.40
Hydrologic/Geologic function Hydro-Alteration (III.F.1)								
Roads/culverts	III.F.1.a		1	1	1	1	0	0.80
Ditches	III.F.1.b		1	1	1	0	0	0.60
Hydro-period Alteration	III.F.1.c		1	1	1	0	0	0.60
Water Level Alteration	III.F.1.d		1	1	1	0	0	0.60
Dams, Reservoirs or other impoundments	III.F.1.e		1	1	1	0	1	0.80
Surface Water Monitoring (III.F.3)								
Surface water quality	III.F.3.a		0	1	1	0	0	0.40
Surface water quantity	III.F.3.b		1	1	1	0	0	0.60
Resource Protection (III.G)								
Boundary survey	III.G.1	1	0	1	0	1	1	0.67
Gates & fencing	III.G.2	1	1	1	1	1	0	0.83
Signage	III.G.3	0	1	1	1	1	0	0.67
Law enforcement presence	III.G.4	0	0	0	0	0	0	0.00

Adjacent Property Concerns (III.H)								
Land Use								
Expanding development	III.H.1.a		0	1	1	0	1	0.60
Inholdings/additions	III.H.2		1	1	1	1	0	0.80
Discussion of Potential Surplus Land Determination	III.H.3		1	1	1	1	1	1.00
Surplus Lands Identified?	III.H.4		0	0	1	1	0	0.40
Public Access & Education								
Public Access								
Roads	IV.1.a		1	1	1	1	1	1.00
Parking	IV.1.b		1	1	1	1	1	1.00
Environmental Education & Outreach								
Wildlife	IV.2.a	0	0	1	1	1	0	0.50
Invasive Species	IV.2.b	0	0	1	1	1	0	0.50
Habitat Management Activities	IV.2.c	0	0	1	1	1	0	0.50
Interpretive facilities and signs	IV.3	0	1	1	1	1	1	0.83
Recreational Opportunities	IV.4	0	1	1	1	1	1	0.83
Management of Visitor Impacts	IV.5	0	1	1	1	1	0	0.67
Managed Area Uses								
Existing Uses								
Hunting	VI.A.1	0	1	1	1	1	1	0.83
Fishing	VI.A.2	0	1	1	1	1	1	0.83
Recreational Trails	VI.A.3	1	1	1	1	1	1	1.00
Environmental Education	VI.A.4		1	1	1	1	1	1.00
Primitive Camping	VI.A.5		1	1	1	1	1	1.00
Equestrian Use	VI.A.6		1	1	1	1	1	1.00

Items Requiring Improvement Actions in the Field

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review were not considered sufficient (less than 2.5 score on average). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The management plan must include responses to the checklist items identified below:

1. Increased resource management activities related to prescribed burning, specifically the area being burned and the frequency of these burns, with documentation in the management plan.

Managing Agency Response: Overall resource management activities will be through continuing implementation of FWC's Objective-based Vegetation Management (OBVM) desired future conditions and associated monitoring protocols. This information will be included in the update of the management plan. These activities are documented in the FWC Land Management Information System and Land Management Uniform Accounting Council Biennial Report. FWC is committed to maintaining a 3-5 year burn rotation on Hungryland WEA as long as funding and weather conditions permit. The burn plan will be updated annually. Information regarding the implementation of these activities will be incorporated into the updated management plan.

2. Increased resource protection, specifically law enforcement presence, with documentation in the management plan.

Managing Agency Response: FWC Law Enforcement staff will continue to evaluate and provide the appropriate level of law enforcement presence as funding and resources allow. Additionally, FWC will assess the need for additional gates, fences, signs for additional protection efforts. FWC will expand the discussion of these issues in the update of the management plan.

3. The need for management resources, specifically staff and funding, with documentation in the management plan.

Managing Agency Response: FWC evaluates the need for more management resources, specifically staff and funding on a continuous basis, and will continue to seek appropriate funding for staff and resources sufficient to implement the plan's goals and objectives. All land management funding is dependent upon legislative appropriations.

FIELD REVIEW		1	2	3	4	5	6	AVERAGE
Natural Communities (I.A)								
Mesic Flatwoods	I.A.1	X	3	3	2	3	3	2.80
Wet Flatwoods	I.A.2	X	2	3	3	3	2	2.60
Depression Marsh	I.A.3	X	5	4	4	4	4	4.20
Wet Prairie	I.A.4	X	4	4	3	4	3	3.60
Dome Swamp	I.A.5	X	4	4	4	5	4	4.20
Basin Marsh	I.A.6	X	4	4	3	4	3	3.60
Baygall	I.A.7	X	4	4	3	5	4	4.00
Listed species:Protection & Preservation (I.B)								
Animal Inventory	I.B.1	X	3	4	2	4	4	3.40
Plant Inventory	I.B.2		3	2	2	3	3	2.60
Natural Resources Survey/Management Resources (I.C)								
Sport fish or habitat monitoring	I.C.1	X	3	3	2	3	3	2.80
Listed species or habitat monitoring	I.C.2	X	4	4	4	4	4	4.00
Other non-game species or habitat monitoring	I.C.3	X	3	3	4	4	4	3.60
Fire effects monitoring	I.C.4	X	3	4	4	4	3	3.60
Other habitat management effects monitoring	I.C.5	X	3	3	4	4	4	3.60
Invasive species survey / monitoring	I.C.6		4	4	5	5	5	4.50
Cultural Resources (Archeological & Historic sites) (II.A,II.B)								
Cultural Res. Survey	II.A		4	4	4	5	3	4.00
Protection and preservation	II.B		4	4	4	5	4	4.20

Resource Management, Prescribed Fire (III.A)								
Area Being Burned (no. acres)	III.A.1	2	2	3	2	2	2	2.17
Frequency	III.A.2	X	2	3	2	2	1	2.00
Quality	III.A.3	X	3	4	2	4	3	3.20
Restoration of Ruderal Areas (III.B)								
Spoil Mounds	III.B.1		5	4	3	5	4	4.20
Non-Native, Invasive & Problem Species (III.E)								
Prevention								
prevention - plants	III.E.1.a	4	3	4	4	X	3	3.60
prevention - animals	III.E.1.b	X	3	3	3	X	3	3.00
prevention - pests/pathogens	III.E.1.c	X	3	3	3	X	2	2.75
Control								
control - plants	III.E.2.a	4	5	4	4	5	5	4.50
control - animals	III.E.2.b	X	3	3	4	4	3	3.40
control - pest/pathogens	III.E.2.c	X	3	4	3		3	3.25
Hydrologic/Geologic function Hydro-Alteration (III.E.1)								
Roads/culverts	III.F.1.a	X	3	4	4	4	4	3.80
Ditches	III.F.1.b	X	3	3	3	3	3	3.00
Hydro-period Alteration	III.F.1.c	X	2	4	3	3	3	3.00
Water Level Alteration	III.F.1.d	X	2	4	3	3	3	3.00
Dams, Reservoirs or other impoundments	III.F.1.e	X	3	3	3	3	4	3.20
Surface Water Monitoring (III.E.3)								
Surface water quality	III.F.3.a	X	3	3	3	X	3	3.00
Surface water quantity	III.F.3.b	X	4	4	3	3	3	3.40
Resource Protection (III.F)								
Boundary survey	III.G.1	X	3	3	1	3	3	2.60
Gates & fencing	III.G.2	4	3	4	5	4	4	4.00
Signage	III.G.3	5	3	5	5	5	3	4.33
Law enforcement presence	III.G.4	X	2	2	1	2	2	1.80
Adjacent Property Concerns (III.G)								
Land Use								
Expanding development	III.H.1.a	4	3	4	4	4	3	3.67
Inholdings/additions	III.H.2	4	3	4	3	5	3	3.67
Public Access & Education								
Public Access								
Roads	IV.1.a	4	3	4	4	4	4	3.83
Parking	IV.1.b	4	3	4	3	4	4	3.67
Environmental Education & Outreach								
Wildlife	IV.2.a	X	2	4	4	3	3	3.20
Invasive Species	IV.2.b	1	2	3	4	3	3	2.67
Habitat Management Activities	IV.2.c	X	2	4	4	3	3	3.20
Interpretive facilities and signs	IV.3	4	4	5	5	5	4	4.50
Recreational Opportunities	IV.4	4	4	5	4	5	4	4.33

Management of Visitor Impacts	IV.5	X	3	5	3	4	4	3.80
Management Resources								
Maintenance								
Waste disposal	V.1.a	4	3	4	2	3	4	3.33
Sanitary facilities	V.1.b	4	3	4	4	5	4	4.00
Infrastructure								
Buildings	V.2.a	X	3	4	3	3	3	3.20
Equipment	V.2.b	X	3	2	2	3	3	2.60
Staff	V.3	X	2	1	2	2	2	1.80
Funding	V.4	X	3	1	2	1	2	1.80

Fish and Wildlife Conservation Commission Manager and Key Staff Present:

- Pamela Boody, Manager
- Linda King
-

APPENDIX:

The following comments represent individual comments, and may not represent the consensus of the land management review team.

I.A. Natural Communities

- It would have helped and for future surveys, will help if a knowledgeable member of the team identify and point out to us the various natural communities in the field for identification.
- Management plan only includes a description from FNAI of communities but not the specific protection/management goals.
- Flatwoods communities that are not over grown and require extensive mechanical treatment (i.e. would be burned today and achieve desired results) would be in maintenance condition.
- Most of the natural communities appeared to be in relatively intact condition, however much of the area is fire suppressed with little recent prescribed fire. As a result, both the flatwoods and prairie systems were lacking desired levels of herbs and grasses. The prairies were, in places, experiencing colonization by slash pines and cypress due to the lack of burning and possibly a shorter hydro-period. Permitted work by the SFWMD and Martin County to remove culverts at the headwaters of Cypress Creek will be a major accomplishment in efforts to restore the historic longer hydroperiods to the prairies and marshes in the northeast sections of the property. The sand bottom depression marshes were dry given recent drought conditions but appeared to be relatively intact with their ecotones showing no disturbance from swamp buggies and off road vehicles like what is evident in the nearby Corbett WMA. Cypress domes and their ecotones appeared intact with no evidence of invasive plants (climbing fern).
- This land is a wonderful example of Florida's natural communities. Keep up your programs to exclude exotics and keep it fire ready.

I.B. Listed Species

- Plant inventory in the management plan is inadequate and has errors. An inventory by institute of regional conservations is much better. Go to www.regionalconservation.org.
- Good inventory in the management plan, but minimal discussion of protection and preservation.
- I do understand why emphasis is not placed on listed vegetation due to lack of staff. (only two staff available for all of this WEA)
- Could use more specific listings with plans for individual species of both plants and animals.
- Plant inventory in the management plan is outdated and inaccurate.
- More work is suggested to coordinate bird and plant monitoring with local organizations who have the expertise to assist staff (i.e. Audubon, FNPS). Good efforts by staff to monitor marsh birds annually.
- FWC institute of regional conservation plant list. We saw very few animals or birds during the survey.

I.C. Natural Resource Survey/Monitoring Resources

- Did not see much invasive plants in areas. Looks like monitoring and control is adequate.
- Staff has made a great effort to survey for exotics. Monitoring of occurrence for listed species is sufficient but should be increased if it's warranted and the funds are available.
- Would have given sport fish a 3 in score based on talking with local FWC staff but didn't feel that the monitoring has really begun or gotten fully underway.
- FWC is working toward improving fisheries in the canals- which may include stocking fish.

II.A.B. Cultural Resources

- Old Jupiter- Indiantown Road is being preserved and should continue to be protected and maintained.
- Survey for cultural resources completed in 2004 also not addressed in plan. Needs to be included in the plan update.
- Commendable job integrating preservation of historic Jupiter Indiantown Road with hydrologic restoration goals.
- Would like to see maybe informational signs or markings to show locations of historic sites.
- FWC might consider some interpretive signage and materials regarding the Jupiter Indiantown grade and its historic significance.

- No staff is trained as an archeological site monitor. The old Jupiter Indiantown has now been listed on the Florida Master Site File and was in good condition.
- Good signage would help visitors to appreciate these sites. Indiantown Road needs more care and upkeep.

III.A. Resource Management

- Frequency of burning needs to be increased over much of the flatwoods, after reduction of understory. Frequency needs to be increased over all burn communities.
- Approximately 3,500 acres have been burned over the last five years (10,000 plus total acres), however the majority of this was accomplished in 2007. Perimeter fire lines are currently being established by DOF on some of the property, however internal burn unit fire lines have not yet been installed. While staff and available funding on the WMA, have been minimal, a much higher emphasis is needed by FWC to advance the prescribed fire program here. With the new district biologist now in place and committed to increase the level of support- it seems likely that that the property should begin to achieve desired burn objectives of averaging 2000-3000 acres each year.

III.B. Restoration

- Native plantings around spoil mounds need to be restored, not removed.
- Spoil mounds have been removed and it looks to be in good condition.
- Still need to remove silt fence.
- The removal of the canal spoil mounds has now been completed. Although the team overlooked adding the agricultural field restoration project on the eastern side of the property. FWC has continued efforts to treat a bad population of lygodium. This will require apparently great diligence to bring into, and keep in, a maintenance condition.

III.E. Non-native, Invasive & Problem Species

- Invasive plants appear under good control. Did not see any Brazilian pepper, only a small amount of lygodium and melaleuca. On the field review I didn't see many hog diggings.
- Staff has made excellent progress on removal and maintenance of exotic species within the natural areas.
- Install wash stations for contracting equipment. Commendable job on exotic control vegetation, especially with limited funds. Recommend continued increases in hog limits and/or trapping hogs to reduce damage.
- Contractors should be required to clean their vehicles to avoid transfer of non native plant species.
- More work could be done to advise campers of not bring in fire wood (related to reducing importation of the red ambrosia beetle). FWC has done an outstanding job of treating and monitoring for non-native invasive plants. All major melaleuca populations that were observed had been hit hard with chemicals and appeared to be completely knocked out. The lygodium in the old agricultural area on the east side will require ongoing work to fully get a handle on it. FWC does a super job managing the exotics crews that work on the property. All areas worked are GPS'ed by the contractor and downloaded weekly, with annotation, at the FWC office.

III.F. Hydrologic/Geologic Function

- In restoring water flows need to keep hiking trails and hammocks as dry as possible for public use- hiking, biking, bird watching, etc.
- FWC should continue to work with other agencies to address hydrological concerns whenever feasible. Staff monitors water level in WEA with level gauges.
- Recommend when doing ditch/canal bank filling. Total bank filling accomplishes goals much better than only installing plugs. No surface water monitoring, but it's not necessary.
- Checking of newly installed staff gauges should be recorded for future reference.
- Some internal ditches associated with the marshes and prairies on the eastern side of the tract need to be addressed for this restoration. This should be done within the planning of a new work. Everglades CERP project, however, we were told. Staff gauges have been recently installed by FWC in depression marshes. FWC needs to get a better understanding of the specific hydrologic assessment work being done on WMA by Beth at SFWMD in support of a north Everglades CERP project being developed.
- The plan is just outdated regarding the hydrologic enhancements that have occurred since the plan was last updated.

III.G. Resource Protection

- The level of law enforcement is sporadic and response to littering and dumping cases has been slow. None of the boundary appears to be surveyed, however there has been few issues related to this adjacent land owners.

III.H. Adjacent Property Concerns

- Continue expanding the WEA by obtaining and purchasing the adjacent private properties.
- Strongly discourage any surplus of land in this area due to connectivity with other public lands and restoration goals (CERP).
- Management plan needs to provide a more current and accurate optimum boundary map.

IV. Public Access and Education

- Did not see any environmental education plans or programs in the management plan. They need to be there.
- FWC/staff should pursue opportunities for public education and outreach.
- Very nice recreational opportunities and recent improvements with generally well marked trailheads with informative kiosks. The historic Jupiter Indiantown Road has been incorporated into a trail. Vegetation has brushed back and flow over; eroded areas have had low water crossings installed. I suggest some interpretation of the 100 year old scenic road be added to the trail head kiosks. Trails are open for equestrian, hiking and bicycle use.

V. Infrastructure/ Management Resources

- From the outside the building looked okay although we didn't see inside them. Staffing seems inadequate.
- More funding for equipment maintenance is needed. Staff is doing a commendable job with so little staff and funding. More staff and funding are needed to further implement management goals.
- Need additional staff to ensure proper functions of resources on site.
- Lack of staff and funding is significantly impacting FWC's ability to meet burning goals and objectives. Having an OPS employee to run the check station would be significantly helpful in meeting resource management goals.
- Staff and equipment work out of the facilities located on the adjacent Corbett WMA. More staff and funding are needed to accomplish resource management work- specifically more burning.
- If you bring it in the park, bring it out.

VI. Managed Area Uses

- With the declining in quail locally and state-wide, along with limited population in this WEA, hunting for quail should not be allowed, especially in this WEA.
- Facilities are very user friendly while allowing for protection of the resources.

13.4 Soil Series Descriptions

Map Unit Description

Martin County, Florida

Map unit: 2 - Lawnwood and Myakka fine sands

Component: Lawnwood (40%)

The Lawnwood component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on coastal plains on marine terraces on flatwoods. The parent material consists of sandy marine deposits. Depth to a root restrictive layer, ortstein, is 20 to 30 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Myakka (40%)

The Myakka component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 4 - Waveland and Immokalee fine sands

Component: Immokalee (40%)

The Immokalee component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Waveland (40%)

The Waveland component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer, ortstein, is 30 to 50 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 5 - Waveland and Lawnwood fine sands, depressional

Component: Lawnwood (40%)

The Lawnwood component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer, ortstein, is 20 to 30 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

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Martin County, Florida

Map unit: 5 - Waveland and Lawnwood fine sands, depressional

Component: Waveland (40%)

The Waveland component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer, ortstein, is 30 to 50 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 6 - Paola and St. Lucie sands, 0 to 8 percent slopes

Component: Paola (45%)

The Paola component makes up 45 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R156BY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: St. Lucie (40%)

The St. Lucie component makes up 40 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R156BY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 8 - Palm Beach-Beaches complex, 0 to 8 percent slopes

Component: Palm Beach (62%)

The Palm Beach component makes up 62 percent of the map unit. Slopes are 0 to 8 percent. This component is on dunes on marine terraces on coastal plains. The parent material consists of shells and sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Beaches (30%)

Generated brief soil descriptions are created for major soil components. The Beaches is a miscellaneous area.

Map unit: 9 - Pomello sand, 0 to 5 percent slopes

Component: Pomello (90%)

The Pomello component makes up 90 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60

Map Unit Description

Martin County, Florida

Map unit: 9 - Pomello sand, 0 to 5 percent slopes

Component: Pomello (90%)

inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 13 - Placid and Basinger fine sands, depressional

Component: Placid (45%)

The Placid component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 6 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger (40%)

The Basinger component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 14 - Archbold sand

Component: Archbold (85%)

The Archbold component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 45 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. This component is in the R156BY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 16 - Oldsmar fine sand, 0 to 2 percent slopes

Component: Oldsmar, fine sand (90%)

The Oldsmar, fine sand component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods, coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

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Map unit: 17 - Wabasso sand, 0 to 2 percent slopes

Component: Wabasso (89%)

The Wabasso component makes up 89 percent of the map unit. Slopes are 0 to 2 percent. This component is on -- Error in Exists On --. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer, strongly contrasting textural stratification, is 9 to 50 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 19 - Winder sand, depressional

Component: Winder (80%)

The Winder component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 21 - Pineda and Riviera fine sands

Component: Pineda (45%)

The Pineda component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY011FL Slough ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Riviera (40%)

The Riviera component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY011FL Slough ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 22 - Okeelanta muck

Component: Okeelanta (90%)

The Okeelanta component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent. This component is in the

Map Unit Description

Martin County, Florida

Map unit: 22 - Okeelanta muck

Component: Okeelanta (90%)

R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 23 - Urban land

Component: Urban land (95%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 27 - Arents, organic substratum, 0 to 5 percent slopes

Component: Arents, organic substratum (100%)

The Arents, organic substratum component makes up 100 percent of the map unit. Slopes are 0 to 5 percent. This component is on fills, rises on marine terraces on coastal plains. The parent material consists of sandy dredge spoils over organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 8. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 28 - Canaveral sand, 0 to 5 percent slopes

Component: Canaveral (80%)

The Canaveral component makes up 80 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains, dunes on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 21 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 30 - Bessie muck

Component: Bessie, tidal (85%)

The Bessie, tidal component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes on marine terraces on coastal plains. The parent material consists of organic material over clayey and sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 35 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 50 within 30 inches of the soil surface.

Map unit: 34 - St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes

Component: St. Lucie (34%)

The St. Lucie component makes up 34 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater

Map Unit Description

Martin County, Florida

Map unit: 34 - St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes

Component: St. Lucie (34%)

than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Paola (31%)

The Paola component makes up 31 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (30%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 35 - Salerno sand

Component: Salerno (80%)

The Salerno component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer, ortstein, is 50 to 72 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 36 - Arents, 0 to 2 percent slopes

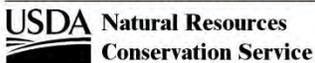
Component: Arents (100%)

The Arents component makes up 100 percent of the map unit. Slopes are 0 to 2 percent. This component is on fills, rises on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 8. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 38 - Floridana fine sand, depressional

Component: Floridana (85%)

The Floridana component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 11 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.



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Map Unit Description

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Map unit: 38 - Floridana fine sand, depressional

Component: Floridana (85%)
soil surface.

Map unit: 40 - Sanibel muck

Component: Sanibel (85%)

The Sanibel component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of thin organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 41 - Jonathan sand, 0 to 5 percent slopes

Component: Jonathan (85%)

The Jonathan component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer, ortstein, is 56 to 99 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 48 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 42 - Hallandale sand

Component: Hallandale, hydric (70%)

The Hallandale, hydric component makes up 70 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 7 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Hallandale, nonhydric (15%)

The Hallandale, nonhydric component makes up 15 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 7 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Martin County, Florida

Map unit: 44 - Boca fine sand

Component: Boca, nonhydic (70%)

The Boca, nonhydic component makes up 70 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 24 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Boca, hydric (15%)

The Boca, hydric component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 24 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 47 - Pinellas fine sand

Component: Pinellas (80%)

The Pinellas component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY012FL Wetland Hardwood Hammock ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 48 - Jupiter sand

Component: Jupiter, nonhydic (60%)

The Jupiter, nonhydic component makes up 60 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 8 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY012FL Wetland Hardwood Hammock ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Jupiter, hydric (20%)

The Jupiter, hydric component makes up 20 percent of the map unit. Slopes are 0 to 1 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 8 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 15 percent. This component is in the R156BY012FL Wetland Hardwood Hammock ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Martin County, Florida

Map unit: 49 - Riviera fine sand, depressional

Component: Riviera (80%)

The Riviera component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 4 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 50 - Wulfert and Durbin mucks, tidal

Component: Wulfert, tidal (45%)

The Wulfert, tidal component makes up 45 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes on marine terraces on coastal plains. The parent material consists of organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 80 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 60 within 30 inches of the soil surface.

Component: Durbin, tidal (40%)

The Durbin, tidal component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on -- Error in Exists On --. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 53 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 30 within 30 inches of the soil surface.

Map unit: 52 - Malabar fine sand, high

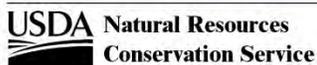
Component: Malabar (85%)

The Malabar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 53 - Udorthents, 0 to 35 percent slopes

Component: Udorthents (100%)

The Udorthents component makes up 100 percent of the map unit. Slopes are 0 to 35 percent. This component is on fills on ridges on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium



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Map Unit Description

Martin County, Florida

Map unit: 53 - Udorthents, 0 to 35 percent slopes

Component: Udorthents (100%)

adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 55 - Basinger fine sand, 0 to 2 percent slopes

Component: Basinger (90%)

The Basinger component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during July, August. Organic matter content in the surface horizon is about 1 percent. This component is in the R155XY011FL Slough ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 56 - Wabasso and Oldsmar fine sands, depressional

Component: Wabasso (45%)

The Wabasso component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Oldsmar (40%)

The Oldsmar component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 57 - Chobee loamy sand, depressional

Component: Chobee (85%)

The Chobee component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Martin County, Florida

Map unit: 58 - Gator and Tequesta mucks

Component: Gator (50%)

The Gator component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over loamy and sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 70 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Tequesta (40%)

The Tequesta component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of stratified sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 48 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 1 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 61 - Hobe fine sand, 0 to 5 percent slopes

Component: Hobe (80%)

The Hobe component makes up 80 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 66 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 63 - Nettles sand

Component: Nettles (80%)

The Nettles component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer, ortstein, is 30 to 50 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R156BY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 66 - Holopaw fine sand

Component: Holopaw (85%)

The Holopaw component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water

Map Unit Description

Martin County, Florida

Map unit: 66 - Holopaw fine sand

Component: Holopaw (85%)

saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R156BY011FL Slough ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 67 - Kesson sand, tidal

Component: Kesson, tidal (80%)

The Kesson, tidal component makes up 80 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes on marine terraces on coastal plains. The parent material consists of sandy marine deposits with shells. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 20 within 30 inches of the soil surface.

Map unit: 69 - Hontoon muck

Component: Hontoon (90%)

The Hontoon component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on swamps on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 80 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 70 - Canova muck, moderately deep, drained

Component: Canova, moderately deep, drained (80%)

The Canova, moderately deep, drained component makes up 80 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of thin layer of organic material over sandy and loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 24 to 42 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is occasionally ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 70 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 73 - Samsula muck

Component: Samsula (85%)

The Samsula component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 70 percent. This component is in the R156BY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric

Map Unit Description

Martin County, Florida

Map unit: 73 - Samsula muck

Component: Samsula (85%)

criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 77 - Paola and St. Lucie sands, 8 to 20 percent slopes

Component: Paola (50%)

The Paola component makes up 50 percent of the map unit. Slopes are 8 to 20 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R156BY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: St. Lucie (45%)

The St. Lucie component makes up 45 percent of the map unit. Slopes are 8 to 20 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R156BY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 78 - Duette fine sand

Component: Duette (80%)

The Duette component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 36 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. This component is in the R156BY001FL Sand Pine Scrub ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 99 - Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map unit: 100 - Waters of the Atlantic Ocean

Component: Waters of the Atlantic Ocean (100%)

Generated brief soil descriptions are created for major soil components. The Waters of the Atlantic Ocean is a miscellaneous area.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 2 - Anclote fine sand

Component: Anclote (90%)

The Anclote component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 4 - Arents-Urban land complex, 0 to 5 percent slopes

Component: Arents (60%)

The Arents component makes up 60 percent of the map unit. Slopes are 0 to 5 percent. This component is on fills, rises on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (35%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 5 - Arents-Urban land complex, organic substratum

Component: Arents, organic substratum (55%)

The Arents, organic substratum component makes up 55 percent of the map unit. Slopes are 0 to 2 percent. This component is on fills, rises on marine terraces on coastal plains. The parent material consists of sandy dredge spoils over organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 6 - Basinger fine sand, 0 to 2 percent slopes

Component: Basinger (90%)

The Basinger component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during July, August. Organic matter content in the surface horizon is about 1 percent. This component is in the R155XY011FL Slough ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 7 - Basinger-Urban land complex

Component: Basinger (55%)

The Basinger component makes up 55 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 8 - Basinger and Myakka sands, depressional

Component: Basinger, depressional (47%)

The Basinger, depressional component makes up 47 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Myakka, depressional (47%)

The Myakka, depressional component makes up 47 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 9 - Beaches

Component: Beaches (90%)

Generated brief soil descriptions are created for major soil components. The Beaches is a miscellaneous area.

Map unit: 10 - Boca fine sand

Component: Boca (85%)

The Boca component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 24 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 11 - Canaveral-Urban land complex, 0 to 5 percent slopes

Component: Canaveral (55%)

The Canaveral component makes up 55 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains, dunes on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 21 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 12 - Chobee fine sandy loam

Component: Chobee (88%)

The Chobee component makes up 88 percent of the map unit. Slopes are 0 to 1 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 9 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 13 - Cocoa-Urban land complex, 0 to 5 percent slopes

Component: Cocoa (60%)

The Cocoa component makes up 60 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 14 - Dania muck

Component: Dania, drained (92%)

The Dania, drained component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 8 to 20 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 86 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 15 - Floridana fine sand

Component: Floridana (85%)

The Floridana component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 10 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 16 - Hallandale fine sand

Component: Hallandale (85%)

The Hallandale component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 7 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 17 - Holopaw fine sand

Component: Holopaw (85%)

The Holopaw component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 18 - Immokalee fine sand, 0 to 2 percent slopes

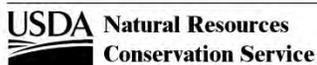
Component: Immokalee (90%)

The Immokalee component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats, coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 19 - Jupiter fine sand

Component: Jupiter (85%)

The Jupiter component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 8 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.



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Map Unit Description

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Map unit: 20 - Lauderdale muck

Component: Lauderdale, drained (85%)

The Lauderdale, drained component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 78 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 21 - Myakka fine sand, 0 to 2 percent slopes

Component: Myakka (90%)

The Myakka component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods, coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 22 - Myakka-Urban land complex

Component: Myakka (50%)

The Myakka component makes up 50 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (40%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 23 - Okeechobee muck

Component: Okeechobee (85%)

The Okeechobee component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 80 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 24 - Okeelanta muck

Component: Okeelanta, drained (80%)

The Okeelanta, drained component makes up 80 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 65 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 25 - Oldsmar sand, 0 to 2 percent slopes

Component: Oldsmar (85%)

The Oldsmar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods, coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 26 - Pahokee muck

Component: Pahokee, drained (85%)

The Pahokee, drained component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 36 to 51 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 83 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 27 - Palm Beach-Urban land complex, 0 to 8 percent slopes

Component: Palm Beach (60%)

The Palm Beach component makes up 60 percent of the map unit. Slopes are 0 to 8 percent. This component is on dunes on marine terraces on coastal plains. The parent material consists of shells and sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (35%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 29 - Pineda fine sand, 0 to 2 percent slopes

Component: Pineda (93%)

The Pineda component makes up 93 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. This component is in the R155X011FL Slough ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 30 - Pinellas fine sand

Component: Pinellas (85%)

The Pinellas component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 31 - Pits, 0 to 5 percent slopes

Component: Pits (90%)

Generated brief soil descriptions are created for major soil components. The Pits is a miscellaneous area.

Map unit: 33 - Pomello fine sand, 0 to 5 percent slopes

Component: Pomello (85%)

The Pomello component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 34 - Pompano fine sand

Component: Pompano (85%)

The Pompano component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 35 - Quartzsammments, shaped, 0 to 5 percent slopes

Component: Quartzsammments (100%)

The Quartzsammments component makes up 100 percent of the map unit. Slopes are 0 to 5 percent. This component is on fills on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 36 - Riviera fine sand

Component: Riviera (82%)

The Riviera component makes up 82 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 37 - Riviera fine sand, depressional

Component: Riviera, depressional (85%)

The Riviera, depressional component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 38 - Riviera-Urban land complex

Component: Riviera (50%)

The Riviera component makes up 50 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (45%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 39 - Sanibel muck

Component: Sanibel (85%)

The Sanibel component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine

Map Unit Description

Palm Beach County Area, Florida

Map unit: 39 - Sanibel muck

Component: Sanibel (85%)

terraces on coastal plains. The parent material consists of thin organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 38 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 41 - St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes

Component: St. Lucie (35%)

The St. Lucie component makes up 35 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Paola (33%)

The Paola component makes up 33 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Urban land (30%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 42 - Tequesta muck

Component: Tequesta (85%)

The Tequesta component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of stratified sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 68 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 43 - Terra Ceia muck

Component: Terra Ceia, drained (84%)

The Terra Ceia, drained component makes up 84 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30

Map Unit Description

Palm Beach County Area, Florida

Map unit: 43 - Terra Ceia muck

Component: Terra Ceia, drained (84%)

inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 44 - Kesson mucky sand, tidal

Component: Kesson, tidal (100%)

The Kesson, tidal component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits with shells. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 22 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 20 within 30 inches of the soil surface.

Map unit: 45 - Wulfert and Durbin muck, tidal

Component: Durbin, tidal (50%)

The Durbin, tidal component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 44 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 30 within 30 inches of the soil surface.

Component: Wulfert, tidal (50%)

The Wulfert, tidal component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 43 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 60 within 30 inches of the soil surface.

Map unit: 46 - Torry muck

Component: Torry, drained (85%)

The Torry, drained component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 51 to 80 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 35 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 47 - Udorthents, 2 to 35 percent slopes

Component: Udorthents (95%)

The Udorthents component makes up 95 percent of the map unit. Slopes are 2 to 65 percent. This component is on fills on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 48 - Urban land

Component: Urban land (100%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map unit: 49 - Wabasso fine sand

Component: Wabasso (80%)

The Wabasso component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 50 - Winder fine sand

Component: Winder (90%)

The Winder component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 99 - Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map unit: 100 - Waters of the Atlantic Ocean

Component: Waters of the Atlantic Ocean (100%)

Generated brief soil descriptions are created for major soil components. The Waters of the Atlantic Ocean is a miscellaneous area.

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

13.5 FWC Agency Strategic Plan

Florida Fish and Wildlife Conservation Commission
Agency Strategic Plan
2014 – 2019

Theme One – Florida’s Fish and Wildlife Populations and Their Habitats

Goal 1: Ensure the sustainability of Florida’s fish and wildlife populations.

Strategies:

1. Manage listed species so they no longer meet Florida’s endangered and threatened listing criteria.
2. Manage species to keep them from meeting Florida’s endangered and threatened listing criteria.
3. Anticipate and address fish and wildlife species’ conservation needs in light of adaptation to long-term environmental changes.
4. Develop, acquire and apply the appropriate biological and sociological science to inform fish and wildlife conservation decisions.
5. Inform and guide partners regarding how their regulations, policies, procedures and other actions affect fish and wildlife conservation.
6. Protect fish and wildlife species through effective outreach and enforcement.

Goal 2: Ensure sufficient habitats exist to support healthy and diverse fish and wildlife populations.

Strategies:

1. Use science to determine quantity, quality and location of the habitats most critical to sustain healthy and diverse fish and wildlife populations.
2. Protect lands and waters critical to sustaining healthy and diverse fish and wildlife populations through diverse incentive programs.
3. Manage habitats to sustain healthy and diverse fish and wildlife populations.

Theme Two – Interactions with Fish and Wildlife, including Fishing, Hunting, Boating and Wildlife Viewing Opportunities

Goal 1: Provide residents and visitors with quality fishing, hunting, boating and wildlife viewing opportunities that meet their needs and expectations while providing for the sustainability of those natural resources.

Strategies:

1. Develop, acquire and use the appropriate biological and sociological science necessary to provide sustainable fishing, hunting, boating and wildlife viewing opportunities that meet the needs and expectations of user groups while providing for the sustainability of those resources.
2. Manage fish and wildlife populations to provide sustainable fishing, hunting, and wildlife viewing opportunities.
3. Develop and maintain widely available, diverse and accessible fishing, hunting, boating and wildlife viewing opportunities that meet the needs and expectations of residents and visitors while providing for the sustainability of those resources and emphasizing partnerships with both public and private landowners.
4. Recruit and manage sustainable levels of resident and visitor participation in fishing, hunting, boating and wildlife viewing.
5. Provide targeted fishing, hunting, boating and wildlife viewing programs for youth, the disabled and veterans.

Goal 2: Enhance the safety and outdoor experience of those who hunt, fish, boat and view wildlife.

Strategies:

1. Provide and promote opportunities for residents, and visitors to learn safety practices for fishing, hunting, boating and wildlife viewing.
2. Enhance the boating safety and waterway experience of residents and visitors through improved access, management, education and enforcement.
3. Promote Florida's outdoor environment as a safe and healthy recreational option for residents and visitors.
4. Address the growing disconnect between people and nature by marketing and providing opportunities and education for diverse age, race, gender, ethnic and other demographic sectors.

Goal 3: Use minimal regulations to manage sustainable fish and wildlife populations, manage access to fish and wildlife resources, and protect public safety.

Strategies:

1. Continually evaluate proposed and existing regulations, based on resource management benefits, public safety concerns, and economic and social impacts, to improve or eliminate regulations as warranted.
2. Coordinate with partners and stakeholders to ensure that appropriate authorities and regulations exist to maintain sustainable fish and wildlife populations.
3. Implement and enforce regulations in an informative, proactive and influential manner to enrich resident and visitors' outdoor experience while safeguarding the natural resources.

Goal 4: Minimize adverse environmental, social, economic and health and safety impacts from fish, wildlife and plants that are known, or have a potential, to cause adverse impacts.

Strategies:

1. Manage species and their habitats, as well as species and human interactions, to eliminate or reduce the adverse environmental, social, economic and health and safety impacts from native and non-native fish, wildlife and plants.
2. Effectively communicate to residents, visitors and businesses how to be safe and act responsibly when interacting with or possessing fish, wildlife and plants.
3. Manage captive and non-native wildlife movement and trade through proactive and responsive enforcement, regulation and education, with an emphasis on species that pose a high risk to our native fish and wildlife.
4. Enhance partnerships to address adverse environmental, social, economic and health and safety impacts from fish, wildlife and plants and ensure a consistent and integrated approach with FWC.

Theme Three – Sharing Responsibility for Fish and Wildlife Conservation and Management with an emphasis on developing conservation values in our youth

Goal 1: Ensure current and future generations support fish and wildlife conservation.

Strategies:

1. Expand and promote the Florida Youth Conservation Centers Network through leveraging FWC programs and staff, and developing public and private partnerships and sponsorships.

2. Develop and deliver standardized youth conservation curricula and fishing, hunting, boating and wildlife viewing outdoor activity programs, and assist with adapting programs and curricula to meet the needs of diverse communities.
3. Foster stewardship and shared responsibility for fish and wildlife conservation through conservation education programs.
4. Expand marketing and outreach to reach diverse audiences and engage all staff in priority outreach initiatives.

Goal 2: Ensure residents, visitors, stakeholders and partners are engaged in the processes of developing and implementing conservation programs.

Strategies:

1. Foster a common vision among partners and the FWC to maintain and enhance fish and wildlife populations and their habitats through interagency coordination, mutually beneficial goals and initiatives.
2. Engage residents, visitors, stakeholders and partners to understand their perspectives, develop and implement conservation programs, and implement fishing, hunting, boating and wildlife viewing management activities.
3. Use citizen science to enhance conservation programs.

Goal 3: Increase opportunities for residents and visitors, especially youth, to actively support and practice fish and wildlife conservation stewardship.

Strategies:

1. Inform residents and visitors about conservation stewardship and encourage their active involvement in achieving conservation of fish and wildlife.
2. Provide and promote opportunities for residents and visitors, especially youth, to participate in conservation stewardship activities, including FWC volunteer opportunities.

Goal 4: Encourage communities to conserve lands and waters critical to sustaining healthy and diverse fish and wildlife populations.

Strategies:

1. Provide communities with the necessary assistance to help them obtain the social and economic benefits of local conservation lands.
2. Provide residents and visitors with relevant information on the social and economic benefits of conservation, fishing, hunting, boating, and wildlife viewing.
3. Support community events and programs that promote fish and wildlife conservation.

Theme Four – Responsive Organization and Quality Operations

Goal 1: Integrate our commitment to benefit the community and enhance the economy through our conservation efforts and public service.

Strategies:

1. Identify and implement ways to support Florida businesses and job growth while managing fish and wildlife.
2. Identify and promote opportunities for staff to benefit local communities through participation in approved activities where FWC resources can be used (for example, the Florida State Employees' Charitable Campaign, the Guardian ad Litem Program, mentoring programs, FWC Disaster Response Teams, and American Red Cross Disaster Services).
3. Provide residents and visitors with reliable and current information on Florida's fish and wildlife.
4. Continue to attract visitors by providing top-quality fishing, hunting, boating and wildlife viewing opportunities.

Goal 2: Provide resources and support for the safety and protection of residents and visitors, our natural and cultural resources, and for emergency responses to critical incidents and environmental disasters.

Strategies:

1. Identify existing and emerging risks to the safety of residents and visitors and foster internal collaboration and external partnerships necessary to effectively manage, reduce or eliminate those risks.
2. Provide immediate and effective disaster response and recovery through mutual-aid efforts with local, state and federal partners.
3. Provide search, rescue, and recovery services in coordination with local, state and federal entities to ensure the safety of residents and visitors.
4. Protect natural and cultural resources through proactive and responsive enforcement efforts.

Goal 3: Ensure the FWC has highly effective and adaptive business practices.

Strategies:

1. Address emerging biological, social and economic trends, anticipate impacts and take advantage of opportunities to accomplish FWC's mission.

2. Expect each employee to be an ambassador for FWC and its mission to Florida's diverse residents and visitors.
3. Provide efficient and effective service to Florida's diverse residents, visitors, and FWC staff.
4. Foster a diverse, accountable, responsive and skilled workforce who effectively serves Florida's residents and visitors.
5. Manage existing and secure additional resources necessary to achieve fish and wildlife conservation and meet residents, visitor and stakeholder needs.
6. Create and maintain an effective business model that supports the FWC's mission by using continuous improvement approaches that foster a collaborative and professional culture.

13.6 JCMJHWEA Timber Assessment

John C. and Mariana Jones /
Hungryland Wildlife and Environmental Area
Timber Assessment

By: John T. Marshall
Senior Forester
Florida Forest Service

Purpose

This document is intended to fulfill the forestry assessment requirement as required by Section 253.036, Florida Statutes for the John C and Mariana Jones / Hungryland Wildlife and Environmental Area (WEA). The goal of this *Timber Assessment* is to evaluate the potential and feasibility of managing timber resources for conservation and revenue generation purposes.

Background

The lands comprising the WEA were purchased starting in 1994 and continued until 2004 under different land conservation programs. The property currently consists of approximately 16,645 acres in Martin and Palm Beach Counties.

Current Conditions

A large percentage of this property is wetlands. Access to the upland areas is difficult at times because of this. Access is also difficult due to the lack of improved roads that would be necessary for a logging operation to operate.

Recommendations

There is no economically feasible timber that could be managed using a silvicultural operation at this time to generate revenue. Other operations that could help with management needs can be looked at on a case by case need.

13.7 FNAI Data Usage Permission Letter



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

April 11, 2014

David Alden
Land Conservation & Planning
Florida Fish and Wildlife Conservation Commission
Tallahassee, FL

Dear David,

By virtue of this letter we are updating and continuing our agreement that it is unnecessary for your office to request FNAI element occurrence data for each land management plan you prepare, under the following conditions:

- FNAI will continue to provide our Florida Element Occurrence GIS database to FWC on a quarterly update basis;
- The FNAI GIS data will be available to FWC staff for reference and incorporation as required in management plan review and preparation.

Our database manager, Frank Price, currently provides this update via ftp to FWC staff on a quarterly basis. Current FWC contacts for the quarterly update are Beth Stys and Ted Hoehn. We are pleased to continue this beneficial collaboration with the Florida Fish and Wildlife Conservation Commission.

Sincerely,

Gary Knight
Director
Florida Natural Areas Inventory



Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

Tracking Florida's Biodiversity

13.8 Prescribed Burn Plan

John C. and Mariana Jones Hungryland Wildlife and Environmental Area

Prescribed Burn Plan



Introduction

The John C. and Mariana Jones Hungryland Wildlife and Environmental Area (Hungryland WEA) is comprised of approximately 16,969 acres located in southern Martin and northern Palm Beach counties.

The Florida Fish and Wildlife Conservation Commission (FWC) is currently assigned lead management authority for approximately 12,735 acres of Hungryland WEA. This lead managed area is composed of approximately 7,741 acres owned jointly by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Board of Trustees) and the South Florida Water Management District (SFWMD) (Lease 4271), 2,553 acres solely owned by the SFWMD (Contract 00287), and 2,441 acres solely owned by the Board of Trustees (Lease 4480). The property was purchased by the SFWMD and the Florida Department of Environmental Protection, Division of State Lands under the Save Our Rivers and Conservation and Recreational Lands programs.

Additionally, FWC leases approximately 4,234 acres from Martin County and the SFWMD for cooperative management. Both the SFWMD and Martin County lands are included within the established boundary for Hungryland WEA. The boundary and managing interests on Hungryland WEA are shown in (Figure 3). This prescribed fire plan covers only the approximately 12,735 acres of Hungryland WEA on which FWC is the lead managing agency.

Fire is a critical component in sustaining many of the natural vegetative communities found within Hungryland WEA. In addition, proper use of prescribed fire will help provide and sustain healthy habitat for a diverse group of wildlife populations within Hungryland WEA.



Burn Objectives

Prescribed fire is used on Hungryland WEA as a habitat management tool exclusively or in conjunction with other management techniques to accomplish a variety of objectives. Prescribed fire is used to restore and/or maintain fire-dependent native habitat communities. This results in preserving native plant communities and improving wildlife habitat. The primary objective of the prescribed burn program is to mimic a natural fire regime that reduces hazardous fuel loads, protects from catastrophic wildfires, and enhances and maintains a mosaic of natural plant communities for the benefit of wildlife.

Additional benefits of prescribed burning include releasing nutrients back into the soil, making them available to plants and wildlife, control of undesirable vegetation, control of exotic plant species, improving wildlife access for both foraging and travel (Givens 1982, Venne and Frederick 2013), promoting the growth and production of vegetation (Loveless 1959a), improved public access, and potentially reducing parasite populations, particularly immature stages of ticks and internal parasites (Garrison and Gedir 2006).

Area Description

Hungryland WEA consists of four non-contiguous areas that are separated by lands in private ownership and other public conservation lands. The lands that comprise the FWC managed portion of Hungryland WEA include:

Portions of sections 23-25	Township 40 South, Range 39 East
Sections 23-27, 34-36 and portions of sections 13-15, 18, 21-22, 28 and 33	Township 40 South, Range 40 East
Sections 18-21, 28-32 and portions of sections 13-14 and 23-25	Township 40 South, Range 41 East

Hungryland WEA is bounded to the north by land in private ownership, other conservation land, land in agricultural use, State Road 76/SW Kanner Highway and County Road 708/SW Bridge Road; to the east by residential areas, Florida's Turnpike and Interstate 95; to the south by Palm Beach County's Pine Glades Natural Area and County Road 706/W Indiantown Road; and to the west by land in private ownership, other conservation land, land in agricultural use and State Road 710/Beeline Highway/SW Warfield Boulevard and County Road 711/Pratt Whitney Road traverses the area (Figure 1).



Prescribed Burning Program

A. Firebreaks

Natural and existing features, such as sloughs, wet prairies, and canals are used as firebreaks whenever possible. Plowed/disked firelines will be used where necessary.

B. Burn Units

The burn units were identified on based on pre-existing breaks in vegetation. These units may be sub-divided to accomplish burn objectives or based on available resources or factors such as vegetative communities, fuel loads, water levels, smoke management and type of ignition.

Maps for individual burn units will be kept on file and attached to burn prescriptions (Appendix 1). Safety zones, escape routes, problem areas, test burn locations, secondary lines, exclusion zones and other items unique to the unit being burned will be identified on these maps and/or in the burn prescription. In general, safety zones will be wet areas (sloughs, cypress, ponds, canals, sparse-vegetation wet prairies and marshes), previously-burned areas, and fire breaks (disked lines, trails, roads). Sloughs and other natural breaks will be identified before the burn for contingency purposes.

Problem areas may include poor substrate for the buggy (deep water, stumps, muck, high number of cypress or pine stems per acre, heavy palmetto growth), Old World climbing fern growth into the canopy (ladder fuel), tall palmetto growth (especially near burn unit boundaries or under low pine canopies), cabbage palms and snags near burn unit boundaries. Hazards, including high fuel loads, infrastructure and early-stage hardwood hammocks may be excluded from fire.

C. Season and Time of Day

Most natural fires in south Florida occur as a result of lightning strikes during the spring and summer months. Prescribed burns may be conducted year round. Individual location objectives will dictate time of year for individual sites.

Prescribed burns will preferably be conducted during the growing season (1 April – 30 September) to enhance control of woody vegetation and promote growth of native vegetation.

Some areas will require initial burns under conditions considered less than optimal due to heavy fuel loads. Dormant season (1 October – 31 March) burning is utilized in areas with heavy fuel loading to minimize tree mortality and may also be coupled with mechanical vegetation treatments. Once fuel loads are reduced to natural levels, efforts will be made to follow a more natural cycle by conducting prescribed burns primarily during the spring and summer months.

Large scale burns (>100 acres) will be kept to a minimum during hunting seasons. If nighttime dispersion is predicted to be ≥ 6 , a nighttime burning authorization may be requested, allowing for ignition until midnight. Otherwise, ignition will be conducted so that the burn is completed with open burning authorized hours.

D. Weather Conditions

The table below summarizes weather conditions suitable for prescribed burning on Hungryland WEA and is based on the US Forest Service publication “Introduction to Prescribed Fires in Southern Ecosystems” (Waldrop & Goodrick, 2012) and the FFS Florida Certified Prescribed Burn Manager Training Course. Individual burn prescriptions will specify the preferred range for individual areas depending on site conditions and desired results. The Florida Forest Service provides fire weather forecasts which will be checked prior to requesting an authorization to burn (<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Wildland-Fire/Fire-Weather>).

If forecast conditions meet requirements of any prepared burn prescriptions, and necessary manpower and equipment is available, a burn authorization will be requested prior to conducting the burn. Determination of burn location will be made by comparing weather conditions to prepared prescriptions, with priority given to maintaining areas already in burn rotation.

WEATHER PARAMETERS	ACCEPTABLE PARAMETERS
Temperature	35-95 °F
Relative Humidity	35-65%
Surface (20') Wind Direction	any (if smoke screening is acceptable)
Surface (20') Wind Speed	5-18mph
Dispersion-Day	35-70
Minimum Mixing Height	1650ft
Transport Wind Speed	9-25mph
Transport Wind Direction	any (if smoke screening is acceptable)
Dispersion-Night Minimum	6
Minimum Fine Fuel Moisture	7%
Keetch-Byram Drought Index	< 650

E. Fuel Conditions

Fuel conditions and fire behavior are dependent on the various habitat types on Hungryland WEA. There will be further variation within each habitat type, depending on specific site conditions (time since last burn, soils, plant growth forms, weather, etc). The following provides a generic overview of expected conditions in each habitat type. Fine fuel moistures will be calculated before ignition and throughout the burn to ensure fuel conditions are within the prescribed limits. Fine fuel moistures will be calculated using the method described in the Florida Certified Burn Manager Training Course (Attachment 1).

The Florida Natural Areas Inventory (FNAI) identified the following natural communities within Hungryland WEA: basin marsh, baygall, depression marsh, dome swamp, mesic flatwoods, pasture-improved, ruderal, wet flatwoods and wet prairie (Figure 3).

PINE FLATWOODS– mesic or hydric pine woodland or mesic shrubland on flat sandy or limestone substrates, may have a hard pan that impedes drainage.

Mesic Flatwoods – flatland with sand substrate; mesic; frequent fire (2-4 years); open pine canopy with a layer of low shrubs and herbs; longleaf pine and/or slash pine, saw palmetto, gallberry, dwarf live oak, wiregrass.

Wet Flatwoods – flatland with sand substrate; seasonally inundated; frequent fire (2-4 years for grassy wet flatwoods, 5-10 years for shrubby wet flatwoods); closed to open pine canopy with grassy or shrubby understory; slash pine, pond pine, large gallberry, fetterbush, sweetbay, cabbage palm, wiregrass, toothache grass.

Palmetto-gallberry fuel- If a 2-year rotation is maintained, these areas will have light (3-4 tons/acre) fuel loads. If these areas have not been burned for 6+ years, as is the case with many areas in Hungryland, they can have heavy (20+ tons/acre) fuel loadings. Burns can be hot and spread rapidly, with significant danger of spotting, especially if cabbage palms are present. A close pattern of spot fires using aerial ignition or ground flares can reduce the intensity of fires in this habitat type. If there is a canopy (usually southern slash pine) over heavy fuel loadings, care must be taken to avoid undue stress on the mature trees. A cool fuel-reduction burn may be called for, or possibly rollerchopping or other mechanical methods to avoid excessive pine mortality. Care must be also taken for grapevines in this habitat type, for they can burn explosively and become ladder fuels into the pine canopy.

MARSHES – long hydroperiod; dominated by grasses, sedges, broadleaf emergents, floating aquatics, or shrubs.

Basin Marsh – basin with peat or sand substrate; seasonally inundated; occasional fire; largely herbaceous; maidencane, sawgrass, bulltongue arrowhead, pickerelweed, Baker’s cordgrass, white water lily, coastalplain willow.

Depression Marsh – small, isolated, often rounded depression in sand substrate with peat accumulating toward center; surrounded by fire-maintained community; seasonally inundated; still water; statewide excluding Keys; frequent or occasional fire; largely herbaceous; maidencane, sawgrass, pickerelweed, longleaf threawn, sand cordgrass, peelbark St. John’s wort.

Sawgrass fuels- As a heavy grass fuel, sawgrass burns powerfully if the stand is thick, even over standing water. Can be source of spotting over short distances. Indicates soft substrate that can trap vehicles quickly, presenting potential for immediate danger from advancing flames. Sparse sawgrass carries fire poorly unless conditions are dry. If too dry (no standing water) organic soils can be ignited, resulting in long-term, smoldering fires (days, weeks, months).

Wet Prairie- flatland with sand or clayey sand substrate; usually saturated but only occasionally inundated; frequent fire (2-3 years); treeless, dense herbaceous community with few shrubs; wiregrass, blue maidencane, cutthroat grass, wiry beaksedges, flattened pipewort, toothache grass, pitcherplants, coastalplain yellow-eyed grass.

Wet prairie fuels- Can be either light or heavy loadings of fine fuels. Heavy fuel loads can make for hot, fast fires to reduce woody invasions. If fuel loading is light may be used for firebreaks by submerging vegetation after several passes with swamp buggies.

Dome Swamp – small or large and shallow isolated depression in sand/marl/limestone substrate with peat accumulating toward center; occurring within a fire-maintained community; seasonally inundated; still water; occasional or rare fire; forested, canopy often tallest in center; pond cypress, swamp tupelo.

Cypress- Generally is used as a firebreak. The limited understory and fine fuels, combined with elevated water levels reduces the burn frequency of these areas. Cypress may occur in wet prairies.

Baygall – slope or depression wetland with peat substrate; usually saturated and occasionally inundated; rare or no fire; closed canopy of evergreen trees; loblolly bay, sweetbay, swamp bay, titi, fetterbush.

ALTERED LANDCOVER TYPES- FNAI recognizes that not all habitats and landscapes in Florida are in natural condition. Some have been completely converted from their historic natural community (e.g. agriculture, pasture) while others have been severely altered by human impacts such as fire suppression or silvicultural activities.

Pasture - Improved – Dominated by planted non-native or domesticated native forage species and evidence of current or recent pasture activity and/or cultural treatments (mowing, grazing, burning, fertilizing) (Agro-Ecology Grazing Issues Working Group 2009). Improved pastures have been cleared of their native vegetation. Most improved pastures in Florida are planted with bahiagrass (*Paspalum notatum*) and to a lesser extent with Bermudagrass (*Cynodon dactylon*) or pangolagrass (*Digitaria eriantha*). Weedy native species are often common in improved pastures in Florida and include dogfennel (*Eupatorium capillifolium*), many species of flatsedge (*Cyperus* spp.), carpetgrasses (*Axonopus* spp.), crabgrasses (*Digitaria* spp.), and rustweed (*Polypremum procumbens*) among many others.

Ruderal (disturbed)- are characterized by a lack of vegetation or dominated by non-native plant species. Most of these habitats can be suitable for restoration and enhancement back into a native plant dominated community.

Exotic plant fuels- *Lygodium* spp. (climbing fern) can act as a ladder fuel if it reaches the temperature of combustion. It can light explosively, but tends not to burn like a fuse, and under lower burning temperatures can act to retard flame advancement.

Thick stands of Melaleuca should be eliminated from the burn area and treated with herbicide before a burn. If possible, keep fire from burning through infected areas due to the fire-induced seed-releasing properties of this species. Brazilian pepper, which does not burn well at all, tends to grow in dense concentrations in disturbed areas. These areas often are used as fire breaks because of their location. The pepper can shade out all ground vegetation, eliminating the fine fuels. This can make for difficult conditions both in being able to set fires and being able to identify exactly where the fire may stop before it reaches a firebreak. Torpedo grass can invade marshes, and, unless it is very dry, will not burn well at all.

F. **Smoke Management**

Emphasis will be placed on reducing the impact of emissions from prescribed fire on areas where smoke is likely to reduce visibility and could become a concern for traffic safety or be detrimental to the health of surrounding populations. Smoke screening will be conducted using an appropriate method as outlined in “Florida’s Certified Smoke Management Plan” (Florida Forest Service, 2014). Smoke critical areas and any appropriate precautions and contingency plans will be identified in individual prescriptions.

Assistance will be sought from Law Enforcement to ensure traffic safety on burns that may impact County Road 706/W Indiantown Road, County Road 711/Pratt Whitney Road, State Road 710/Beeline Highway/SW Warfield Boulevard , State Road 76/SW Kanner Highway, Interstate 95 and Florida’s Turnpike.

The weather recorder will monitor smoke production, plume direction and dispersion throughout the burn. The amount of particulates around the power lines will be minimized by utilizing an ignition technique and weather conditions that promote more complete combustion. In areas where residual smoke is a concern more extensive mop-up of heavy fuels or stumps/snags may be indicated. The impact of emissions may also be reduced by decreasing the size of the burn, ending the burn well before sunset while dispersion conditions are generally best and by using backing fire to reduce smoldering. Mop-up along roads will begin as soon as practical to reduce the impact of smoldering fuels on visibility, particular attention will be given to stumps, snags and logs.

G. **Authorizations and Notifications**

Burn authorization will be requested from FFS prior to the burn in accordance with the provisions of FS 590.125 utilizing the web-based open burn authorization request (<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Wildland-Fire/Resources/Fire-Tools-and-Downloads/Web-Based-Open-Burn-Authorization-Request-WebOBA>) or by phone. This request will specify that the burn will be conducted under the certified burner program.

Notifications (Attachment 2) per the prescription will be made the afternoon prior to or the morning of the burn. Names of actual contacts should be recorded as contacts are made.

H. Communications and Publicity

Emergencies will be reported via 911 or VHF radio to the J. W. Corbett Wildlife Management Area (Corbett WMA) Field Office for relayed contact. Operational communications during the burn will be conducted via VHF radio and/or cell phone. Whenever feasible, all communications among the burn crew should be conducted over the radio so that all burn participants may maintain situational awareness.

Public information is an important component of prescribed burning. Local residents will be notified of large fires near the boundaries of Hungryland WEA. Road signs will be erected before these burns in prominent locations along the main. Opportunities to incorporate the media in a positive fashion will be taken when possible.

I. Safety

Safety is the primary concern of any burn. The closest hospital to Hungryland WEA in Martin County is Martin Hospital South (2100 SE Salerno Road, Stuart 34994) and Jupiter Medical Center (1210 S Old Dixie Highway, Jupiter, 33458) in Palm Beach County. The nearest fire rescue stations in Martin county are Station 23 Kanner Highway (4181 SW Kanner Highway, Stuart, 34997) to the north; Station 36 South County (18405 SE County Line Road, Tequesta, 33469) to the east; and Station 24 Indiantown (16556 SW Warfield Boulevard, Indiantown, 34956) to the west of Hungryland WEA. The nearest Palm Beach county fire rescue station is Station 14 Jupiter Farms (12015 W Indiantown Road, Jupiter, 33478). Long distances and access issues make safety even more important on the burn, understanding fire rescue stations and hospitals are often more than 30 minutes from the burn. All personnel and equipment on any wildland fire on Hungryland WEA, prescribed fire or wildfire, shall meet the standards outlined in the Division of Habitat and Species Conservation (DHSC) Prescribed Burning and Wildfire Suppression Standards (Appendix 1).

The following is a list of precautions that will be followed in addition to the standards outlined in the DHSC policy to further reduce risk of personal injury or equipment damage. Equipment will be checked before the fire is ignited as safety issues often arise from or are exacerbated by equipment failures.

- Preparation of burn units will utilize existing breaks in fuel (roads, trails, sloughs, cypress strands, and canals) as much as possible to reduce the need to hold dangerous/difficult fire lines.
- Dramatic changes in weather/burn conditions will be identified over the radio. Although the weather monitor usually would initiate this, other crewmembers may notice a local condition (i.e., wind shift, increasing intensity, etc.) that others need to be aware of.
- Safety zones (previously burned areas, wet areas, outside the burn unit) will be identified during the on-site pre-burn orientation. Care will be taken at all times to stop vehicles in these safety zones whenever possible. It is the precautionary expectation

that the equipment may break down or may not re-start, so it needs to be parked in a safety zone.

- Flame-thrower wands will not be held/passed over the deck of a buggy or the gas tank of an ATV while they are lit.
- As many crewmembers as possible need to know how to run multiple pieces of equipment on the burn.
- Potential operators of each piece of equipment will be identified before the burn and assigned stations that will allow them to access the equipment if the primary operator is unable to.
- Keys will be left in the ignitions; if not, keys will be left someplace else on the equipment and all crewmembers informed of this location.
- In event of a medical emergency, emergency medical services will be called immediately. In the event that cell phones are out of coverage communications will be relayed through the Corbett WMA field office via VHF radio.
- In the event that the fire escapes, or there are control issues that exceed the capabilities of the crew on site, FFS will be contacted via cell phone or VHF radio.
- All crewmembers need to be able to identify burn location in latitude/longitude coordinates in addition to the section(s)/township(s)/range(s) noted on the burning authorization, in the event that medical evacuation by helicopter is necessary.
- The nearest potential helicopter landing zone for medical evacuation needs to be specified during the pre-burn briefing and indicated on prescription.
- All crewmembers need to be familiarized with the basic use of the radios. Plain language will be used on the radios, no codes, to ensure all members of the crew understand all communications.
- Equipment will not be operated unnecessarily inside the burn unit after the burn is started.
- If a situation exists where people must enter the burn unit during ignition, whenever possible, they will go in pairs, or be monitored by a spotter on the perimeter.
- Any person working inside the fire will have an active radio with them and communicate their position and activity on a regular basis.

J. Firing Plan

Issues specific to individual burns will be addressed in the individual burn prescriptions. These documents will meet the criteria outlined in F.A.C. Chapter 5I-2.0006 (2) (a) and will also include a pre-burn checklist, weather and fire behavior data sheet, and a post burn evaluation form.

The test fire is normally lit in a small, isolated plot on the down-wind side of the burn. If after assessing the test fire behavior and on site weather conditions it appears that the burn objectives will be met and conditions are within prescription, black lines will be secured on the down-wind side of the burn, unless natural breaks or previous burns allow otherwise. When a solid anchor-point is achieved, the black line will be extended until it is determined safe to proceed with the burn. Firing techniques may vary greatly depending on the individual situation of the burn, and may include strip, flank, head, aerial spot/strip, or other techniques as identified in the burn prescription.

Limited human resources prevent the assignment of independent ignition/suppression/safety/etc. crews. Rather, responsibilities shift as the process of conducting a prescribed fire unfolds. While the burn boss is primarily responsible for identifying safety issues, all personnel will be encouraged and expected to voice any safety concerns to the burn boss. Whenever possible, this should be done via radio so that all crew members are aware of any potential safety issues.

One person is assigned to monitor the weather and fire behavior, reporting this data over the radio every hour or more frequently if conditions warrant. If enough personnel are available, one or more persons may be assigned to watch the down-wind side of the fire, but usually the team lighting a line is responsible for monitoring that line and ensuring there are no spotovers. This requires a slower pace of ignition.

In the event of a spotover, all ignition beyond that required to contain the fire is curtailed and all resources will be reassigned to suppression until the fire is contained. After all lines have been lit, all personnel become responsible for containing the fire and mopping-up. As the fire dies down and burns out, some of the crew may be released from the site to begin equipment maintenance and replenish the vehicles with supplies. The burn boss or another certified burner will remain until the fire is completely contained.

K. Control

Crew assignments will be made the morning of the burn. Prior to any ignition, all firebreaks will be established and secondary lines identified. If the fire is no longer controllable with existing personnel and equipment, the nearest FFS response for burns in Palm Beach County is located in Loxahatchee and for burns in Martin County is located in Palm City. When available, FFS will have a presence on all burns in case of emergency. Otherwise, response may be 30-60 minutes (or more, depending on burn location) from the time assistance is requested. Site-specific contingencies will be developed for individual burns and indicated in the prescription.

L. Mop-Up

A fire will be declared contained when there are no active flames within 25 feet of fire breaks, no burning snags capable of falling across fire breaks and no fire spreading within the burn unit. Site-specific modifications to these general requirements may be indicated due to unique conditions (location of cabbage palms and Old World climbing fern, wind direction, nearby infrastructure or roads). It is acknowledged that internal snags may burn for several days. Unless presenting a smoke problem, burning snags and lighter wood stumps will be allowed to burn away to avoid a reoccurring problem on future burns.

M. Declaring the Fire Out

The fire will be declared out when mop-up is complete and no combustion is observed within the burn unit or on any spotovers or escapes for one week after one inch or more of rainfall.

Until the fire is declared out, it will be monitored periodically to ensure it remains contained. This includes visiting the area the day after the burn, arriving at the burn unit while the humidity is high in the event that the fire has escaped over night, and remaining on site until early afternoon to observe any remaining hot spots that may appear as the humidity decreases and wind speeds increase.

N. Burn Evaluation

Individual prescriptions are based on pre-burn evaluations. Included in the plan is a form for evaluating weather and fire behavior conditions during the burn and a 3-month follow-up evaluation form. As soon as possible after the burn, a group discussion (after action review) will be conducted to review the burn and record what went well and what needs to be modified before the next burn. Comparisons between prior-stated objectives and actual results will also be made, along with comparisons between weather recordings during the burn and the morning fire-weather forecast. The information gathered from these reviews and evaluations will be incorporated into the planning phase for the next burn of that unit or units with similar conditions (fuel types/loading, weather factors, etc.).

A. Literature Cited

Garrison, E. and J. Gedir. 2006 Ecology and Management of White-tailed Deer in Florida. Florida Fish and Wildlife Conservation Commission. Florida, U.S.A.

Givens, L. S. 1982. Use of Fire on Southeastern Wildlife Refuges. First Annual Proceedings Tall Timbers Fire Ecological Conference. Tallahassee, Florida.

Florida Forest Service. 2014 Florida's Certified Smoke Management Plan (FDACS Publication No. P-01870). Tallahassee, FL: Florida Department of Agriculture and Consumer Services.

Loveless, C. M. 1959a. The Everglades Deer Herd: Life History and Management. Florida Game and Freshwater Commission Technical Bulletin 6.

Venne, L. S. and P. C. Frederick. 2013. Foraging Wading Bird (Ciconiiformes) Attraction to Prescribed Burns in an Oligotrophic Wetland. Fire Ecology Volume 9, Issue 1: 78-85.

Waldrop, T. A. & Goodrick, S. L. 2012. Introduction to prescribed fires in southern ecosystems. (Science Update SRS-054). Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station.



Figure 1. John C. and Mariana Jones Hungryland Wildlife and Environmental Area Location Map.

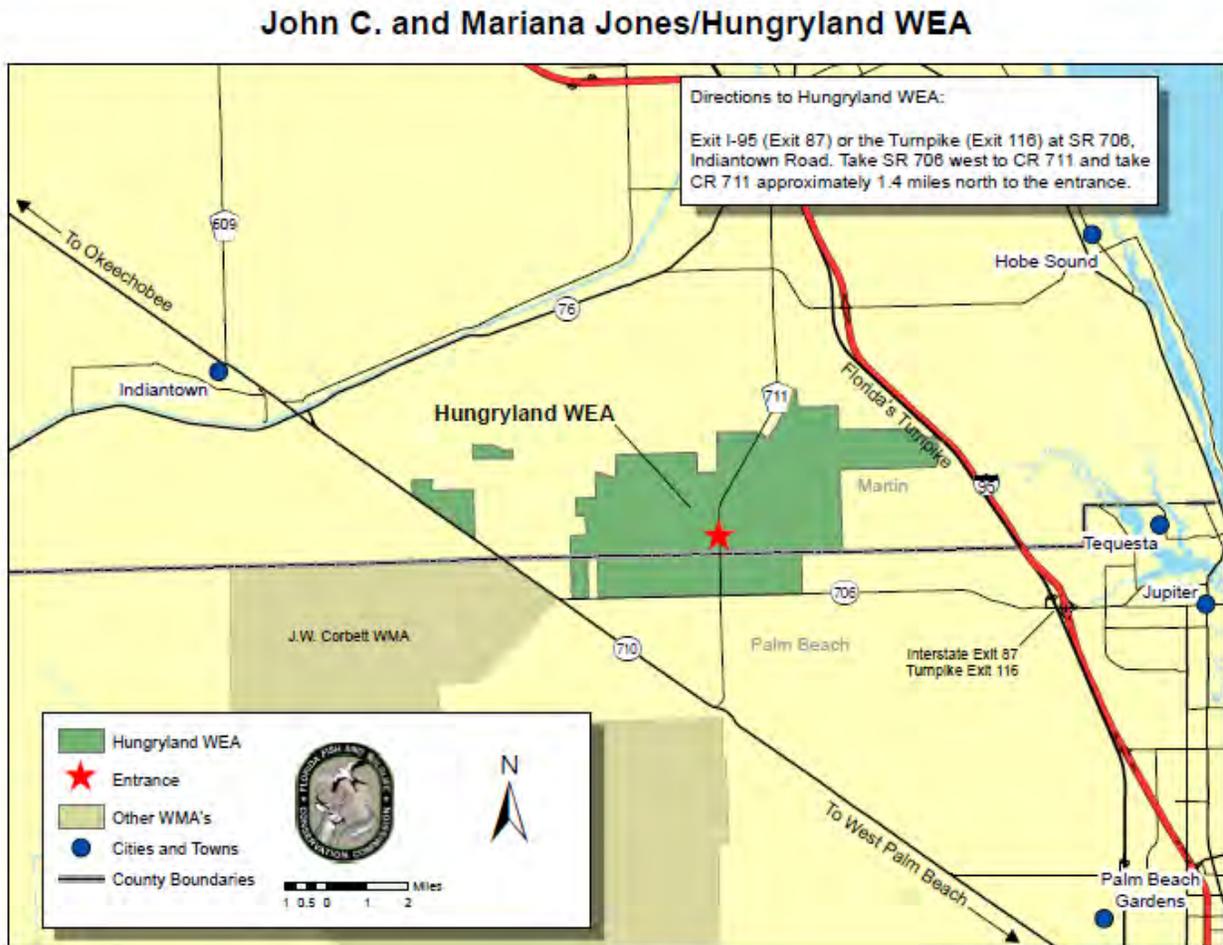


Figure 3. John C. and Mariana Jones Hungryland Wildlife and Environmental Area Natural Communities Map.

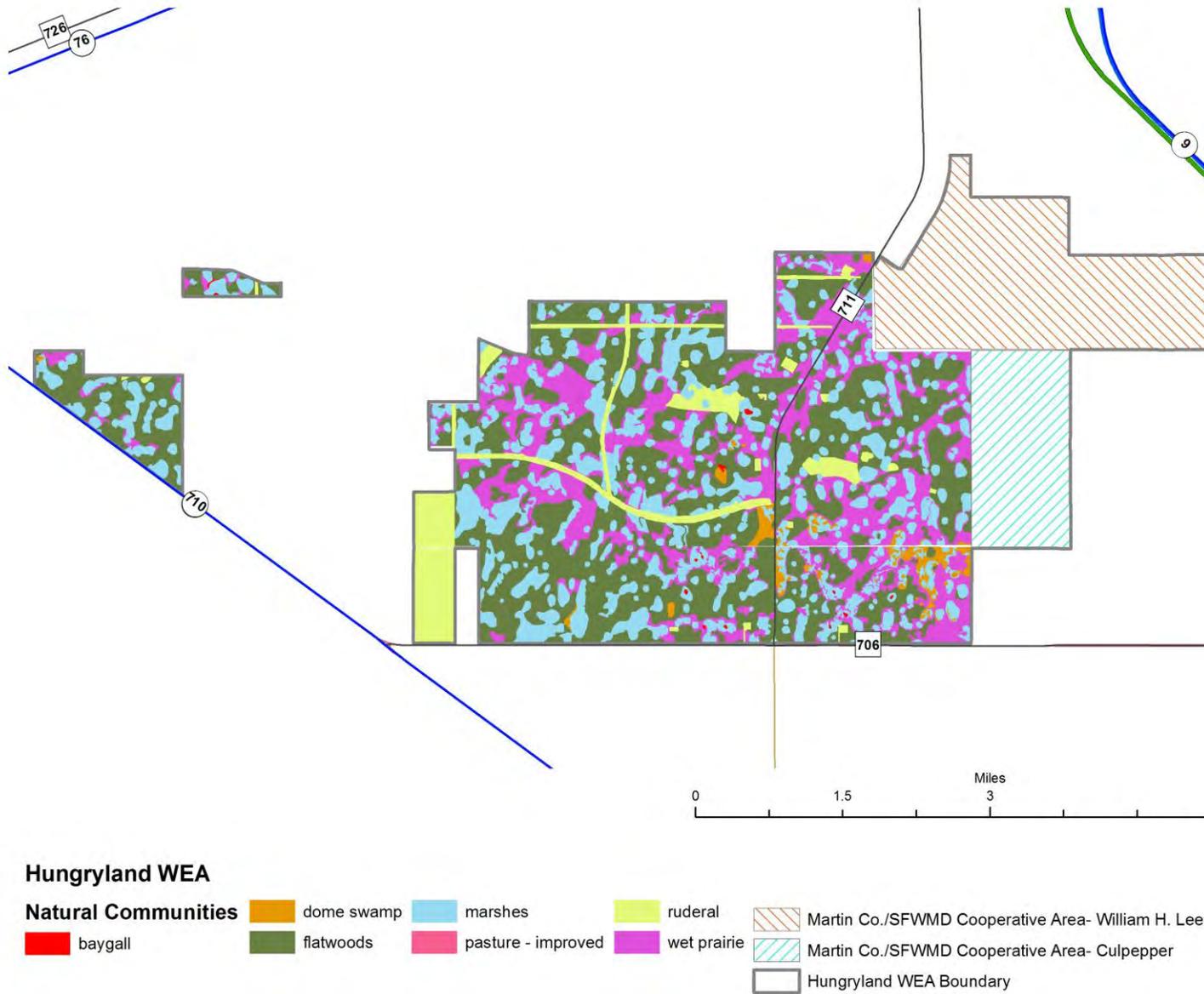
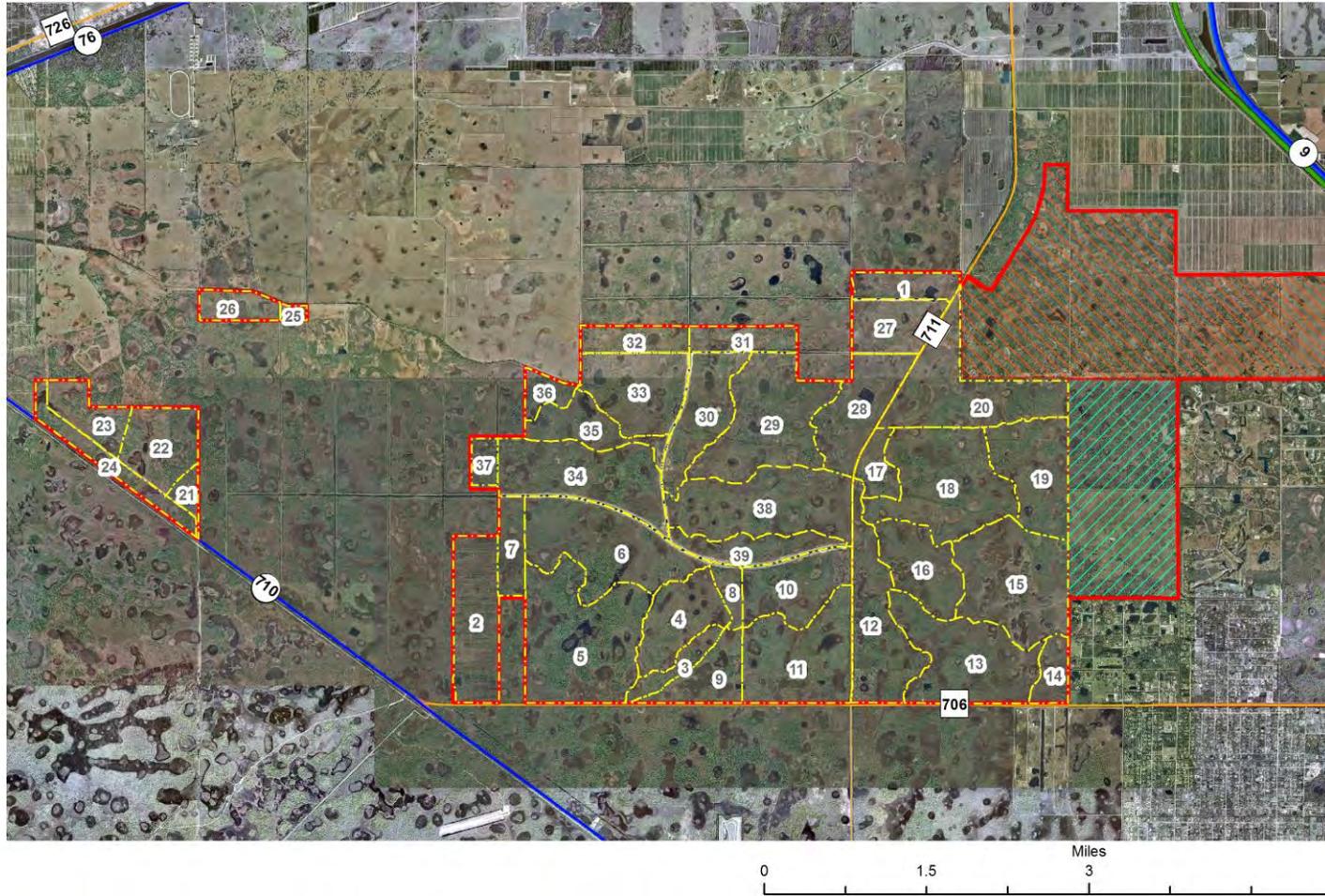


Figure 4. John C. and Mariana Jones Hungryland Wildlife and Environmental Area Burn Unit Map.



Hungryland WEA

-  Burn Units
-  Hungryland WEA Boundary
-  Martin Co./SFWMD Cooperative Area- Culpepper
-  Martin Co./SFWMD Cooperative Area- William H. Lee Unit

<h2 style="color: green; margin: 0;">Prescription for Prescribed Burning</h2> ☐ Entered LMIS <p style="margin: 0;">Florida Fish and Wildlife Conservation Commission Division of Habitat and Species Conservation</p>						
WMA/WEA: Click here to enter WMA/WEA			FFS Certified Burn Authorization Number: Enter number			
Landowner: Click here to enter landowner			County of Burn: Click here to enter county			
Customer Number: Click here to enter number		Customer Name: Click here to enter name				
Burn Unit Name/Number	Acres	Date of Last Burn	Section(s)	Township	Range	Click to add other
Unit name/number	Acres	Date	Section	Township	Range	Info
Unit name/number	Acres	Date	Section	Township	Range	Info
Unit name/number	Acres	Date	Section	Township	Range	Info
Unit name/number	Acres	Date	Section	Township	Range	Info
Total	Total Acres					
Latitude/Longitude to Assist with Emergency Locate: Click here to enter Lat/Long						
Unit Description and Habitat Composition - Attach Maps of Area to be Burned						
Overstory Description and Basal Area if Applicable: Click here to enter description						
Understory Description: Click here to enter description						
Fuel Loading: Click here to enter fuel loading						
Duff or Muck Locations: Click here to enter location						

Description and Condition of Fire Breaks: Click here to enter description	
Other Important Stand Parameters if Applicable: Click here to enter parameters	
Restoration or Maintenance Burn? Click here to enter info	
Burn History and Vegetative Description of Surrounding Units: Click here to enter surrounding unit information	
Emergency Contacts (can be attachment)	
FFS Dispatch: Click here to enter	FFS Forest Area Supervisor: Click here to enter contact
Local Fire Departments: Click here to enter number	
Local Hospitals or Emergency Care Centers: Click here to enter number	
FHP: Click here to enter number	DOT: Click here to enter number
FWC Dispatch: Click here to enter number	
Other: Click here to enter	
Notifications (e-mail group, adjacent landowners, schools, airports, media, etc): Click here to enter notifications or include attachment with notifications	
Personnel Names and Crew Assignments: Click here to enter personnel/assignments	
Equipment and Suppression Tools to be Used on Burn: Click here to enter equipment/tools	

Purpose of Burn: Click here to enter purpose	
Measurable Burn Objectives: Click here to enter objectives	
Season and Time of Day to Meet Objectives: Click here to enter season/time of day	
Firing Plan and Ignition Pattern: Click here to enter plan/pattern	
Intensity Desired to Meet Purpose and Objective: Click here to enter intensity	Ignition Method: Click here to enter methods
Contingencies (includes safety zones, escape routes, secondary control lines, escape response procedures, helicopter landing lat/long if applicable): Click here to enter contingencies	
Mop-up Standards: Click here to enter standards	
Declaring the Fire Out Standards: Click here to enter standards	

Smoke Management

Smoke Sensitive Areas Identified Using Southern Smoke Management Guide Smoke Screening Tool? **Yes** **No**

Any Critical Smoke Sensitive Areas Identified? **Yes** **No** **If “Yes”, Do Not Burn Under Current Prescription.**

Downwind/Downdrainage Smoke Sensitive Areas and Distance from Burn: [Click here to enter areas](#)

Other Smoke Sensitive Areas and Distance from Burn: [Click here to enter areas](#)

Smoke Management Plan (attach smoke management screening maps): [Click here to enter smoke management plan](#)

Is There Potential for Smoke to Impact a Public Roadway? **Yes** **No**

If Yes, Have You Erected Smoke Warning Signs and Contacted FHP and Your Local LE?

Plan for Monitoring Smoke During and After the Burn to Assess Visibility Issues if Applicable: [Click here to enter smoke monitoring plan](#)

WEATHER PARAMETERS	Acceptable Parameters	Forecasted and Actual Conditions – Attach Fire Weather Forecast and Spot Weather Forecast.
Surface (20') Wind	Acceptable wind directions	Forecasted wind direction
Surface Wind Speed	Acceptable wind speeds	Forecasted wind speeds
Transport Wind Direction	Acceptable wind directions	Forecasted wind direction
Transport Wind Speed	Acceptable wind speeds	Forecasted wind speed
Minimum Mixing Height	Minimum mixing height	Forecasted mixing height
Dispersion Index (DAY)	Acceptable dispersion range	Forecasted daytime dispersion
Dispersion Index (NIGHT)	Acceptable minimum dispersion	Forecasted nighttime dispersion
Maximum Temperature	Acceptable max temperature	Forecasted max temperature
Relative Humidity Range	Acceptable humidity range	Forecasted low humidity
Minimum Fine Fuel	Acceptable minimum fuel moisture	Actual fine fuel moisture
KBDI	Acceptable max KBDI	Actual KBDI
LVORI	Acceptable max LVORI	Forecasted LVORI
Days since ½" Rain	Acceptable days since ½" rain	Actual days since ½" rain
Additional Field	Additional Field Parameter	Additional field condition
Additional Field	Additional Field Parameter	Additional field condition
FIRE BEHAVIOR		
Rate of Spread	Desired rate of spread	
Starting Time	Desired starting time	
Burn Technique	Back, spot, flank, strip, aerial?	
Flame Length	Desired flame length	

PRE-BURN CHECKLIST

BURN MANAGER: Check each item to indicate compliance.

- All prescription requisites met.
- Authorization obtained.
- All equipment required on scene and fully operational.
- Each crewmember has proper personal gear and clothing.
- Appropriate steps have been taken to ensure crew and public safety.

CREW BRIEFING

- Objectives of burn.
- Exact area of burn (ensure crew members have maps).
- Hazards discussed (volatile fuels, spotting potential, weak points in perimeter lines, terrain features, etc.)
- Crew assignments made.
- Weather monitoring assignment made.
- Ignition technique and pattern. Holding method(s).
- Location of extra equipment, fuel, water, vehicle keys.
- Authority and communications.
- Contingencies covered including escape routes or procedures.
- Sources of nearest assistance. Nearest phone and emergency numbers.
- Special instructions regarding smoke management, contact with the public and others.
- Safety briefing
- Mop-up standards
- Arrange next day inspection and mop-up assignments
- Questions?
- Crewmembers given opportunity to decline participation (is there anything that is going to prevent full physical performance?).
- Conduct test burn

Prescription Prepared by: [Click here to enter name](#)

Date/Time Prescription Prepared:
Date/Time

Authorization Date and Time Period: [Click here to enter date and time period](#)

Burn Manager: [Click here to enter name](#)

Burn Manager Title: [Click here to enter title](#)

Burn Manager Certification Number: [Click here to enter number](#)

Burn Manager Signature:

Start Time: Enter start time

Date Fire Declared Out: [Click here to enter date](#)

FINE DEAD FUEL MOISTURE ESTIMATION IN FLORIDA

STEP ONE – Determine Reference Fuel Moisture:

Daytime (08:00 – 19:59)

% Relative Humidity	Dry Bulb Temperature (Degrees F)			
	30-49	50-69	70-89	90-109
15-19	3	3	2	2
20-24	4	4	3	3
25-29	5	5	4	4
30-34	5	5	5	4
35-39	6	6	5	5
40-44	7	6	6	6
45-49	7	7	7	7
50-54	7	7	7	7
55-59	8	8	8	8
60-64	9	8	8	8
65-69	9	9	8	8
70-74	10	9	9	9
75-79	10	10	10	10
80-84	11	11	10	10
85-89	12	12	11	11
90-94	13	12	12	12
95-99	13	12	12	12
100	13	13	13	13

Nighttime (20:00 – 07:59)

% Relative Humidity	Dry Bulb Temperature (Degrees F)			
	30-49	50-69	70-89	90-109
15-19	4	4	4	3
20-24	5	5	4	4
25-29	6	6	5	5
30-34	7	6	6	6
35-39	8	8	7	7
40-44	9	8	8	8
45-49	9	9	9	9
50-54	11	10	10	9
55-59	11	11	10	10
60-64	12	11	11	10
65-69	13	12	12	11
70-74	14	14	13	13
75-79	16	16	15	14
80-84	18	17	17	16
85-89	21	20	20	19
90-94	24	23	23	22
95-99	25	25	25	25
100	25	25	25	25

STEP TWO – Add Fuel Moisture Correction:

November, December, January

Time	Shading <50%	Shading >50%
08:00 - 09:59	5	5
10:00 - 11:59	4	5
12:00 - 13:59	3	5
14:00 - 15:59	2	5
16:00 - 17:59	4	5
18:00 - 19:59	5	5

February, March, April and

August, September, October

Time	Shading <50%	Shading >50%
08:00 - 09:59	4	5
10:00 - 11:59	2	4
12:00 - 13:59	1	4
14:00 - 15:59	1	4
16:00 - 17:59	2	4
18:00 - 19:59	4	5

May, June, July

Time	Shading <50%	Shading >50%
08:00 - 09:59	3	4
10:00 - 11:59	1	4
12:00 - 13:59	0	3
14:00 - 15:59	0	3
16:00 - 17:59	1	4
18:00 - 19:59	3	5

Do not add a Fuel Moisture Correction for Nighttime Estimations

Attachment 1. Fine Dead Fuel Moisture Estimation in Florida.

Attachment 2. Prescribed Fire Notifications.

Florida Fish & Wildlife Conservation Commission	
FWC Law Enforcement Dispatch	561-357-4200
FWC Law Enforcement South Region A Lieutenant- Charlie King	561-882-5840 Charles.King@MyFWC.com
FWC Regional Biologist- Mike Anderson	561-882-5708 Michael.Anderson@MyFWC.com
FWC South Region Public Information Director- Liz Barraco	561-882-5709 Liz.Barraco@MyFWC.com
Martin County	
Florida Forest Service- Okeechobee District Burn Authorizations Forest Area Supervisor- Mike Lisiecki	863-462-5160 863-462-5163 772-221-4045 Michael.Lisiecki@FreshFromFlorida.com
Martin County Fire Rescue Dispatch	772-287-1662 All_Dispatch@Martin.FL.US
Martin County Sheriff's Office Dispatch	772-220-7170
Martin County Ecosystem Restoration & Management Manager- Deborah Drum	772-288-5927 DDrum@Martin.FL.US
Palm Beach County	
Florida Forest Service- Everglades District Burn Authorizations Forest Area Supervisor- Chris Wasil	954-475-4120 954-475-4120 954-347-8061 cell Chris.Wasil@FreshFromFlorida.com
Loxahatchee Work Center	561-791-4725
Palm Beach County Fire Rescue Dispatch Battalion 1 Chief- Mike Wells	561-712-6550 561-308-4101 cell MWells@PBCGov.org
Palm Beach County Sheriff's Office	561-688-3400
Palm Beach County Environmental Resources Management Pine Glades Natural Area- Kraig Krum	561-233-2493/561-310-9958 cell KKrum@PBCGov.org
Water Districts	
South Florida Water Management District Land Management Unit Section Leader- James Schuette	561-924-5310 x 3331 JSchuett@SFWMD.gov
Dupuis WEA Office	561-924-5310
Pal Mar Water Control District Security- T. J. Mansell	954-753-0380 863-634-8367 cell tjmansell@att.net
Hobe St. Lucie Conservancy District Thomas Lindsey	772-234-5234 772-260-6613 cell TLindsey@BeckerHolding.com
South Indian River Water Control District Manager of Operations- Michael Dillon	561-747-0550 Dillon@SIRWCD.org
Other	
Sikorsky/Pratt Whitney Aircraft Tower	561-796-2333/2330
North County Airport FBO	561-626-9799 f45@landmarkaviation.com
Florida Power & Light Gregory Cox	786-229-4176 Gregory.Cox@FPL.com
Florida Highway Patrol	561-357-4015
Florida Department of Transportation Dispatch	954-847-2777

DIVISION OF HABITAT AND SPECIES CONSERVATION
Internal Operating Policy
Revised March 2011

Subject: Prescribed Burning and Wildfire Suppression Standards

Policy:

The following policy shall apply to all Division of Habitat and Species Conservation (DHSC) employees engaged in prescribed burning or wildfire suppression activities.

General Guidelines:

This policy establishes minimum standards for participation in prescribed burning and wildfire suppression activities. In addition to conducting prescribed burning on Commission-managed lands, DHSC employees are periodically asked to assist the Florida Division of Forestry with wildland fire suppression efforts, particularly during declared wildfire emergencies. Working on prescribed fires or wildfires is an inherently dangerous and risky activity that can result in significant property damage, personal injury, or loss of life. Therefore, it is necessary to establish minimum standards for training and certification to insure DHSC employees have the appropriate skills and knowledge to perform these activities safely and effectively. Employees are encouraged to obtain higher levels of training and certification as warranted and approved through supervisory channels.

Chapter 1 Prescribed Burning

1.1 Prescribed Burn Participation: This section establishes minimum training, certification, and experience required for members of a prescribed burn team. These same standards apply to non-DHSC employees, volunteers, and contractors participating on a burn on FWC-managed state lands.

- A. **Crew Member Trainee:** Employees who do not meet the requirements for Crew Member shall be classified as a Crew Member Trainee. A Crew Member Trainee may participate in prescribed burning activities provided that they are under the direct supervision of a Crew Member. A Crew Member may supervise no more than one Crew Member Trainee. It is recommended that no more than 40% of the burn crew be Crew Member Trainees.

Note: Crew members may supervise more than one Crew Member Trainee, and more than 40% of the burn crew may be Crew Member Trainees during prescribed burns conducted during training classes.

- B. **Crew Member:** May participate independently in prescribed burning activities. Shall have successfully completed the following level of training:

- 1) Interagency Basic Prescribed Fire Course; *or*
- 2) Basic Wildland Firefighter Training (S-130) **and** Introduction to Wildland Fire Behavior (S-190).

C. **Burn Manager Trainee:** May serve as burn manager to fulfill the responsibilities of acquiring certified prescribed burn manager status. Burn Manager Trainee must be under the direct supervision of a Certified Burn Manager on prescribed burns that will be used to qualify them for certified prescribed burn manager status. Shall have successfully completed the following level of training and have the specified level of experience:

- 1) Interagency Basic Prescribed Fire Course;
- 2) S-130/S-190; *and*
- 3) Participated on at least five prescribed burns.

D. **Certified Burn Manager:** May request prescribed burn authorizations and serve as burn manager. Shall have successfully completed the following level of training, and have the specified certification and level of experience:

- 1) Interagency Basic Prescribed Fire Course;
- 2) S-130/S-190;
- 3) Prescribed Burn Manager Certification; *and*
- 4) Participated on at least ten prescribed burns.

1.2 Prescribed Burn Engine (Pumper Unit/Brush Truck) Operator: Before an employee may independently operate a water-delivery engine in support of active prescribed burns, they shall have successfully completed the following level of training and have the specified level of experience:

- A. S-130/S-190;
- B. On-the-job training for operation of water-delivery engines by a trained and/or experienced engine operator; *or* successful completion of Southern Area Engine Academy or Engine Operator (PMS 419); *and*
- C. Participated on at least five prescribed burns.

1.3 Prescribed Burn Tractor/Bulldozer Plow Unit Operator: Before an employee may independently operate tractor/dozer fire-plow during prescribed burns, they shall have successfully completed the following level of training and have the specified level of experience:

- A. The wildland fire portion of Basic Fire Control Training; *and*
- B. Participated on at least five prescribed burns.

1.4 Prescribed Burn Aerial Ignition Dispenser (AID) Operator: Before an employee may independently operate an AID during a prescribed burn, they shall have successfully completed the following level of training and have the specified level of experience:

- A. Qualified at or above Crew Member level for prescribed burning;
- B. Completed an FWC AID training workshop or other courses that provide an equivalent level of training; *and*
- C. Participated on at least five prescribed burns.

1.5 General: All prescribed burns shall be conducted in complete compliance with all laws regulating the use of prescribed fire; specifically Chapter 590.125(3) F.S. and Chapter 51-2 F.A.C. Burn plans shall have all the required elements as specified in Chapter 51-2.006 as well as a contingency plan, mop-up standards, and standards for declaring the fire out. All prescribed burns shall be conducted as a certified prescribed burn, and managed by a certified prescribed burn manager.

Chapter 2 Wildfire Suppression

2.1 General: The Division of Forestry, or other firefighting entity, may request assistance from DHSC staff during a wildfire suppression incident. This request will usually be for a wildfire strike team. A wildfire strike team consists of one wildfire strike team leader, and two wildfire strike team members per Type V or VI engine. Standards for strike team members and leaders are outlined below. In addition, requests may be made for personnel to fill positions on a suppression incident that are not covered by the following standards. The decision to assist, and the level of assistance provided, on fire suppression incidents will be made by DHSC leadership (includes Division Director, Deputy Division Director, Section Leaders and/or Assistant Section Leaders) and the Wildland Fire Coordinator.

2.2 Wildfire Strike Team Member: Before an employee may participate on wildfire strike teams in support of wildfire suppression efforts, they shall have successfully completed the following level of training and have the specified level of experience:

- A. S-130/S-190;
- B. Southern Area Engine Academy;
- C. Experience and demonstrated proficiency operating a Type V or VI engine; *and*
- D. Participated on at least ten prescribed burns and/or wildfire suppression incidents.

* Exception - Employees who do not meet the above standards can be approved by DHSC leadership and the Wildland Fire Coordinator to serve on a wildfire strike team. Exceptions can be granted when available strike team personnel are not sufficient to meet the requested need. Training and experience levels should be considered when approving exceptions.

2.3 Wildfire Strike Team Leader: Before an employee may serve as team leader for wildfire strike teams in support of wildfire suppression efforts, they shall have completed the following

level of training and have the specified level of experience **in addition to that required to participate on a wildfire strike team:**

- A. Basic Incident Command System (I-200); **and**
- B. Experience as burn manager, crew boss, or strike team leader on at least ten prescribed burns or wildfire suppression incidents.

2.4 Wildfire Tractor/Bulldozer Plow Unit Operator: Before an employee may independently operate tractor/dozer fire-plow units in support of wildfire suppression efforts, they shall have completed the following level of training and have the specified level of experience:

- A. The wildland fire portion of Basic Fire Control Training;
- B. Experience and demonstrated proficiency operating a tractor/bulldozer plow unit; **and**
- C. Participated on at least ten prescribed burns or wildfire suppression incidents.

Chapter 3 Safety

3.1 Personal Protective Equipment: Required items of Personal Protective Equipment for all wildland fire activities include:

- Flame Resistant Shirt and Pants, or Jumpsuit
- Wildland Fire Hard Hat
- Leather Gloves
- Leather Boots – 8” Lace-up
- Eye Protection
- Bandana or Dust Mask
- Hand-held Radio
- Fire Shelter

Safety considerations and/or vegetative types may dictate that crew members wear additional equipment or in some cases deviate from the above required equipment. The burn manager/strike team leader shall determine what Personal Protective Equipment will be worn by their crew to maximize safety, and shall document justifications for any deviations of the required equipment.

3.2 Physical Standards: Prescribed burning and firefighting are physically demanding activities. Each prescribed burn crew/strike team member shall maintain a level of fitness that will allow full participation in these activities. It is the burn crew/strike team member’s responsibility to make the burn manager/strike team leader aware of any limitations that may restrict their activities so that they can be assigned an appropriate role.

3.3 Mobile Equipment: The following is a list of required items for mobile equipment used during wildland fire activities. Mobile equipment includes all-terrain vehicles, utility vehicles, airboats, swamp buggies, trucks, tractors, and bulldozers.

- An ABC fire extinguisher that has been inspected, serviced, and maintained in accordance with the manufacturer's maintenance procedures shall be in or on all mobile equipment. Below are minimum sizes:
 - All-terrain and utility vehicles – 2.5 pound extinguisher
 - Trucks and tractors – 5 pound extinguisher
 - Bulldozers and Swamp Buggies– 10 pound extinguisher
 - Vessels – 5 pounds (could be two, 2.5 pound extinguishers)
- An operational winch shall be installed on all-terrain vehicles, utility vehicles, swamp buggies, and trucks used in the interior of a burn unit.
- An operational water delivery system with at least five gallons of water shall be installed in or on any mobile equipment used in the interior of a burn unit.

Chapter 4 Incident Reviews

4.1 Incident Reviews: This section outlines a mechanism for how DHSC will respond to and review a prescribed fire that had unintended negative consequences. The purpose of a fire-related incident review is to gather facts regarding the incident, and if necessary, recommend actions that may help minimize the chance of reoccurrence.

4.2 Fire-related Incident: A fire or smoke related incident that includes any of the following:

- A. Notice of Violation;
- B. Conducting a burn outside of the prescription;
- C. Fire leaves the prescribed burn area;
- D. Fire leaves the WMA or WEA; or
- E. Fire causes property damage, personal injury, or loss of life.

4.3 Reporting of Fire-related Incidents: The burn manager shall notify their Regional Wildlife Management Biologist as soon as possible but no later than 8:00 am the day after the fire-related incident occurred. The Regional Wildlife Management Biologist shall notify THCR leadership and the Wildland Fire Coordinator of the incident as soon as possible. The notification should include the following:

- A. Date, Time and Location of Incident
- B. Brief Description of the Incident and Current Status
- C. Other Agencies or Entities Assisting

THCR leadership will notify Division leadership and the Executive and Assistant Executive Director of any incidents involving escapes from the WMA, escapes requiring unplanned

suppression assistance, or any incidents resulting in private property damage or injury to a member of the public.

4.4 Fire-related Incident Review: A review of a fire-related incident initiated by the Wildland Fire Coordinator resulting in a written finding of facts and recommendations. The following guidelines should be used to determine the type of review conducted:

- A. **No Review** – No review is required if the prescribed fire escaped from the burn unit, stayed on the WMA/WEA, and was suppressed. These incidents, however, need to be reported to the Regional Wildlife Management Biologist and the Wildland Fire Coordinator if Division of Forestry or other entity assisted with suppression efforts.
- B. **Level 1 Review** – Review to be conducted by the Wildland Fire Coordinator or alternate if one or more of the following occurred and no Level 2 review criteria were met:
 - 1) A Notice of Violation was issued to the burn manager.
 - 2) Motorized equipment was damaged requiring the completion of an Equipment Damage Report.
 - 3) A Level 1 review is requested by DHSC leadership.
- C. **Level 2 Review** – Review to be conducted by the Wildland Fire Coordinator or alternate, and one representative from at least three of the administrative regions if one or more of the following occur:
 - 1) Prescribed fire escaped from the burn unit and from the WMA/WEA.
 - 2) Injury or private property damage resulted from the fire or smoke. If an injury occurs to a member of the burn crew, the need to convene a review team will be determined by DHSC leadership.
 - 3) A Level 2 review is requested by DHSC leadership.

4.5 Fire-related Incident Report: Within 45 days of completing a Fire-related Incident Review, the Wildland Fire Coordinator shall submit a report to DHSC leadership for approval. The report should include: 1) a summary of the incident; 2) a review of the weather forecast and observed weather conditions; 3) a review of the burn prescription; 4) a summary of the execution of the burn and the suppression of the escape, if applicable; and 5) recommendations for future burns. After being approved, the report will be made available to appropriate personnel via e-mail and by being posted on the Terrestrial Habitat and Conservation's Wildland Fire Sharepoint site.

Approved: Timothy A. Beault 3-2-2011
Division Director or Designee Date
Division of Habitat & Species Conservation
Florida Fish and Wildlife Conservation Commission

13.9 WCPR Strategy

Jones/Hungryland WEA

Species Management Strategy

June 24, 2009

Florida Fish & Wildlife Conservation Commission
Division of Habitat & Species Conservation
Terrestrial Habitat Conservation & Restoration Section
A product of the Wildlife Conservation,
Prioritization & Recovery Program



EXECUTIVE SUMMARY

The Florida Fish & Wildlife Conservation Commission's (FWC) Terrestrial Habitat Conservation and Restoration section (THCR) takes a proactive, science-based approach to species management on lands in the Wildlife Management Area (WMA/WEA) system. This approach uses site-specific wildlife assessments of a number of focal species in conjunction with area and species expert knowledge to develop a wildlife management strategy for the area. This strategy is intended to: 1) provide land managers with information on actions that should be taken provided the necessary resources are available, 2) promote the presence of and ensure the persistence of focal wildlife species on the area, and 3) provide measurable species objectives that can be used to evaluate the success of wildlife management on the area.

This document presents the results of a science-based approach to evaluating focal species needs within an ecosystem management approach for the John C. & Mariana Jones/Hungryland Wildlife and Environmental Area (Hungryland). Natural community management focused on a set of focal species provides benefits to a host of species reliant upon these natural communities. Monitoring select species provides information that verifies whether natural community management is having the desired effect on wildlife. Throughout the process, the role of the area in regional and statewide conservation initiatives was considered to maximize the potential benefit.

[Section 1](#) informs the reader about the process used to generate this document. [Section 2](#) describes ongoing management actions on the property. [Section 3](#) provides a list of the focal and listed species on the area, and an assessment of each species' level of opportunity/need. This includes species-specific goals and objectives when appropriate. Objectives are identified for 4 species on this area: Bachman's sparrow, limpkin, northern bobwhite, and the round-tailed muskrat. [Section 4](#) describes specific land management actions recommended for focal species. This includes Strategic Management Areas (SMA) and Objective-Based Vegetation Management (OBVM) considerations. A SMA is an area in which a specific land or species management action(s) can be taken to facilitate conservation of a single or group of species. This section also discusses management necessary to ensure continued persistence of focal species. [Section 5](#) describes species-specific management (e.g. restocking, nest structures, etc), the species monitoring prescribed for the area, and research that would be necessary to guide future management efforts. No species-specific management actions are recommended for this suite of species. Monitoring efforts are described for marsh birds (including the limpkin), wading birds, Bachman's sparrow, northern bobwhite, and round-tailed muskrat. Opportunistic monitoring is suggested for a number of other focal and imperiled species. The conservation of Hungryland's wildlife requires interaction with other entities beyond local staff. Intra-agency coordination with 7 other units in FWC and inter-agency coordination with 8 other entities are identified in [Section 6](#). [Section 7](#) describes efforts prescribed "beyond the area's boundaries" to help affect conservation of the species on the area.

Continuation of current resource levels would be required to provide for most of the land management recommended in this document. These actions can be conducted either by area staff or by contracting with vendors. Some of the monitoring recommendations may require additional resources, while others can be accomplished with continuation of existing resources. Additional resources will likely be required to achieve optimal burn intervals in upland communities.

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Section 1: Introduction

The Florida Fish & Wildlife Conservation Commission's (FWC) Terrestrial Habitat Conservation and Restoration section (THCR) takes a proactive, science-informed approach to species management on lands in the Wildlife Management Area (WMA/WEA) system. Staff integrates conservation planning, Population Viability Analysis (PVA) results, and geospatial analytical techniques to model potential habitat to help FWC determine where focal species conservation can be affected. These landscape level assessments are then combined with area specific and expert knowledge and result in the creation of Species Management Strategies (Strategy) specific to each WMA.

The Strategy is intended to: 1) provide land managers with information on actions that should be taken provided the necessary resources are available, 2) promote the presence and facilitate the persistence of focal wildlife species on the area, and 3) provide measurable species objectives that can be used to evaluate the success of wildlife management on the area. On FWC lead areas, goals and objectives included in the Management Plan (formerly known as Conceptual Management Plan) are referenced when discussing the species and drafting the Strategy; therefore this Strategy will help guide and support the goals of the Management Plan. The species-specific objectives identified in this Strategy will be incorporated into the Management Plan and this Strategy will be appended to the Management Plan.

In this document, goals, objectives and strategies are defined as follows: Goals are broad statements of a condition or accomplishment to be achieved; goals may be unattainable, but provide direction and inspiration. Objectives are a measurable, time-specific statement of results responding to pre-established goals. Strategies are the actions that will be taken to accomplish a goal or objective, and strategies may be measurable.

Species-specific habitat models were used to create statewide potential habitat maps. A GIS analysis was conducted to determine which of the focal species were modeled to have potential habitat on each area. We use local staff's knowledge, species-expert knowledge, and area-specific maps of natural communities to refine habitat information for each species and evaluate the area's potential role in conservation of the species. A workshop is conducted at which all individuals involved in the decision making process discuss the focal species status, evaluate opportunities for land and species management on the area, and decide on appropriate monitoring and/or research actions. Some species cannot be expected to persist on an area based solely on area-specific measures; therefore this strategy identifies intra- and interagency coordination and any "beyond the boundary" considerations (i.e. working with neighboring land owners) necessary for the management of focal species. Area-specific species objectives, a list of necessary actions to achieve these objectives, and the monitoring necessary to verify progress towards objectives are agreed upon and used to create the area's Strategy.

The primary focus of this approach is non-game species; however 2 of the focal species are game birds. Specific game management actions are not included in this Strategy, though game management actions are considered when drafting the Strategy and are compatible with the actions prescribed by this Strategy. While this Strategy focuses on the John C. & Mariana Jones/Hungryland Wildlife and Environmental Area (Hungryland), it considers the role of the area within the larger state or regional context. Similarly, while the Strategy has species-specific objectives and actions, it does not endorse single-species

management. The FWC's land management focuses on natural community management that benefits the host of species that naturally occur in each natural community. However, some species may need directed actions if they are to recover from past declines or be restored to habitat from which they were extirpated. By implementing the Strategy, FWC believes our management will benefit the largest suite of native wildlife by keeping common species common and aiding in the recovery of listed species.

Section 2: Current Management Actions on Jones/Hungryland WEA

The lands comprising Hungryland were purchased in 1994 and 1997 under the Save our Rivers (SOR) program and in 1999 under the Conservation and Recreation Lands (CARL) program. Hungryland was established as a 10,294 acre WEA in June 2001. An additional 2,121 acres located in Palm Beach County were incorporated in September 2004. Hungryland consists of four disjunct parcels separated by private land. Acquisitions by Martin County and the South Florida Water Management District (SFWMD) are tentatively scheduled to be incorporated into the Hungryland. Two additional FWC management areas (J.W. Corbett WMA [Corbett] and John G. and Susan H. DuPuis WEA [DuPuis]) are located near Hungryland, and Hungryland is part of a mosaic of conservation lands located in proximity to areas of dense development.

During the turn of 20th century, lands within Hungryland were being settled. Cattle ranches, orange groves, farms, and sawmills were established along Old Jupiter-Indiantown Grade. A real estate sales scheme in the late 1960s resulted in 35 miles of deep water drainage canals being cut into the area formerly know as Pal-Mar (23,000 acres). Nine miles of this canal system currently exists within Hungryland. The John D. and Catherine T. MacArthur Foundation reserved the rights to the fill dirt from the canal excavation, and spoil removal commenced in June 2004, affecting options to restore the hydrology.

Current actively managed natural communities include mesic flatwoods, wet flatwoods, and wet prairie. These communities are managed with prescribed fire and mechanical and chemical vegetation control. Through the Objective-Based Vegetation Management (OBVM) workshop process, management units were delineated and desired future conditions (DFC) were defined for the actively managed natural communities. The OBVM sampling plan for Hungryland is available at http://www.myfwc.com/docs/WildlifeHabitats/CMP_Hungryland_2002_2007.pdf.

Many of Hungryland's focal species are wetland-dependent. Therefore, water quality and quantity are essential to maintaining suitable habitat for these species. Large wetland complexes, natural hydrological flow, and connections between wetlands should be maintained whenever possible.

A prescribed burn program was implemented to reduce heavy fuel loads, lessen chance of catastrophic wildfires, and enhance natural communities for the benefit of wildlife. The first prescribed burn of 380 acres was conducted in April 2003. A total of 7,965 acres exist in fire-maintained communities on Hungryland ([Table 1](#)). To date, 4,337 acres have been treated with prescribed fire. A combination of growing and dormant season burns is preferred, but dormant season burns are often used to ensure fire frequency is maintained when conditions do not permit fire in the growing season. Shredding is frequently conducted on Hungryland to reduce understory and shrub height. In 2006 and 2007 approximately 81 acres of palmetto was shredded in uplands and along firebreaks.

Invasive exotic plant control began on the area in 2002. Primary exotic species targeted for control include Australian pine (*Casuarina equisetifolia*), melaleuca (*Melaleuca quinquenervia*), Brazilian pepper (*Schinus terebinthifolius*), old-world climbing fern (*Lygodium microphyllum*), strawberry guava (*Psidium cattleianum*), common guava (*Psidium guajava*), tropical soda apple (*Solanum viarum*), downy rose myrtle (*Rhodomyrtus tomentosa*), and earleaf acacia (*Acacia auriculiformis*). Herbicide treatments of 12,200 acres at a cost of \$539,425 were funded from FWC budget. Department of Environmental Protection (DEP) funding provided an additional \$782,018 for herbicide treatment. The DEP money funded a combination of initial treatments and maintenance and follow-up treatments on 9,192 acres. All areas within Hungryland have received initial treatments for exotic vegetation. Continued maintenance treatments are necessary to control reinfestations.

Table 1. Mapped acreage of current and historic plant communities on Hungryland, including management status and number of focal species that use the community.

Community Type	Estimated Current Acreage	Estimated Historic Acreage	Actively Managed	# (use by species)
Basin marsh	1,776	1,961	No	6
Baygall	15	13	No	4
Depression marsh	1,815	1,805	No	9
Dome swamp	199	189	No	3
Mesic flatwoods	1,794	1,523	Yes	11
Pasture improved	98	0	No	9
Ruderal	1,026	0	No	3
Wet flatwoods	3,431	4,197	Yes	7
Wet prairie	2,740	3,206	Yes	8
TOTAL ACRES	12,895			

Hungryland’s southwestern corner is a ruderal parcel of 411.6 acres known as the Lemon Groves Mitigation Bank (LGMB). Historically, this area was forested wetlands, wet prairies, and marshes. In the 1970’s, a lemon grove and its associated water management facilities were constructed. The current condition of the LGMB is significantly disturbed, and from a wildlife habitat quality perspective, it is expected to deteriorate with time. This area has been identified as in need of restoration in Hungryland’s most recent Conceptual Management Plan. However a private company, Mitigation Services, retains the mitigation rights to this parcel. In 2009, a new agreement is being negotiated between the Board of Trustees, FWC and Mitigation Services for a mitigation bank, or other mitigation project, on the LGMB.

Current species monitoring includes a yearly flyover (initiated in 2007) to document wading bird rookery use. FWC’s Species Conservation Planning Section (SCP) began a marsh bird survey on Hungryland in 2007 and 2008. The monitoring protocol allows for the detection of black rail (*Laterallus jamaicensis*), least bittern (*Ixobrychus exilis*), king rail (*Rallus elegans*), purple gallinule (*Porphyryla martinica*), common moorhen (*Gallinula chloropus*), pied-billed grebe (*Podilymbus podiceps*), and limpkin (*Aramus guarauana*). All of these species were detected except the black rail. Limpkins and pied-billed grebes were the most commonly detected species. The marsh bird survey will be repeated by THCR staff

in 2009 and at least biennially thereafter. A herpetofauna survey was conducted on the area during the months of February – May and August, 2004. During the survey, 33 herpetofauna species were identified. Area staff historically conducted aerial transect surveys for deer, but these were discontinued. For species management, 26 wood duck (*Aix sponsa*) boxes are maintained on the property. In 2006, camera-trap surveys were conducted for wild turkeys. Although turkeys are known to occur on the area, no turkeys were detected during the survey period.

Section 3: Area Focal Species

The FWC’s land management is based on restoring the natural form and function of natural communities. However, in some instances it is important to consider the needs of specific species, and necessary to monitor the impacts of natural community management on select wildlife to ensure management is having the desired effect. To ensure a focused, science-based approach to species management, the FWC is using the focal species approach embraced by *Closing the Gaps*. The focal species approach incorporates a variety of concepts and considerations that, if applied correctly, allow one to identify the needs of wildlife collectively by strategically selecting a subset of wildlife species. The group of focal species includes umbrella species, keystone species, habitat specialists, and indicator species. Sixty focal species and 1 group of species were selected for the statewide assessment. Potential habitat maps were generated and a PVA was conducted for each of these species.

Of the 60 focal species, 16 were modeled to have potential habitat on Hungryland. One additional species was identified by the area manager as having been documented on the property, and in need of conservation consideration. Area-specific natural community maps and knowledge from local managers and species experts were used to refine area-specific potential habitat maps. Information on the focal species was compiled and provided in a workbook to allow for informed discussion of the species. The Hungryland Wildlife Conservation Prioritization and Recovery (WCPR) Workshop brought decision makers together and facilitated discussion on: an assessment of the opportunity and needs for each species; identification of measurable objectives; a description of necessary actions including monitoring; and any coordination efforts that are necessary. The “level of opportunity and need” for each species was discussed at the workshop. This included analyzing the long-term security of the species (i.e., examine PVA results), considering if the species occurs in actively managed communities ([Table 1](#)), if the species is management responsive, and any other local overriding considerations (e.g., status of species in the region, local declines/extirpations). A brief summary of this assessment of each species is available in [Section 3.2](#).

3.1: Jones/Hungryland WEA Focal Species

Gopher tortoise (*Gopherus polyphemus*)*

American swallow-tailed kite (*Elanoides forficatus*)

Bachman’s sparrow (*Aimophila aestivalis*)

Crested caracara (*Caracara cheriway*)

Florida mottled duck (*Anas fulvigula*)

Florida sandhill crane (*Grus canadensis pratensis*)
Limpkin (*Aramus guarauna*)
Northern bobwhite (*Colinus virginianus*)
Red-cockaded woodpecker (*Picoides borealis*)
Short-tailed hawk (*Buteo brachyurus*)
Snail kite (*Rostrhamus sociabilis*)
Southeastern American kestrel (*Falco sparverius paulus*)*
Southern bald eagle (*Haliaeetus leucocephalus*)
Wading birds (*Multiple spp.*)

Florida black bear (*Ursus americanus floridanus*)*
Round-tailed muskrat (*Neofiber alleni*)
Sherman's fox squirrel (*Sciurus niger shermani*)*

* Indicates a species was modeled to have potential habitat on the area; however there is little opportunity to manage for these species on the area. The assessment for these species is covered in [Section 3.2.14](#).

3.2: Focal Species Opportunity/Needs Assessment

3.2.1: American Swallow-Tailed Kite

The swallow-tailed kite is occasionally seen on Hungryland. Although a few kites nest on nearby WMAs, there is no known nesting on Hungryland. The swallow-tailed kite uses a variety of natural communities, requiring a mosaic of tall trees for nesting habitat and open areas for foraging habitat. Dominant trees which are taller than surrounding trees are preferred for nesting sites. Shrub height and density tends to be higher around nest sites. There are currently few large, mature pines on Hungryland. Potential habitat models indicate 4,633 acres of current potential habitat with 4,730 acres possible after restoration. This species is not listed at either the state or federal level, but is considered a moderate statewide priority as it triggers 4 of the 6 statewide prioritization parameters (low population status, unknown trend, probability of a 50% decline, and a low proportion of populations on state lands modeled to persist).

This species is not typically considered management dependent and the opportunity for management to have significant impact on this species at the local level is low. However, ongoing efforts to maintain Hungryland's natural community structure and function will benefit this species. Management actions including prescribed fire and mechanical actions that aid in restoring natural community structure should continue to maintain/enhance habitat for this species. Habitat suitability for this species should increase with management and as the area's pines mature. However, even if Hungryland is managed to accommodate the needs of this species, the continued presence of this species on Hungryland is dependent on conditions that influence the regional population of American swallow-tailed kites.

The area goal is to promote suitable foraging and nesting habitat for the American swallow-tailed kite that will allow the kites using Hungryland to function

as part of a regional population. Because this species naturally occurs in relatively low densities, local monitoring would be unlikely to detect a change in the area's population. Given these conditions, it would be impractical to designate a SMA or measurable objectives for this species. Should nests be detected, management considerations around these sites will be used ([Section 4.3.1](#)). If kite activity is observed during nesting season (particularly if kites are observed carrying nesting material, mobbing, or in groups of 3 or more) this information should be documented ([Section 5.2.5](#)). Coordination recommendations for this species are found in [Section 6.6](#). By providing suitable nesting and foraging sites, the area will fulfill its role in the conservation of this species of greatest conservation need.

3.2.2: *Bachman's Sparrow*

Bachman's sparrows have recently been heard on Hungryland, although efforts to document breeding or overall distribution have not been attempted. This species prefers mature pine forests with low basal area and abundant herbaceous vegetation or early successional oldfield habitat. The occurrence of fire is critical to sustaining this species as use of an area by Bachman's sparrows declines rapidly around 18 months post-fire and sites are typically abandoned if fire is excluded for greater than 3 years. In many areas the optimal fire return interval necessary to achieve desired vegetative parameters for Bachman's sparrow habitat is 2-3 years. Bachman's sparrows are not listed at either the state or federal level, and the species triggers 2 of the 6 statewide prioritization parameters (declining trend and a low proportion of populations on state lands modeled to persist). However, this species can be used as an indicator of properly managed pine stands.

Potential habitat models indicate 1,893 acres of current potential habitat with 1,523 acres possible after restoration. However, much of Hungryland's pine flatwoods contain small, younger pines with tall palmetto or shrubby understory, which is not optimal habitat for this species. Therefore there is a high level of opportunity for Bachman's sparrow management on Hungryland. While Hungryland contains enough potential habitat to sustain a small population of Bachman's sparrows once all habitat is suitable, it is likely Bachman's sparrows occupying Hungryland will function as part of a larger, regional population. While little specific information exists on the abundance of Bachman's sparrows on neighboring lands, this species is known to occur in the northwestern portions of Corbett and has been documented breeding on DuPuis. Therefore, dispersal into suitable areas on Hungryland is likely.

There is good potential to increase the Bachman's sparrow population in the next 10+ years through management actions that emphasize prescribed fire and include the thinning of flatwoods where appropriate as the pines mature. Additional land management considerations are found in [Section 4.3.2](#). As we do not have enough information on the distribution of the species on Hungryland to know where to focus strategic management for this species, no SMA is recommended at this time. However, after collecting information on the species through biennial monitoring ([Section 5.2.1](#)), it may be possible to determine a SMA in the future. The purpose of any potential SMA would be to focus efforts at increasing the fire return interval

within the SMA to see if these efforts would positively influence the numbers of Bachman's sparrows and northern bobwhite.

The area goal is to maintain a viable population on Hungryland that functions as part of a larger regional population. The measurable objectives are as follows:

- 1) Conduct a baseline survey to determine current distribution and relative abundance by 2012, and
- 2) Conduct biennial spring call counts to verify we are maintaining a stable or increasing trend.

Once the baseline survey has been completed, additional measurable objectives may be considered. A monitoring protocol is currently being developed for this species, and this may provide opportunity to designate more specific measurable objectives. Monitoring for this species will occur on at least a biennial basis using a standardized spring call count approach currently being developed ([Section 5.2.1](#)). Coordination recommendations are found in [Section 6.1.2](#). By restoring the natural form and function of the flatwoods to better meet the needs of the Bachman's sparrow, the area will fulfill its role in reversing the ongoing population decline of the species.

3.2.3: Crested Caracara

Crested caracaras are occasionally seen on Hungryland foraging in ruderal habitats or open areas and are seen on private land to the north and northwest of Hungryland. There are no records of nesting on the site, although they are known to nest on nearby Corbett and Allapattah Flats WMAs. Caracaras prefer to forage in open areas with low ground and shrub cover, and currently much of the state's caracara population utilizes open pasture on private lands. Nests are typically built above the ground in a cabbage palm (*Sabal palmetto*) in an open area with scattered trees. Caracaras are listed as threatened at both the state and federal levels. This species triggers 4 of 6 statewide prioritization parameters (high Millsap biological and supplemental scores, low population status, and unknown trend), and is a moderate to high statewide priority.

Potential habitat models indicate 1,893 acres of current potential habitat with 1,523 acres possible after restoration. While Hungryland contains the specific natural communities required for foraging and potential nesting of this species, the amount of potential habitat is less than the reported home range value (~3,000 acres). Therefore, the management opportunity is low. Because of this and the fact that ongoing management of Hungryland's natural communities will maintain or enhance habitat for this species, no SMA is necessary. Caracaras will only continue to occur on Hungryland if the regional population remains healthy.

The area goal is to maintain appropriate natural communities in a condition suitable to the species to ensure the crested caracaras occurring on Hungryland function as a part of the larger regional population. This species naturally occurs in relatively low densities and its home range size is larger than the amount of caracara potential habitat available on the area. As such, the management opportunity for this species is low, and it would be impractical to set measurable objectives or conduct

species-specific monitoring. However, the occurrence of adults during the nesting season (September – February) or the presence of pre-dispersal young with adults will be recorded ([Section 5.2.5](#)). If there is reason to believe nesting is occurring, an attempt will be made to document the nest. Should nests be detected, management considerations around these sites will be implemented. These and other land management recommendations are found in [Section 4.3.3](#). Since much of the state’s caracara population utilizes private lands, coordination with private landowners may be necessary. Coordination recommendations for the crested caracara are found in [Sections 6.1.5](#) and [6.8](#). Considerations beyond the boundaries of Hungryland are found in [Section 7.2](#). By providing potential nesting and foraging habitat for the crested caracara, Hungryland will fulfill its role in the recovery of this threatened species.

3.2.4: Florida Mottled Duck

Mottled ducks are common and known to forage on Hungryland. While breeding has not been documented, there have been no local efforts to document breeding or track abundance. Preferred nesting habitat for this species includes upland grassy areas near wetlands, but they also will nest in dry marsh, pine flatwoods, or urban areas. Wet prairies, shrub and forested wetlands, open water, and flooded uplands are avoided. This species prefers water less than 10 inches deep and wetlands with emergent vegetation. Management activities that promote shallow emergent wetlands with a mosaic of open water and herbaceous cover provide good foraging habitat. The mottled duck is a game species and is not listed at either the state or federal level. This species triggers 2 of the 6 statewide prioritization parameters (supplemental score and declining trend).

Potential habitat models indicate 5,982 acres of current potential habitat on Hungryland with 6,595 acres possible after restoration. In south Florida, patterns of habitat use, movement, and population size are poorly known. Therefore, it would be inappropriate to designate specific area-level management objectives.

The FWC’s Fish and Wildlife Research Institute (FWRI) is conducting a 3-year study (initiated in 2008) on mottled ducks in south Florida. The goal of the study is to gather population and habitat use information. Until this study is complete and management recommendations are available, the area manager at Hungryland will continue to use prescribed fire in marsh communities and adjacent uplands, which should promote foraging and nesting habitat. Because little management besides prescribed fire can be used in Hungryland’s marsh system and there is a lack of information on habitat use patterns in south Florida, no SMA is recommended at this time.

The area goal is to maintain the Florida mottled duck as common on Hungryland to allow them to function as part of a regional population. There are no current measurable objectives; however measurable objectives may be adopted, if appropriate, following the completion of the FWRI study. Communication with FWRI will be a priority, and coordination efforts are described in [Section 6.1.2](#) and [Section 6.1.3](#). Opportunistic observations of nesting activity and juveniles will be recorded ([Section 5.2.5](#)). By maintaining wetland habitat and ensuring

communication with species experts, Hungryland will fulfill its role in the conservation of the Florida mottled duck.

3.2.5: Florida Sandhill Crane

The Florida sandhill crane is commonly seen and does nest on Hungryland. This species uses a combination of shallow wetlands and open upland habitats with a majority of the vegetative cover ≤ 20 inches in height. Standing water is an important component of nesting habitat for Florida sandhill cranes. Nests consist of herbaceous plant material mounded in shallow water or marshy areas. Home range size varies seasonally and regionally. For adult pairs home range likely varies from approximately 300 to 600 acres per pair. Habitat used includes a mosaic of emergent palustrine wetlands and open uplands such as pasture, prairie, and open pinelands. The Florida sandhill crane is listed as threatened at the state level. This species triggers 4 of the 6 statewide prioritization parameters (Millsap biological and supplemental scores, declining trend, and a low proportion of populations on state lands modeled to persist) and is a moderate to high statewide priority. Concern for ongoing loss of habitat on private lands makes conservation of this species on state lands more of a priority.

Potential habitat models indicate 4,653 acres of current potential habitat with 5,011 acres possible after restoration. Whether or not this is enough habitat to independently sustain a viable population of sandhill cranes, Hungryland is part of a mosaic of conservation lands. It is likely this mosaic of conservation lands has enough potential habitat to support a viable population, provided appropriate hydrology is maintained.

Sandhill cranes will occupy the same territory for many years, and typically move only when necessitated by environmental conditions (e.g. drought) or deteriorating habitat. As ongoing management activities such as prescribed burning and exotic plant removal will meet the needs of this species, no SMA is recommended. While monitoring can detect changes in local nesting effort, the cost of conducting systematic surveys at the level necessary to achieve a complete count is cost prohibitive. For this reason, it would be inappropriate to create measurable objectives for this species on this area. However, if funding is made available, this species should be monitored across the number of public lands in this area, and it might be appropriate to have a regional objective.

The area goal is to maintain appropriate natural communities in a condition suitable to the species to ensure the Florida sandhill cranes occurring on Hungryland function as a part of the regional population. Sandhill crane nests may be identified during ongoing management actions and actions taken for other species. When this occurs, nest locations will be documented. In particular, sandhill crane nests are easily detected from the air, and will be documented during aerial surveys for wading birds and exotic plant control. This level of monitoring is not sufficient to be considered a full count, and will therefore be opportunistic ([Section 5.2.5](#)). When nests are detected, management activities will be planned to avoid disturbance ([Section 4.3.4](#)). Observations of nesting activity will be shared with appropriate

cooperators and databases ([Section 6.8](#)). By providing suitable foraging and nesting habitat, the area will help affect the conservation of this threatened species.

3.2.6: Limpkin

Limpkins are common on Hungryland and are believed to breed on the area, although efforts to document nest locations have not been attempted. Surveys started in 2007 by FWC's SCP indicate this species is common on the area during the breeding season. Therefore it is reasonable to assume breeding has occurred and is common. This might be evidence that ongoing management is meeting the needs of this species. Limpkins live in wetland habitats, some of which are not actively managed. However, the control of invasive exotic plants does help maintain these wetlands and the use of prescribed fire in wet prairie, wet flatwoods and the marsh habitats does benefit this species. This species is mobile and is influenced by regional water levels and availability of prey items such as apple snails. At the state level, the limpkin is listed as a species of special concern. This species triggers 1 of the 6 statewide prioritization parameters (unknown population trend).

Potential habitat models indicate 9,672 acres of current potential habitat with 11,170 acres possible after restoration. While it is not known if this is enough habitat to independently support as population of limpkins, it is likely that the limpkins occurring on Hungryland function as part of a regional population. Prescribed fire in wet prairie and wet flatwoods enhances foraging opportunities and can prevent shrub encroachment of wetland systems. Allowing prescribed fire to burn into marsh systems will maintain or improve habitat conditions and continue to promote use of these wetlands by limpkins. As ongoing natural community management and exotics control meet the management needs of this species, no SMA is recommended.

The area goal is to maintain this species as commonly seen or heard on Hungryland. Meeting this goal is dependent on the limpkins on Hungryland having the potential to function as part of a larger regional population which is impacted by events beyond the control of area managers. The measurable objective is to:

- 1) Complete biennial marsh bird surveys to determine relative abundance/distribution.

Area staff will work toward the goal by promoting foraging and nesting opportunities by maintaining healthy aquatic ecosystems through ongoing natural community management. However, the status of limpkins on Hungryland will be influenced by regional conditions. As monitoring provides information on population response to these conditions, it may be possible in future workshops to establish measurable objectives. If nests are located, they will be protected during management activities. Further land management considerations can be found in [Section 4.3.5](#). Monitoring for limpkins will be continued at least biennially ([Section 5.2.4](#)). As exotic invasive aquatic plants can have a negative impact on apple snails, any occurrence of these species on the area should be documented and reported to the Invasive Plant Management Section. Coordination recommendations are found in [Sections 6.1.1](#), [6.1.7](#), and [6.8](#). By providing suitable foraging and nesting habitat, the area will contribute to the conservation of the species.

3.2.7: Northern Bobwhite

Northern bobwhites have been documented on Hungryland occasionally, although systematic efforts to document local distribution and relative abundance have not been attempted. Northern bobwhites depend on multiple early-successional habitats that are well interspersed to meet their annual life requirements. This species prefers patchy herbaceous or saw palmetto groundcover that is typically maintained with a 2-3 year fire return interval. The northern bobwhite is a game species and is not listed at either the state or federal level. However, ongoing declines in this species' population are cause for concern and this species is a focus of a number of ongoing conservation initiatives. This species triggers 2 of the 6 statewide prioritization parameters and is a medium statewide priority.

Potential habitat models indicate 4,772 acres of current potential habitat with 5,721 acres possible after restoration. However, much of Hungryland's pine flatwoods contain small, younger pines with tall palmetto or shrubby understory; a condition that is not optimal for northern bobwhite. Therefore, there is high opportunity to positively influence the northern bobwhite population in the next 10+ years. Management actions that include frequent prescribed fire in association with the thinning of flatwoods where appropriate should create favorable habitat as these pines mature and the understory is reduced. The combination of growing and dormant season fire will be used to reduce excess fuels and shrub cover and increase herbaceous groundcover. Growing season fire is preferred, but dormant season fire can be used to maintain the desired habitat parameters if conditions are not suitable during the growing season. Following initial prescribed burning to reduce shrub height, future burn prescriptions will focus on creating a mosaic habitat to maximize benefit to northern bobwhite. Given that management and surveys should be conducted on all appropriate natural communities throughout Hungryland, no SMA is recommended for this species.

The area goal is to establish and maintain a viable population of northern bobwhite on Hungryland that functions as a part of the larger regional population. While managers believe northern bobwhite numbers will increase on Hungryland in response to management, current population information of northern bobwhite on Hungryland is not available. Therefore, the measurable objectives are as follows:

- 1) Conduct a baseline survey to determine current distribution and relative abundance by 2012, and
- 2) Conduct biennial spring call counts to verify we are maintaining a stable or increasing trend.

Once the baseline survey has been conducted, additional measurable objectives may be considered. Surveys for this species will be conducted at least biennially ([Section 5.2.1](#)). Coordination recommendations are found in [Section 6.1.2](#). By restoring the natural form and function of the flatwoods to better meet the needs of the northern bobwhite, the area will fulfill its role in reversing the population declines of the species.

3.2.8: Red-Cockaded Woodpecker

Red-cockaded woodpeckers are believed to have historically occurred on Hungryland. However, there are no active clusters on the area and no birds have been documented on the area since FWC was assigned management responsibility. This cavity-nesting species is dependent on mature pine uplands with limited understory. Red-cockaded woodpeckers are listed as federally endangered and are a state species of special concern. Statewide, this species triggers 4 of the 6 prioritization parameters (high Millsap biological score, low and declining population, and a low proportion of populations on state lands modeled to persist). The only parameters not triggered for this species are the Public Lands Conservation Planning (PLCP) PVA results. However, the results of this PVA should be used with caution as several of the model's assumptions are not suited to this species, and the model had a starting population higher than the known population. This species is a moderate to high priority.

On Hungryland, 1,635 acres of potential habitat were modeled to occur on the area with 1,254 possible after restoration. There are active red-cockaded woodpecker populations on nearby Corbett (nearest cluster > 4 miles from Hungryland) and DuPuis (nearest cluster > 11 miles from Hungryland). Both properties are involved in the red-cockaded woodpecker Southern Range Translocation Cooperative and are recipient sites for translocated birds. As such, dispersal onto Hungryland may be possible when habitat becomes suitable. Currently there is little to no suitable habitat, as the area lacks large, mature pines suitable for cavities. While Hungryland does not currently have suitable habitat for the red-cockaded woodpecker, long term (> 30 years) goals involve Hungryland functioning as part of the Corbett/ DuPuis red-cockaded woodpecker metapopulation. Management actions that include prescribed fire and thinning of flatwoods where appropriate should create favorable habitat as pines mature.

The area goal for this species is to promote habitat conditions on Hungryland that will ensure the area supports a red-cockaded woodpecker population that functions as part of the larger Corbett/ DuPuis metapopulation. This is a long-term goal that will not be achieved for more than 30 years. To work toward this goal, staff will conduct management actions to promote old-growth habitat structure with limited understory suitable for red-cockaded woodpeckers. As suitable habitat will not become available on Hungryland for >30 years, no SMA or measurable objectives are recommended for the species at this time. Ongoing natural community management will benefit this species, and further land management recommendations for red-cockaded woodpeckers are found in [Section 4.3.6](#). Opportunistic monitoring is recommended for the species ([Section 5.2.5](#)). There is currently no need for coordination, but there will be a need for coordination once habitat is suitable for the species. By promoting development of old growth pine forests with limited understory that will eventually support red-cockaded woodpeckers, Hungryland will fulfill its role in the recovery of this species.

3.2.9: Short-Tailed Hawk

In June 2008, a short-tailed hawk was observed roosting on the Nine Gems parcel of Hungryland. This is the first known occurrence of this species using the area, and its presence during the month of June indicates there may be potential for local breeding activity. Robust efforts to document the presence of short-tailed hawks on Hungryland or surrounding lands have not been attempted. This species reaches the northern limits of its range in peninsular Florida. It is a rare species that is difficult to study, resulting in an incomplete knowledge of its life history. Habitat types used for breeding include dense or open woodland stands in wetlands, cypress swamps, and bay swamps. Foraging occurs over adjacent prairies and open areas. Transitional zones and ecotones appear to be important components of foraging habitat. This species triggers all of the statewide prioritization parameters making it a priority species.

This species was not modeled to have potential habitat on Hungryland using landcover data, however potential habitat models using natural community data indicate 3,276 acres of current potential habitat with 4,661 acres possible after restoration. This is not enough habitat to sustain a population. Given the generalist nature of this species and its mobility, it is not considered management dependent. However, the species has high nest site fidelity. Ongoing management of Hungryland's natural communities with prescribed fire and other mechanical actions should continue to maintain/enhance habitat for this species. Martin County and the SFWMD are conducting habitat restoration on recently acquired parcels east of Nine Gems, which should increase the amount of suitable habitat. As this species is not management dependent and has only been documented on Hungryland once, there is low opportunity to influence the species through management actions. Therefore, no SMA is designated for this species.

The area goal is to enhance and then maintain the suitability of habitat for the species to allow the short-tailed hawks using Hungryland to function as part of a regional population. Management of this species likely needs to occur at a regional level. Even if staff manage the habitat on Hungryland for the needs of the species, it is possible the species may cease to occur on the area if regional conditions deteriorate. Due to a combination of this species naturally occurring in relatively low densities and because it is unlikely that management at the area level is likely to affect a measurable change in the local population, no measurable objective was designated for this species. It is likely that as trees mature throughout Hungryland and the habitat is maintained through ongoing natural community management, increased utilization of this area by short-tailed hawks is possible.

If nesting is detected, management considerations around these sites will be used ([Section 4.3.7](#)). Area staff will document and report any short-tailed hawk sightings on Hungryland ([Section 5.2.5](#)). Detailed habitat and population information on this species is lacking at the statewide level. Research needs for this species have been identified ([Section 5.3.1](#)). Coordination recommendations are found in [Sections 6.1.3](#) and [6.6](#). By providing suitable foraging and potential nesting sites, the area will fulfill its role affecting the conservation of the short-tailed hawk.

3.2.10: Snail Kite

Snail kites are commonly seen on Hungryland and nesting has been documented on the area since 1996. Snail kites are frequently seen along the canal system in Hungryland, as well as in wet prairie, depressional wetland, and marsh habitats across the area. The snail kite is highly dependent upon availability of its primary food source, the apple snail, which requires high-quality wetland habitats with emergent vegetation. Nest success is closely tied to appropriate water levels. Snail kites are highly mobile, and the individuals on Hungryland function as a part of a larger regional population. The snail kite is listed as endangered at both the state and federal levels, and the species triggers 4 of the 6 statewide prioritization parameters (a low and declining population and high Millsap biological and supplemental scores). The only parameters not triggered by this species are the Public Lands Conservation Planning (PLCP) PVA results. However, the results of this PVA should be ignored as more recent species-specific PVAs model this species to have high risk of decline and extinction. The snail kite is a high priority species.

Potential habitat models indicate 6,176 acres of potential habitat, with 6,845 possible after restoration. This is not enough habitat to independently support a viable population. Regionally, snail kites have abandoned their historic major nesting site, Water Conservation Area (WCA) 3A, most likely due to changes in water management. The regional goal is to restore major snail kite nesting activity to their historic nesting areas. Snail kites will only continue to occur on Hungryland if the regional population is stabilized, and increased.

Hungryland is included in a yearly survey of snail kite nesting habitat conducted by the University of Florida (UF). Two nests were confirmed in 2008, however neither nest was successful. UF staff specifically noted that foraging habitat was limited immediately adjacent to the nest sites. More suitable nesting locations are available throughout Hungryland, and UF believes planting additional woody nesting substrate plant species (e.g. pond apple [*Annona glabra*], cypress [*Taxodium* spp.], coastal plain willow [*Salix caroliniana*], or cabbage palm [*Sabal palmetto*]) near foraging areas is therefore unlikely to influence nest site selection. Additionally, UF commented on the fact that water levels dropped significantly toward the end of the nesting season, which may have contributed to the nest failures.

Although the species is considered a high statewide priority, the opportunity for local managers to impact the species is limited. Hydrology plays a major role in snail kite population levels. While hydrologic assessments indicate Hungryland's hydrology is very good, hydrology on Hungryland is controlled by the Pal-Mar Water Control District (Pal-Mar). Additionally, regional conditions outside the control of the area manager have significant impact on populations of kites and the snails they eat. These constraints indicate there is low opportunity for area staff to significantly impact the snail kite. However, ongoing natural community management including exotic plant control and prescribed fire in wet prairie and marshes should promote suitable habitat for this species by preventing shrub encroachment and supporting growth of appropriate native vegetation.

The area goal is to enhance and then maintain the suitability of habitat for the species to allow the snail kites using Hungryland to function as part of a regional

population. We will work towards this goal by managing for high-quality wetland habitats that provide snail kite foraging and nesting habitat. While area staff can do their part to maintain suitable vegetative conditions on Hungryland, there are issues that impact this species that are beyond the control of area staff. Even if staff manage the habitat on Hungryland for the needs of the species, it is possible the species may cease to occur on the area.

Land management considerations are found in [Section 4.3.8](#). Due to the low opportunity for area staff to influence kite populations on Hungryland, no measurable objectives are appropriate. As Hungryland is already included in the statewide kite monitoring program, there is no need for local staff to conduct additional monitoring, although observations of nesting, nesting behavior, or kite pairs will be documented ([Section 5.2.5](#)) and the information shared with researchers ([Section 6.1](#) and [6.2](#)). Providing occurrence locations to and maintaining communication with UF will be a priority. As exotic invasive aquatic plants can have a negative impact on apple snails, any occurrence of these species on the area should be documented and reported to the Invasive Plant Management Section ([Section 6.1.7](#)). Additional coordination recommendations are found in Sections [6.1.3](#), [6.2](#), [6.4](#), [6.5](#), [6.7](#), and [6.8](#).

A Strategic Habitat Conservation Area was identified for the snail kite, including lands within 3 miles of the Hungryland boundary. This should be considered when revising the area's optimal boundary. Beyond the boundaries considerations for Hungryland are found in [Section 7.1.1](#). By maintaining suitable foraging and nesting habitat, the area can fulfill its role in the conservation of this endangered species.

3.2.11: Southern Bald Eagle

Bald eagles are rarely seen on Hungryland, and nesting has not been documented. The species is a generalist and uses a number of natural communities. Therefore, it is not considered management dependent, though it does benefit from active management to restore natural communities provided nest protection guidelines are followed. Statewide, this species triggers 0 of the 6 prioritization parameters. However federal and state protections remain, and there is a state management plan to ensure the continued recovery of the species.

Potential habitat models indicate 490 acres of current potential habitat with 511 acres possible after restoration. Suitable foraging/nesting habitat is currently restricted on Hungryland, particularly due to a lack of large pines suitable for nesting. While Hungryland may eventually attract nesting eagles, the area's role in bald eagle recovery is limited, and the occurrence of eagles on Hungryland is dependent on the regional eagle population. Bald eagles are known to nest on nearby Corbett and DuPuis and do pass over Hungryland. Because there is little suitable habitat and limited potential to influence the species through management actions, no SMA is recommended.

The area goal is to promote suitable habitat for potential bald eagle nesting. Ongoing management of Hungryland's natural communities should continue to maintain or enhance habitat for this species by maintaining potential foraging habitat in wetland systems and potential nesting sites as pines mature. Should nests be

detected, management considerations around these sites will be observed ([Section 4.3.9](#)). If eagle behavior indicative of nesting (i.e. courtship flights, carrying sticks, etc) is observed, an effort will be made to determine the location of any potential nest on the area. Monitoring recommendations for this species are found in [Section 5.2.5](#). If bald eagle nesting is documented on site, the nest will be reported and the taxa coordinator for this species notified ([Sections 6.1.3](#) and [6.1.6](#)). By providing suitable foraging and nesting habitat and maintaining that habitat as the area's pines mature, Hungryland can help affect the conservation of the bald eagle.

3.2.12: Wading Birds

Six of the 8 species of wading birds (great egret [*Ardea alba*], snowy egret [*Egretta thula*], tricolored heron [*Egretta tricolor*], little blue heron [*Egretta caerulea*], wood stork [*Mycteria americana*], and white ibis [*Eudocimus albus*]) are commonly seen on Hungryland. The roseate spoonbill (*Platalea ajaja*) is rarely seen on Hungryland and the surrounding areas, and the reddish egret (*Egretta rufescens*) is not typically seen on Hungryland. Statewide, this group of species is a moderate priority. Several species are state listed species of special concern and the wood stork is state and federal listed as endangered. The Millsap biological scores for the reddish egret, little blue heron and wood stork are high. The snowy egret, little blue heron, and roseate spoonbill are believed to have declining population trends while the tricolored heron and white ibis have unknown trends.

Potential habitat models indicate 9,976 acres of current potential habitat with 11,372 acres possible after restoration. Several rookery and nesting sites have been documented throughout Hungryland, with one notably large, multi-species (little blue heron, snowy egret) rookery occurring in management unit (MU) 13D. This rookery has been active since at least 2005. Wading bird use of this rookery has been more stable year-to-year than rookeries on nearby areas. Due to the significance of the rookery found in MU 13D, a SMA is recommended for these species ([Section 4.1.1](#)).

Natural community management that includes prescribed fire and exotic plant removal in wet prairie and wet flatwoods will enhance and maintain these natural communities in good condition for wading birds. However, wading bird population levels are highly influenced by regional conditions, especially water level conditions. Although this species is a high local priority, there is low opportunity to impact the species through actions beyond ongoing natural community management. Therefore, no measurable objectives have been identified for wading birds. Timing of management activities should be carefully considered to avoid negatively impacting nesting wading bird colonies ([Section 4.1.1](#)). To observe long-term trends and avoid negative impacts to rookery sites, area staff will monitor rookery use and identify additional nesting locations through yearly aerial surveys ([Section 5.2.2](#)). Coordination with surrounding area managers is necessary ([Sections 6.1.1](#), [6.1.4](#), [6.3](#), [6.4](#), and [6.5](#)) to ensure proposed management and recreational activities consider the needs of these species.

The area goal is to enhance and then maintain the suitability of habitat for the species to allow the wading birds using Hungryland to function as part of a regional population. This will be accomplished by maintaining the habitat in a condition that

is suitable to these species. By maintaining suitable nesting and foraging habitat, the area can fulfill its role in the conservation of these species. However, these species are significantly impacted by water quality and quantity. The long-term persistence of these species on Hungryland will be influenced by regional water management decisions.

3.2.13: Round-Tailed Muskrat

Round-tailed muskrats were documented on Hungryland during a pilot study conducted in 2008, however robust monitoring efforts have not been undertaken. Muskrats also were documented on nearby Corbett and DuPuis. A wetland-dependent species, round-tailed muskrats prefer wetlands with emergent vegetation and water depths in the 11.5 – 19.5 inch range. The round-tailed muskrat may be a species of greater conservation concern than initially realized and the species has garnered recent attention. Endemic to southern Georgia and Florida, its population status and trend has been largely ignored. However, FWC is undertaking a project to develop a monitoring protocol for this species.

Potential habitat models indicate 4,555 acres of current potential habitat with 5,011 possible after restoration. This species was not listed as a PLCP species; however the Legacy Initiative describes this species as having a low and declining population and it has a high supplemental score. Locally, there is moderate opportunity to impact this species through ongoing natural community management and there is likely sufficient habitat to support a small population on Hungryland.

As a wetland-dependent species, water quality and quantity are essential to maintaining suitable habitat for this species. Therefore, the long-term persistence of this species on Hungryland will be influenced by regional water management decisions. Large wetland complexes, natural hydrological flow, and connections between wetlands should be maintained whenever possible. Prescribed fire in appropriate wetland communities likely benefits this species by encouraging growth of preferred forage plants ([Section 4.3.10](#)). Further management recommendation may be made after a baseline survey is completed ([Section 5.2.3](#)). Coordination recommendations are found in [Section 6.1.1](#). As the distribution and abundance of muskrats on Hungryland is currently unknown, no SMA is recommended for this species.

The area goal is to maintain the round-tailed muskrat as common on Hungryland. The measurable objective is to:

- 1) Complete a baseline relative abundance/distribution survey for round-tailed muskrats by 2012.

It may be possible to establish more specific measurable objectives once the survey protocol is finalized and the baseline survey completed. By maintaining quality wetland habitat suitable for the round-tailed muskrat, the area can fulfill its role in the conservation of the species. However, water management decisions made at the regional level will have significant impact on the ability of Hungryland to meet the goal for this species.

3.2.14: Limited Opportunity Species

Four focal species (gopher tortoise, southeastern American kestrel, Florida black bear, and Sherman's fox squirrel) modeled (through the PLCP process) to have potential habitat on Hungryland lack reasonable opportunity for management on the area.

The gopher tortoise is not known to have naturally occurred on Hungryland nor has it been documented on the area. Prior to FWC receiving management authority, a number of radio-tracked tortoises were released on spoil berms to determine the area's suitability for a long-term relocation site. After the acquisition of Hungryland, a survey was done on the berms and no evidence of tortoise activity was found. The berms have since been removed. A small population is known to occur on nearby Corbett; however it occurs on levees, a human-made habitat, and is believed to have been introduced to Corbett as a result of illegal release of tortoises. Although this species was included in the area's focal species list as habitat models estimated 4,293 acres of potential habitat, when potential habitat models are modified to incorporate local soils data, 0 acres of potential habitat area are actually present on the area. As there is currently little to no suitable habitat and no habitat could be added with restoration efforts, it is unlikely this species will occur on the area and the species should not be a focus of management. Therefore, no management is recommended for this species. Opportunistic monitoring recommendations are found in [Section 5.2.5](#). Should this species be detected on Hungryland, management and monitoring opportunities will be re-evaluated.

Although migratory American kestrels are common on Hungryland in the winter, the southeastern subspecies has not been documented on the area. Species experts confirm that Hungryland is currently beyond the southern extent of the likely dispersal range of southeastern American kestrel populations. Therefore, no management actions are recommended for the species. Ongoing natural community management should create favorable habitat as the area's pines mature. If the presence of kestrels during the breeding season (March – June) is observed, area staff will document and report these sightings ([Section 5.2.5](#)). If breeding kestrels are identified, additional management actions and monitoring may be considered.

Florida black bears have not been documented on Hungryland, and the area falls outside of both the primary and secondary range of the species as identified by the FWC Bear Management Plan (2008). Additionally, Florida natural Area (FNAI) rare species potential habitat maps do not identify any potential black bear habitat in the vicinity of Hungryland. Regionally, the closest population occurs in and near Big Cypress National Preserve, and little to no use is reported on areas closer to Hungryland. Due to Hungryland being outside the current range of this species, no management actions are recommended for the species. However, natural community management and management for other focal species should maintain or possibly enhance foraging habitat for Florida black bear. If bear or bear sign are encountered on the area, this information should be documented ([Section 5.2.5](#)).

Sherman's fox squirrels have not been documented on Hungryland, although robust efforts to document their presence have not been attempted. This species has a relatively large home range when compared to other squirrels. Potential habitat

models indicate 1,867 acres of current potential habitat with 1,523 acres possible after restoration. Given the available habitat and the fact that the species is not known to occur on nearby areas, natural re-colonization of the area after suitable habitat is created is unlikely. Due to the relatively small amount of potential habitat for the species, reintroduction likely would not be efficient or successful. Given the low probability of this species using Hungryland and the great need for statewide research on habitat requirements and dispersal capability, no management actions are recommended for this species. If the Sherman's fox squirrel is encountered on the area, this information should be documented ([Section 5.2.5](#)) and additional management actions and monitoring may be considered.

3.2.15: Other Imperiled Species

Excepting the listed species discussed above, the American alligator (*Alligator mississippiensis*) is the only listed wildlife species documented on Hungryland. Ongoing management to maintain healthy wetland habitats should ensure the continued existence of the alligator on Hungryland.

Occurrence information from nearby WMAs suggests the eastern indigo snake (*Drymarchon corais couperi*) may occur on or near Hungryland. Ongoing natural community management will enhance and/or maintain habitat for indigo snakes and any other listed species that might occur on the area. If eastern indigo snakes or other listed wildlife are detected on Hungryland, this will be documented ([Section 5.2.5](#)). No SMA or measurable objectives are recommended for these species.

Banded wild pine (*Tillandsia flexuosa*) is the only rare plant species documented on Hungryland. Banded wild pine is an air plant that occurs in a variety of wetland and upland habitats. Management actions that promote and protect swamp and upland trees will continue to provide benefits for this species. Appropriate steps will be taken to ensure chemical and mechanical treatments do not negatively impact specific sites known to support this species.

It is possible other imperiled species occur on Hungryland. All imperiled species will continue to benefit from FWC's ongoing management actions that aim to restore natural communities' structure and function. Florida's imperiled species are adapted to these natural communities and have a higher probability of persistence under FWC management actions than in the absence of management.

Section 4: Land Management Actions and Considerations

While 16 focal species were modeled to have potential habitat on the area ([Section 3.1](#)), not all of these species have the same level of management opportunity or need ([Section 3.2](#)). The FWC's natural community-based management will promote the habitat conditions necessary for most of these species, without the need for further strategic management actions.

When actions over and above ongoing natural community management are required, a Strategic Management Area (SMA) may be designated ([Section 4.1](#)). The designation of SMAs allows for identification of an area in which a specific land or species management action(s) can be taken to facilitate conservation of a species or group of species. A SMA is

an area in which specific actions will occur that typically will not occur area-wide and can be used to do the following:

- Identify the area in which to apply specific land or species management that creates the highest probability for persistence/conservation of a species/suite of species. These specific actions may aid in restoring, enhancing or maintaining the habitat or population.
- Identify an area in which to focus specific management actions (land management or species management) for the best chance of success on large areas with more restoration/enhancement than can be accomplished in short order. This might be the first or next step in a sequential series of management actions that will increase the likelihood of occupation and/or persistence of a specific species.
- Identify an area that is so critical to the persistence of a species on the area that it warrants identification to ensure protection against negative alteration.
- Focus efforts on restoration/enhancement of a natural community that will benefit a priority species or a group of focal species. The SMA should identify the area in which these actions have the greatest positive impact for the species of interest.
- Identify areas that are more critical for research or monitoring.
- Recommend specific OBVM DFCs in a specific area to benefit a specific species when we would not want to change the DFCs in the natural community area-wide.

In order to ensure natural community management addresses the needs of these focal species, the OBVM DFC are evaluated ([Section 4.2](#)). As the existing DFCs appear to meet the needs of these species, there is no need to modify them.

Some species have specific protective measures or land management considerations that are necessary to ensure their continued use of the property. These are prescribed in [Section 4.3](#).

4.1: Strategic Management Areas

While the intent on Hungryland is to restore all restorable natural communities to a more natural condition that will better suit these species, SMAs allow focus on areas with the highest possibility of success and/or areas most critical for the conservation of a species on the area. The WCPR process resulted in the identification of 1 species group for which a SMA was established on Hungryland ([Figure 1](#)). For the SMA, a species-specific goal and strategy was developed to guide management. In this document, goals and strategies are defined as follows: Goals are broad statements of a condition or accomplishment to be achieved in the future; goals may be unattainable, but provide direction and inspiration. Strategies are the actions that will be taken to accomplish a goal or objective, and strategies may be measurable.

4.1.1: Wading Birds

The SMA was designated to focus attention on maintaining this area in good condition for wading birds and to ensure timing of management activities will not adversely affect wading bird rookeries, particularly during nesting season. Timing management activities in this unit to avoid impacts to nesting wading birds also will

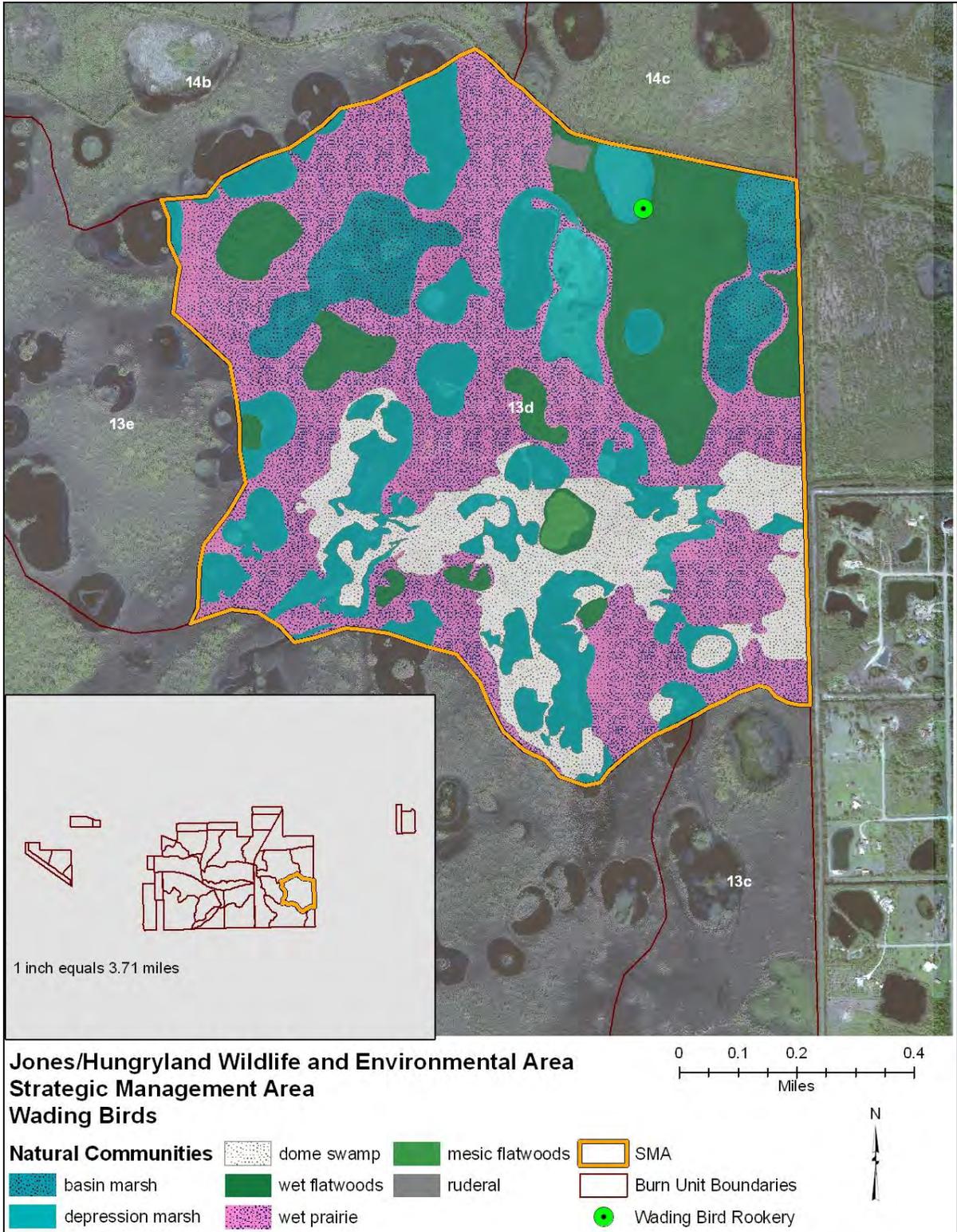


Figure 1: Management units and natural communities in which specific actions are prescribed to benefit wading birds on Jones/Hungryland Wildlife Environmental Area.

benefit limpkins and sandhill cranes, which nest nearby. Other rookeries occur throughout Hungryland; however the rookery in 13D is the largest and most consistently utilized. Maintaining this area in good condition for wading birds will benefit snail kites, limpkin, and sandhill cranes and other species that utilize the area.

The wading bird species utilizing Hungryland rely on a variety of wetland and aquatic natural communities for breeding and foraging. On Hungryland, these habitat types are predominately marshes, swamps, wet prairie, and occasionally wet flatwoods. Habitat loss is a major threat to populations of wading birds as wetlands are destroyed and hydrology is altered. A reduction in suitability and availability of nesting sites and colonies also threatens populations. The 7 species commonly and occasionally present on Hungryland may all nest in colonies, with several nesting in mixed-species colonies.

Four species (great egret, snowy egret, little blue heron, and tri-colored heron) have been documented breeding on Hungryland. Breeding has been documented in the large rookery occurring in MU 13D since 2005. Area managers documented locations of nesting wading birds during an aerial survey in 2007 and plan to continue these surveys. Ongoing natural community management including removal of exotic plant species and application of prescribed fire in wet prairie and marsh systems has enhanced habitat for these species.

The SMA is based on the location of the large mixed-species rookery that has been active in MU 13D. Should additional significant rookeries be identified, including them in the SMA may be appropriate.

SMA Goal: Maintain this important habitat feature in a condition that will allow the area to serve as a nesting site for these species when appropriate water levels are available.

SMA Objective: Visit the rookery area following fledging at least biennially to assess conditions and take any appropriate actions such as exotic control or litter clean-up.

Description of the SMA: The SMA brings attention to a 7.3 acre depression marsh in MU 13D. A large, multi-species wading bird rookery is present in this unit. This rookery occurs in a depression marsh adjacent to the northern boundary of MU 13D and is surrounded by wet flatwoods.

Strategy: Rookeries tend to occur in areas that are not actively managed, with the exception of exotics species control. However, prescribed fire in surrounding natural communities enhances foraging opportunities and decreases the threat of catastrophic fire impacting these rookeries. Management actions that include removal of exotic vegetation, particularly lygodium and melaleuca, and prescribed fire in marshes and wetlands will maintain and enhance wading bird habitat. Exotic plant treatments will be prioritized at rookery sites. However, if the targeted species is woody (i.e. Brazilian pepper), the application of herbicides must be conducted without impact to nesting substrate.

Timing of management activities to avoid negative impacts to nesting wading birds is critical. Management actions and other disturbances will be avoided within 330 ft (or greater) of active breeding sites during the nesting season. Post-nesting, staff will visit the rookery site at least biennially to determine if there is a need for physical cleanup of the rookery site to remove litter and debris or exotic plant control.

A new designated entrance into Hungryland has been proposed on the Jupiter-Indiantown grade that runs within 330 ft of the rookery in MU 13D. The Jupiter-Indiantown grade is open as a recreational trail to hikers, cyclists, and equestrians, although the trail is not heavily used. Currently the only access to the eastern part of the trail is from the designated entrance along Pratt-Whitney road (several miles west of the rookery). The SFWMD and Martin County have proposed creating a designated entry point into Hungryland at the eastern edge of the trail as part of the Northeast Everglades Natural Area (NENA) trail system master plan. Martin County and the SFWMD would like to promote the trail as part of the Ocean to Lake Trail and make the trail more accessible for hikers, equestrians, and cyclists. The proposed entrance, located approximately ¼ mile east of the rookery, would provide increased access to the eastern portion of the trail. This entrance would allow users to travel from the Cypress Creek natural area to Hungryland's western border. This increased accessibility and exposure would likely result in increased utilization of the trail. Potential impacts to the rookery must be considered during review of the rule change associated with the new designated entrance, and coordination with surrounding area managers will be necessary.

The FWC will work closely with Martin County, SFWMD, and FWC's Office of Recreation Services to minimize potential impacts to the wading bird rookery. This may include posting educational materials and signage when the rookery is active, as well as the timing of any construction activities. FWC's SCP section has signage for this purpose, and will be an important contact during this process. Any construction activities near the rookery should be completed outside of the breeding season. Once the trail is active, the rookery will be closely monitored for signs of disturbance.

The rookery will be monitored each year through aerial surveys and data will be shared with the SFWMD ([Section 6.3](#)). It is well documented that aerial surveys do not provide accurate information on the number and even the composition of species in the rookery. However, aerial monitoring will provide the information about the location of, timing of, and rough composition of rookeries. This is the most critical information for management purposes.

Prior to any land management actions on or near the rookery close to breeding season, on-foot searches of the rookery will be conducted to assess the risk of impact and assist in determining appropriate action. Removal of exotic vegetation will be prioritized at rookery sites, and application of herbicide will be carefully monitored to avoid adverse impacts to the rookery.

Acquisition of additional parcels near Hungryland has been considered for mitigation purposes. Breeding season aerial surveys of private parcels to the northwest of Hungryland to identify additional significant rookeries may be appropriate, as this may provide support for prioritizing acquisitions.

4.2: Objective-Based Vegetation Management Considerations

Objective-Based Vegetation Management (OBVM) will be used to monitor progress towards Desired Future Conditions (DFCs) of various natural community attributes. As such, OBVM will be effective in monitoring progress towards land management strategies. The OBVM DFCs were designed to target a range in values for various habitat parameters within actively managed communities.

An evaluation of the preferred habitat parameters for the suite of focal species with potential to occur on Hungryland indicates that if the identified OBVM DFC (Table 2) can be achieved, these natural communities will be in a condition suitable for these focal species; therefore there is no recommended modifications to the DFCs.

Table 2. Desired Future Conditions for specific vegetative parameters in actively managed natural communities at Jones/Hungryland WEA as identified via the OBVM workshop process.

Mesic Flatwoods	Wet Prairie
Basal Area (overstory): <60 sq. ft./acre	Pine Stems/acre: <5 stems/acre
Canopy Age: >20% older mature +	Dwarf Shrub Cover: >25%
Shrub Height (midstory): <5'	Total Shrub Cover excluding dwarf cover: <10%
Shrub Cover: <50%	Herbaceous Cover: >85%
Palmetto Cover: <35%	Wiry Graminoid Cover: >50%
Herbaceous Cover (understory): >45%	Exotics Cover: 0
Exotics Cover: 0	
Wet Flatwoods	
Basal Area (overstory): <40 sq. ft./acre	
Canopy Age: >20% older mature +	
Shrub Height (midstory): <5'	
Total Shrub Cover excluding dwarf cover: <50%	
Palmetto Cover: <15%	
Herbaceous Cover (understory): >75%	
Exotics Cover: 0	

4.3: Further Land Management Considerations

It is commonly believed that most species will benefit from management that restores the natural structure and function of natural communities they use. However, for some species, specific management recommendations and precautions are necessary to ensure the continued suitability of the area for the species. The following recommendations will help ensure Hungryland continues to fulfill its role in the conservation of these species.

4.3.1: American Swallow-Tailed Kite

Because swallow-tailed kites exhibit high nest site fidelity, any known nest sites should be protected from disturbance and alteration, and all of the tallest pines in the area of nest sites should be retained. If documented on the area, kite nesting areas should be allowed to have a higher shrub height and density than surrounding areas when feasible. If kite activity is observed during nesting season, particularly if kites are observed carrying nesting material, mobbing, or in groups of 3 or more, this information will be documented and an effort to locate the nest should be made. For information on how to locate nests, see:

Meyer, K. D., and M. W. Collopy. 1995. Status, distribution, and habitat requirements of the American swallow-tailed kite (*Elanoides forficatus*) in Florida. Project Report, Florida Game and Fresh Water Fish Commission, Tallahassee.
http://research.myfwc.com/engine/download_redirection_process.asp?file=95meyer%5F0231%2Epdf&objid=47206&dctype=publication

4.3.2: Bachman's Sparrow

Prescribed fire improves the quality of habitat for this species, and is the primary land management tool recommended to promote habitat for Bachman's sparrow on Hungryland. Suitable habitat can be created/maintained through frequent (≤ 3 year rotation) use of prescribed fire. The occurrence of fire is critical to sustaining this species as use of an area by Bachman's sparrows declines rapidly around 18 months post-fire, and Bachman's sparrows may abandon habitat if fire is excluded for more than 3 years. When mechanical treatments are used to reduce understory, an effort should be made to retain some small patches of shrubs, and the mechanical treatment should be followed with a prescribed burn. This type of land management also will benefit northern bobwhite and red-cockaded woodpeckers, and a number of other species.

4.3.3: Crested Caracara

Crested caracaras have high fidelity to their home ranges and nest sites. Efforts will be made to protect nesting sites and maintain home ranges in suitable condition if individuals are known to occupy a particular management unit. Management actions like mowing, shredding, and prescribed burning will improve habitat conditions by creating areas with low ground and shrub cover. Care should be taken to limit management actions during the breeding season if a nest is located. Crested caracaras are most likely to flush from the nest, which can be detrimental to eggs or young, if disturbance occurs within 1,000 feet of the nest during the first 2-3 weeks of nesting. Maintain this distance (1,000 feet) as a buffer around known nests. Morrison (2001) suggests historic management can continue (if the birds are used to it) during nesting season, as long as the first 2-3 weeks of nesting are avoided. A significant increase in human activity within the home range or territory can cause

caracaras to abandon the area, even outside of the nesting season. Complete management guidelines are available in:

Morrison, J.L. 2001. Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Caracara cheriway audubonii*) in Florida. Florida Fish and Wildlife Conservation Commission, Technical Report No. 18. Tallahassee, Fl. 19 pp.
http://research.myfwc.com/publications/publication_info.asp?id=49246

4.3.4: Florida Sandhill Crane

Prescribed fire improves the quality of upland habitat for this species and maintains wetlands in suitable condition by reducing invasion by shrubby and woody species. Mechanical treatments can be useful in reducing growth of brush on wetland edges when the shrubs cannot be reduced by fire. Increased shrub cover around wetlands impede crane movement while increasing the potential of predation by bobcats (*Lynx rufus*). The marsh/upland ecotone is important foraging habitat for sandhill cranes and is used in a greater proportion when not overgrown by brush. In known nesting areas, management actions should occur outside of the nesting season (December - June) and after the young are able to fly. Nests should be protected by a 400 ft buffer to minimize likelihood of disturbance from management actions. The seasonality of wetland management activities should be considered to avoid flooding of nests or reducing foraging habitat. For management recommendations see:

Stys, B. 1997. Ecology of the Florida sandhill crane. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 15. Tallahassee, Fl. 20 pp.
http://research.myfwc.com/publications/publication_info.asp?id=49382

4.3.5: Limpkin

Ongoing actions (e.g., prescribed fire, mechanical treatment, herbicide) could have negative impacts on limpkins if the needs of the species are not considered when planning these activities. The potential to have negative impacts on this species can be reduced by taking actions to avoid disturbing nests, particularly identifying and protecting or avoiding these areas when conducting management activities in wetlands during nesting season. In addition, considerations for limpkin and apple snail populations should be taken into account during hydrologic assessment and evaluations.

4.3.6: Red-Cockaded Woodpecker

The long term potential for developing suitable habitat for the red-cockaded woodpecker on Hungryland is great. To meet this potential, an effort must be made to transition all mesic and wet flatwoods to an open canopy forest of mature pines with little midstory and reduced understory; a condition more suitable to this species.

Current management activities including mechanical and prescribed fire treatments should continue to promote development of suitable habitat for this species. In particular, Hungryland lacks many old trees required for red-cockaded woodpecker cavities. Therefore, special care should be taken to protect the few existing large trees during prescribed fire and timber thinning. Land management for red-cockaded woodpeckers will benefit Bachman's sparrows and a number of other species dependent on healthy, mature, fire maintained flatwoods.

4.3.7: Short-Tailed Hawk

Nests of this species often are difficult to locate and monitor; however, protective action will be taken if/when nests are known to be active. Known nesting sites should be protected from human disturbance (e.g., prescribed fire, timber thinning, mechanical treatments) by maintaining a 330 ft buffer around the nest during the nesting season, and avoiding heavy alteration of the nesting location both during and outside of the nesting season. Large, mature trees should be protected during management activities to retain future nesting sites.

4.3.8: Snail Kite

Prescribed fire to burn into marsh and wet prairie habitats can help maintain these communities in an open condition beneficial to snail kites. If an active nest is identified, managers will follow the management guidelines found at: <http://www.fws.gov/verobeach/images/pdflibrary/20060221%20Snail%20Kite%20Management%20Guidelines2.pdf> (or any subsequent version). In particular, increased activity will be prohibited within a 900 ft limited activity buffer zone of the active nest.

4.3.9: Southern Bald Eagle

State and federal law requires protection of bald eagles, including avoiding disturbance of nesting eagles. Managers will consider the management guidelines available at: http://myfwc.com/imperiledspecies/plans/Eagle_Plan_April_2008.pdf (or any subsequent version) when planning activities within 660 ft of known eagle nests. Any new nests that are located will be documented. As this species is surveyed annually on a statewide basis, the bald eagle database coordinator will be contacted annually to request status of current nests and if any new nests are detected via the survey. As it is undesirable to have unnaturally dense stands around eagle nests, when eagle nests occur in actively managed stands the nest buffer area should continue to be managed but with proper planning to avoid negative impacts to the eagles, per the guidance of the management plan. Large, mature pines should be preserved as potential future nesting sites during management activities.

4.3.10: Round-Tailed Muskrat

Because the round-tailed muskrat is wetland-dependent, water quality and quantity are essential to maintaining suitable habitat for this species. Large wetland complexes, natural hydrological flow, and connections between wetlands should be maintained whenever possible. Holding water at artificially high levels will decrease habitat suitability for round-tailed muskrats. Managers should frequently burn wetlands dominated by emergent vegetation (particularly those dominated by maidencane). Re-growth of emergent vegetation after prescribed fires likely improves the quality of habitat for this species. As some habitat management information is not yet available (e.g. recommended seasonality of burns) conservation and management may be adjusted as more information becomes available.

Section 5: Species Management Opportunities

The focal species approach taken here represents a science-based approach to ecosystem management. Though this method relies on a suite of individual species, land management actions focused on these species directly benefit associated species. However, for some species land management actions alone are insufficient in aiding recovery. Species that are not present on a site and have limited dispersal capabilities are unlikely to occupy a site without re-introduction once habitat restoration is complete. Additionally, species that are currently present but occur at low densities, have low reproduction potential, or have other limitations that inhibit recovery, may require species-specific management. This section provides species management recommendations ([Section 5.1](#)) as well as monitoring recommendations ([Section 5.2](#)) to assess species response to land management and to determine the need for additional species management. Any research necessary to guide future management is suggested in [Section 5.3](#).

5.1: Species Management

Species management as used here refers to non-monitoring actions taken for a specific species. It can include actions such as translocation, restocking, installing artificial cavities, etc. Monitoring related actions, including banding or tagging, will be covered in [Section 5.2](#). Most land management actions, such as prescribed fire or mechanical treatments, are covered in [Section 2](#) and [Section 4](#).

No species management is currently recommended on Hungryland.

5.2: Species Monitoring

Monitoring is critical to evaluating the impact of the management actions described in this Strategy. While we are unable to monitor all of the focal species on Hungryland, the recommended monitoring will assess species in all actively managed communities, select wetland dependant species, and includes opportunistic monitoring for uncommon or hard to monitor species. The Terrestrial Habitat Conservation and Restoration Section is currently developing a monitoring database. When this is in place, all WMA species monitoring data will be loaded into the database. Until the monitoring database is functional, data collected

will be reported to the regional conservation biologist for inclusion in the appropriate database. Monitoring data will be made available to cooperating agencies and organizations such as FNAI ([Sections 6.1.1](#), [6.1.3](#), [6.1.6](#), [6.2](#), [6.3](#), [6.6](#), [6.7](#), and [6.8](#)).

This section provides the list of monitoring actions recommended for the area, and provides the purpose for the monitoring. The FWC is in the process of standardizing monitoring protocols for a number of these species. When protocols are finalized, they will be implemented in accordance with the timeframe described in this Strategy.

5.2.1: Avian Spring Call Count Survey

The purpose of monitoring northern bobwhite, Bachman's sparrow, and other grassland birds is to establish a baseline and track relative abundance over time. Surveys will be point counts likely using a distance sampling methodology that is currently being developed and based on protocol developed for the Upland Ecosystem Restoration Program (UERP). If necessary, the use of callback tapes may be incorporated into the call station protocol. On Hungryland, these avian surveys will occur on a biennial basis.

5.2.2: Aerial Nest Surveys

The purpose of monitoring wading birds is to identify trends in nesting or habitat use and to document rookery locations. Transects over Hungryland will be flown a minimum of once annually during the peak breeding season, which may vary depending on environmental conditions. Additional flyovers will be conducted if time and resources are available. When sandhill crane nests are identified during these surveys, they also will be documented. This information will be used to influence timing of management activities. Once several years of nesting data are available, it may be possible to develop measurable objectives for these species in future Strategies. As the SFWMD is collecting regional information on wading bird trends, this data will be shared with the SFWMD to aid in this project.

5.2.3: Round-Tailed Muskrat Monitoring

The purpose of monitoring round-tailed muskrats is to document the distribution of the species on the area, and determine if population information or trend information can be obtained. Monitoring protocol is currently under development. The initial assessment will be conducted by 2015. The need for future monitoring will be determined after the initial assessment, and repeat assessments will be conducted on a 3-5 year rotation if necessary and if resources are available.

5.2.4: Marsh Bird Monitoring

The purpose of monitoring limpkins is to establish a baseline and track relative abundance over time. Monitoring protocol is based on protocol developed by the National Marsh Bird Monitoring Program and allows for the gathering of information on a number of marsh birds including the limpkin. Detailed protocol and

program information can be found at: <http://www.cals.arizona.edu/research/azfwru/NationalMarshBird/>. Surveys begin in April or May, depending on environmental conditions, and are conducted once each month for a minimum of 3 months. These surveys will be continued on at least a biennial basis if resources are available.

5.2.5: Opportunistic Monitoring

The purpose of opportunistic monitoring is to document the presence of specific species. Opportunistic monitoring is the process of recording important information as it is encountered. Documentation of opportunistic sightings including approximate lat/long or appropriate management unit, number of individuals, behavior, and habitat type should be recorded. Encounters with or sign of the following focal species should be recorded:

- Gopher tortoise
- Swallow-tailed kite (aggregations of 3 or more birds on a regular basis in one area during spring and any nesting activity)
- Cooper's hawk (nesting activity)
- Florida black bear
- Limpkin (nesting or occurrence of dependant young)
- Mottled duck (nesting or occurrence of dependant young)
- Red-cockaded woodpecker
- Snail kite (nesting activity)
- Sherman's fox squirrel
- Short-tailed hawk (also record color phase)
- Southeastern American kestrel (presence during nesting season)
- Southern bald eagle (nesting activity)
- Crested caracara (nesting activity or occurrence of dependant young)
- Any listed species that does not have a monitoring protocol in this section

5.3: Species Research Needs

Species management recommendations in other sections of this document are based on the most current information regarding management strategies for a given species. However, cases arise when little or no information is available to guide management. This section outlines research needs identified through the WCPR process.

5.3.1: Development of Desired Future Conditions for Short-Tailed Hawk

The population status, trends, and habitat associations of the short-tailed hawk are poorly known. Currently, there is little information on optimal habitat conditions for the short-tailed hawk. The hawk utilizes a number of habitats for breeding and foraging occurs over adjacent prairies and open areas. Generally, this species requires large, old trees in mature forested stands as nest trees with ecotones appearing to be important components of foraging habitat.

There is a need for identifying and defining preferred vegetative parameters (e.g. overstory characteristics of nest sites, composition of ground cover species, etc.), as well as determining accurate information regarding population trends and management considerations/needs (e.g. is there a need for a nest protection buffer and if so, how large). Research regarding these habitat preferences will provide information to be used in managing habitat occupied by short-tailed hawks.

Section 6: Intra/Inter Agency Coordination

Throughout the WCPR process many recommendations were made regarding possible management strategies for focal species. Most proposed management actions can be handled by THCR staff; however, cases may arise when coordination with other sections in FWC or other agencies is necessary or increases efficiency. This section identifies cases in which coordination is necessary outside of THCR, identifies the entity to coordinate with, and provides position contacts for these entities.

An attempt is made to provide the name, position and contact information for the people holding the position when this Strategy is drafted. As positions experience turnover, when in doubt, contact the current Section Leader /supervisor to determine the appropriate individual.

6.1: Florida Fish & Wildlife Conservation Commission

6.1.1: Species Conservation Planning Section

Monitoring animal populations on a WMA/WEA gives managers a way to gauge animal response to management. If this information is not shared with others, valuable data that can be used to assess state-wide conservation efforts often is lost. Therefore, monitoring data should be shared with the appropriate taxa coordinator and program coordinator for species in which conservation initiatives or other management programs have been developed. The regional SCP biologist is a good source of information on the regional status of non-game species. Additionally, FWC staff is authorized to handle federally listed species if it is done consistent with the requirements of the agency's Endangered Species Act Section 6 Cooperative Agreement. To meet these requirements, reporting as outlined in the Agreement will be provided to the agency's Endangered Species Coordinator. Please note some contacts will also be covered under [Section 6.1.3](#); FWRI, and [Section 6.1.6](#); Florida's Wildlife Legacy Initiative.

Contacts:

Elsa Haubold, Species Conservation Planning Section Leader: (850) 488-3831

Robin Boughton, Avian Taxa Coordinator: (352) 732-1225

Melissa Tucker, Mammalian Taxa Coordinator: (386) 758-0525 ext 114

Bill Turner, Herp Taxa Coordinator, (850) 410-0656 ext 17331

Ricardo Zambrano, Regional Biologist: (561) 625-5122

Brad Gruver, Endangered Species Coordinator: (850) 488-3831

6.1.2: Hunting & Game Management

As the FWC has a statewide quail strategy, information collected on northern bobwhite should be shared with the small game coordinator.

Contacts:

Paul Schulz, Section Leader: (850) 488-3831

Chuck McKelvy, FWC Small Game Program Coordinator: (850) 342-0256

6.1.3: Fish and Wildlife Research Institute (FWRI)

Area staff will regularly communicate with FWRI's mottled duck team to obtain the most recent survey results for Hungryland, Corbett, DuPuis, and Allapattah. Additionally, short-tailed hawk, southern bald eagle, snail kite, and southeastern American kestrel sightings will be shared with FWRI.

Contacts:

Tim O'Meara, Section Leader: (850) 488-3831

Ron Bielefeld, FWRI Wildlife Biologist (Florida mottled duck): (772) 228-9125

Janell Brush, FWRI Wildlife Biologist (bald eagle, snail kite): (352) 955-2081

Karl Miller, FWRI Wildlife Biologist (kestrel): (352) 955-2081

Jim Rodgers, FWRI Wildlife Biologist (wading birds): (352) 955-2081

Jeff Gore, FWRI Wildlife Biologist (round-tailed muskrat): (850) 265-3677

Marty Folk, FWRI Wildlife Biologist (sandhill crane): (407) 348-3009

6.1.4: Office of Recreation Services

Adding a designated entrance for a recreational trail has been proposed on Hungryland. If not done properly, this project has the potential to impact breeding wading birds. Coordination and communication with the Office of Recreation Services (ORS) will be critical to ensure proper educational materials and signs are posted, as well as coordination of any construction events. Additionally, any access restrictions must be coordinated with ORS.

Contacts:

Jerrie Lindsey, Director: (850) 410-4951

Hugh MacArthur, Planning and Design: (850) 921-9931

6.1.5: Habitat Conservation Scientific Services (HCSS)

Since much of the crested caracara's foraging habitat is on private lands, developing working relationships with surrounding landowners will be critical to the conservation of the species. HCSS works with many private landowners and may be able to assist in making contacts or providing incentives for management activities on neighboring private lands. Maintaining communication regarding current and future projects will be critical.

Contacts:

Scott Sanders, HCSS Section Leader: (850) 488-3831

Laura Knipp, HCSS South Region: (561) 625-5122

6.1.6: Florida's Wildlife Legacy Initiative (FLWI)

Monitoring animal populations on a WMA/WEA gives managers a way to gauge animal response to management. If this information is not shared with others, valuable data that can be used to assess state-wide conservation efforts often is lost. FLWI can be helpful in identifying and assisting with partnering efforts, and might be a source of funding via the State Wildlife Grants program. Therefore, regular communication with this section will be a priority.

Contacts:

Katherine Haley, Florida's Wildlife Legacy Initiative: (850) 410-0656 x17297

Mary Truglio, South Region Legacy Biologist: (561) 625-5122

6.1.7: Invasive Plant Management Section

The Invasive Plant Management Section provides technical and financial assistance to assist in the control of upland and aquatic invasive exotic plants. As exotic invasive aquatic plants can have a negative impact on apple snails, any occurrence of these species on the area should be documented and reported to the Invasive Plant Management Section. The Invasive Plant Management Section may serve as a critical resource in determining appropriate solutions to and identifying funding for solutions for exotic plant issues.

Contact:

Jeff Schardt, Aquatics sub-section administrator: (850) 245-2815

Greg Jubinsky, Uplands sub-section administrator: (850) 245-2821

Jackie Smith, Invasive Plant Management-Savannas State Park: (772) 871-5407

6.2: University of Florida

The University of Florida conducts surveys each year to document snail kite nesting and success. Hungryland is included in the annual surveys and UF staff has been a valuable resource offering insight on habitat conditions and regional trends. Yearly data on nesting locations and success should be obtained from UF, and any additional locations identified by FWC should be shared with UF.

Contacts:

Wiley Kitchens, UF Fish and Wildlife Cooperative Research Unit: (352) 846-0536;
wiley01@ufl.edu

6.3: South Florida Water Management District

The SFWMD currently owns and cooperatively manages a few parcels that occur as disjunct portions of Hungryland (9 Gems, MU 16, MU 17, and MU 18). The SFWMD (in cooperation with Martin County) also recently acquired a tract of land along the eastern border of Hungryland's main parcel. Opportunities to coordinate management actions or initiate monitoring/research efforts for focal species, particularly wading birds, should be shared with SFWMD staff when necessary. Mark Cook, in the Everglades Division, maintains a regional database for wading bird monitoring. Wading bird data from Hungryland should be shared with the SFWMD.

Contacts:

Bill Helfferich, Sr. Environmental Analyst; Land Stewardship: (561) 682-6637

David Foote, Environmental Analyst; Land Stewardship Division: (561) 682-2686

Mark Cook, Sr. Environmental Scientist, Everglades Division: (561) 681-2500
x4539

6.4: Palm Beach County, Environmental Resources Management (ERM)

Palm Beach County ERM currently owns and manages several conservation areas to the south of Hungryland with similar land cover. It is likely that wetland dependent species occupying Hungryland, particularly snail kites and wading birds, regularly utilize these areas. Actions to coordinate prescribed burning, exotic removal, and other management should be initiated with land managers responsible for managing these public lands.

Contacts:

Kraig Krum, Environmental Analyst: (561) 310-9958

6.5: Martin County

Martin County owns and manages several conservation areas with similar land cover near and adjacent to Hungryland. It is likely that wetland dependent species occupying Hungryland, especially snail kites and wading birds, regularly utilize these areas. Actions to coordinate prescribed burning, exotic removal, and other management should be initiated with land managers responsible for managing these public lands.

Contacts:

Chuck Barrowclough, Environmental Lands Administrator: (772) 288-5476

6.6: Avian Research and Conservation Institute

The Avian Research and Conservation Institute (ARCI) has been studying the Florida population of short-tailed hawks since 1998, and is conducting research on nesting and wintering ecology using radio-telemetry. The study seeks to identify critical nesting sites and concentrations of hawks to determine distribution and habitat needs. Other goals include identifying threats, causes of mortality and demographic features that most influence

population trends. The intent is to develop a monitoring plan and recommend management and conservation actions. Short-tailed hawk sightings or nesting information should be shared with the ARCI. Additionally, this research station surveys and keeps information on American swallow-tailed kite populations. Location information on the swallow-tailed kite, particularly nests or nesting behavior, should be shared with ARCI.

Contacts:

Dr. Ken Meyer, avian researcher: (352) 335-415: meyer@arcinst.org

6.7: United States Fish and Wildlife Service

The USFWS maintains records on the federally endangered snail kite. Nest locations should be shared with USFWS. Additionally, USFWS may serve as a source of information on and possible assistance with federally listed species. Therefore, communication with USFWS regarding listed species should occur whenever appropriate.

Contacts:

Heather Tipton, Fish and Wildlife Biologist: (772) 562-3909, ext. 296

6.8: Florida Natural Areas Inventory

The FNAI collects, interprets, and disseminates ecological information critical to the conservation of Florida's biological diversity. The FNAI's database and expertise facilitate environmentally sound planning and natural resource management to protect the plants, animals, and communities that represent Florida's natural heritage. The FNAI maintains a database of rare and listed species that are often used for planning purposes. Nesting locations of Florida sandhill crane, limpkin, and crested caracara should be shared with FNAI. Species locations will be reported online at www.fnai.org

Contacts:

Dan Hipes, Chief Scientist: (850) 224-8207

6.9: Florida Division of Forestry

The DOF can assist with timber management on state lands. They also issue authorizations for prescribed burning and will assist on escaped fires. Staff should continue to coordinate with DOF on these issues.

Contacts:

Edward Ward, Forest Area Supervisor: (772) 221-4045

Section 7: Beyond the Boundaries Considerations

There is enough potential habitat (with restoration) to support many of Hungryland's focal species, and Hungryland is part of a network of conservation lands that will help ensure the continued existence of many of the wide ranging focal species. However, the optimal

management boundary identified for the area does not currently include all important habitat for focal species, such as the lands identified as Strategic Habitat Conservation Areas (SHCAs) for the snail kite. The FWC originally identified SHCA in the Commission report Closing the Gaps in Florida's Wildlife Habitat Conservation System (Cox et al. 1994). The goal of SHCAs is to identify the minimum amount of land needed in Florida to ensure long-term survival of key components to Florida's biological diversity. The SHCAs identify important remaining habitat conservation needs on private lands. New SHCAs have been identified in recent FWC efforts to update the Closing the Gaps, and information on SHCA is available through the PLCP. Although it is unlikely all property identified in the snail kite SHCA will be acquired, property acquisition and limiting development near Hungryland should be a priority.

While Hungryland and the current condition and management of neighboring lands provide an opportunity to further the conservation of many focal and imperiled species, significant changes in management or land use beyond the boundaries may have significant impact on some species. Many of the area's species are wetland dependent. In addition to regional fluctuations in rainfall, regional water management has the potential to influence the hydrology in ways that could significantly impact these species. While FWC will make every attempt to communicate with the SFWMD and Pal-Mar, management decisions of these agencies are ultimately outside the control of the area manager. Species that require large home ranges or are dependent on dispersal for maintaining a population are particularly affected by adjacent land management or development. Many of Hungryland's species are dependent on the availability of suitable habitat on adjacent private lands. As such, the actions of adjacent landowners will determine if some of these focal species will persist on Hungryland. Area staff should make every effort to cooperate on the conservation of focal species with adjacent private landowners. Staff should coordinate with HCSS to ensure receptive private landowners get the proper technical assistance and are informed of incentive programs to encourage conservation based management. Fostering a positive relationship with neighboring landowners may increase the willingness of the landowner to become a partner in conservation based land management. Such partnerships are critical to the long-term persistence of species, such as the snail kite and crested caracara on Hungryland.

7.1: Snail Kite

Snail kites are highly mobile and the individuals using Hungryland function as a part of a larger regional population. The amount of habitat on Hungryland is not sufficient to support a self-sustaining population. Therefore the snail kite population depends on regional habitat fragments to support a population. The PLCP tool modeled 31,210 additional acres of potential habitat in a SHCA occurring within 3 miles of Hungryland. Given snail kites' highly mobile nature and their dependence on high-quality wetlands, acquisition of as much surrounding land as possible should be considered to provide maximum habitat acreage for this species and to preserve wetlands which support a number of other focal and imperiled species. When acquisition is not an option, private landowners should be encouraged to manage their land in a manner that is compatible with the existence of these species. Much of the SHCA occurs outside the current optimal boundary, and managers should consider this additional acreage when revising optimal boundary lines.

7.2: Crested Caracara

A large percentage of potential caracara habitat in Florida is located on private lands that are not protected from current or future detrimental land use practices. Caracaras are often seen foraging on private ranchland to the north and northwest of Hungryland. While Hungryland may provide nesting habitat, there is limited foraging habitat. The total potential habitat on Hungryland is less than the home range for one pair. Therefore, any caracaras observed on Hungryland are likely utilizing nearby private land. The private parcels to the north and northwest of Hungryland are currently outside of the area's optimal boundary. Adding these parcels to the optimal boundary and prioritizing these parcels for acquisition or private lands management incentives should be considered to maximize available protected habitat for the crested caracara. As it is unlikely that all potential habitat near Hungryland will be acquired, special emphasis will be placed on communication and coordination with surrounding landowners. As caracaras can thrive on properly managed private ranchland, maintaining good relationships with owners of nearby private ranchland will contribute to the conservation of the crested caracara in the region.

13.10 FWC Apiary Policy

Apiary Policy

Division of Habitat and Species Conservation

Issued by:
Terrestrial Habitat Conservation and Restoration Section
9/1/2010

Enclosed is the HSC/THCR Apiary Policy for all Florida Fish and Wildlife Conservation Commission's Wildlife Management Areas and Wildlife and Environmental Areas.

DIVISION OF HABITAT AND SPECIES CONSERVATION POLICY
Issued September 2010

**SUBJECT: APIARY SITES ON FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
 WILDLIFE MANAGEMENT AREAS AND WILDLIFE AND ENVIRONMENTAL AREAS**

STATEMENT OF PURPOSE: It is the intent of this policy to determine which Florida Fish and Wildlife Conservation Commission (FWC) Wildlife Management Areas or Wildlife and Environmental Areas (WMA/WEA) may have apiary sites, and provides direction on site location, management and administration of said apiaries.

Definitions

Apiary – A place where bees and beehives are kept, especially a place where bees are raised for their honey.

Apiary Site – An area set aside on a WMA/WEA for the purpose of allowing a beekeeper to locate beehives in exchange for a fee as established by contract between the beekeeper and FWC.

Apiary Wait List – An apiary wait list will be maintained by the Terrestrial Habitat Conservation and Restoration (THCR) Section Leader’s Office based on applications received from interested beekeepers. Only qualified apiarists will be added to the list. To become qualified the new apiarist must submit an application form and meet the criteria below under the section titled “Apiary Wait List and Apiary Application.”

Beekeeper/Apiarist – A person who keeps honey bees for the purposes of securing commodities such as honey, beeswax, pollen; pollinating fruits and vegetables; raising queens and bees for sale to other farmers and/or for purposes satisfying natural scientific curiosity.

Best Management Practices – The Florida Department of Agriculture & Consumer Services (FDACS; Division of Plant Industry (DPI), Apiary Inspection Section, P.O. Box 147100, Gainesville, FL 332614-1416) provides Best Management Practices (BMP) for maintaining European Honey Bee colonies and FWC expects apiarists to follow the BMP.

Hive/Colony – Means any Langstroth-type structure with movable frames intended for the housing of a bee colony. A hive typically consists of a high body hive box with cover, honey frames, brood chambers and a bottom board and may have smaller super hive boxes stacked on top for the excess honey storage. A hive/colony includes one queen, bees, combs, honey, pollen and brood and may have additional supers stacked on top of a high body hive box.

Establishment of Apiary Sites on WMA/WEA

During the development of an individual WMA/WEA Management Plan, apiaries will be considered under the multiple-use concept as a possible use to be allowed on the area. “Approved” uses are deemed to be in concert with the purposes for state acquisition, with the Conceptual State Lands Management Plan, and with the FWC agency mission, goals, and objectives as expressed in the agency strategic plan and priorities documents. Items to consider when making this determination can also include:

- Were apiaries present on the area prior to acquisition?
- Are there suitable available sites on the WMA/WEA?
- Will the apiary assist in pollination of an onsite FWC or offsite (adjacent landowner) citrus grove or other agricultural operation?

For those WMA/WEAs that have not considered apiaries in their Management Plan, upon approval of this policy Regional Staff will work with the Conservation Acquisition and Planning (CAP) staff and THCR Section leadership to determine if apiaries are an approved use on the area. If apiaries are considered an approved use then a request will be made to the Division of State Lands to allow this use as part of an amended Management Plan. This request will be made through the THCR’s Section Leader’s office and coordinated by the CAP.

Determination of apiary site locations on WMA/WEAs should be done using the following guidelines:

- Apiary sites should be situated so as to be at least one-half mile from WMA/WEA property boundary lines, and at least one mile from any other known apiary site. Exceptions to this requirement must be reviewed by the Area Biologist and presented to the THCR Section Leader for approval.
- Site should be relatively level, fairly dry, and not be prone to flooding when bees would normally be present.
- Site should be accessible by roads which allow reasonable transfer of hives to the site by vehicle.
- If a site is to be located near human activity, such as, an agricultural field, food plot, wildlife opening, campsites, etc., or if the site may be manipulated by machinery at a time when bees would be present, then the apiary site should be located at a minimum of 150 to 200 yards from the edge of that activity. This will ensure minimal disturbance to the bees and minimize incidents with anyone working in the area.

- It is preferable to have apiary sites located adjacent to or off roads whenever possible. If traditional apiary sites were located on roads and the Area Biologist determines that the site will not impact use of the road by visitors then it will be allowed.
- FWC Area Biologist shall select apiary site(s) and the site(s) selected should not require excessive vegetation clearing (numerous large trees, dense shrubs) or ground disturbance (including fill).

WMA/WEA Staff Responsibilities

Area Biologist on WMAs/WEAs with approved apiary sites will forward a GIS shapefile depicting all the apiary site polygon(s), including a name or number with coordinates for each apiary site, to the THCR Contract Manager.

Area Biologist will monitor each apiary site no less than once a year to determine if the beekeeper is abiding by the contract requirements. If violations are noted, staff should bring them to the attention of the beekeeper for correction. If violations continue staff should notify the THCR Contract Manager who will determine if or what additional action is warranted.

Area Biologist will establish and maintain firelines around the apiary site to ensure the apiary site is ready when a planned burn is scheduled.

Area Biologist will advise the beekeeper of burn plans, road work, gate closures, or other site conditions and management activities that may affect the beekeeper's ability to manage or access the apiary site.

Area Biologist is not responsible to ensure access roads are in condition suitable for beekeepers to access their hives with anything other than a four wheeled drive vehicle. (The site of the apiary may be high and dry, but the roads accessing them may be difficult to impossible to get a two wheeled drive vehicle into during extreme weather, e.g., heavy rainfall events.)

Apiary Wait List and Apiary Application

An electronic waiting list for apiary sites will be maintained by the THCR's Contract Manager for each WMA/WEA. To be placed on the waiting list an interested beekeeper must submit an apiary application form to the contract manager (See Enclosed Application Form). Each applicant will be considered based on the following criteria:

- Proof of a valid registration with the FDACS/DPI.
- Proof of payment of outstanding special inspection fees for existing sites.
- A validated history of being an apiary manager.
- Three references that can attest to the applicant's beekeeping experience.

If an apiary site becomes available on a WMA/WEA and there are beekeepers on the waiting list interested in that particular area, those individuals meeting the criteria above will be given preference. If there is more than one beekeeper meeting the criteria with their name on the list then a random drawing will be held by the THCR Contract Manager to determine who will receive the site. Beekeepers on the waiting list will be notified in writing of the random drawing's date/location and will be invited to attend. The individual's name selected during this drawing will be awarded the contract.

Apiary agreements are non-transferable. Each agreement serves as a contract between a specific individual or company and FWC, and the rights and responsibilities covered by an individual agreement cannot be transferred.

Contracts

Apiary contracts are for five (5) years and renewals are contingent upon a satisfactory performance evaluation by Area Biologist and concurrence of the THCR Section Leader. Approval is based on apiarist performance, adherence to rules and regulations and general cooperation. If an Area Biologist decides an apiarist whose contract is expiring is unacceptable he may recommend not approving the new contract. If this transpires then the wait list process using random selection will be used. If there is no apiarist on a current wait list then the apiarists who are in good standing with existing contracts will be notified to see if any want to be put on the wait list for the drawing. If none are interested then the site will be put on hold pending a valid request.

Pricing of Apiary Site(s)

Cost of each apiary site will be \$40 annually which will include up to 50 beehives. Additional beehives will be charged at the rate of \$40 per 50 beehives.

Pricing examples:

- A beekeeper is leasing 2 apiary sites with up to 100 beehives - the fee per year is \$80.
- A beekeeper is leasing 3 apiary sites with up to 200 beehives - the fee per year is \$160.

Note: The maximum number of hives/colonies allowed on an apiary site will be at the discretion of the apiarist. However, the apiarist is strongly recommended to follow the BMP as recommended by the FDACS/DPI. In addition to providing the BMP, FDACS/DPI's management has recommended 50 hives per site in pineland communities and no more than 100 hives per site in areas with bountiful resources. However, FWC will not dictate the number of hives on a site unless they create land management issues.

Bear Depredation Control at Apiary Site(s)

Beekeepers are required to consult with the WMA/WEA Area Biologist to see if electric fencing is required for their apiary sites. If the Area Biologist requires electric fencing then the

Beekeeper shall construct and maintain electric fences for each apiary site. Numerous electric fence designs have been used to varying success and FWC as a courtesy provides an electric fence technical information bulletin with each Agreement. This bulletin is attached in order to assist the Beekeeper and/or provide a design that has been proven to be reasonable effective.

SUBJECT MATTER REFERENCES

Apiary Inspection Law - Chapter 586, Florida Statutes (see <http://www.leg.state.fl.us/Statutes/>), Rule Chapter 5B-54, Florida Administrative Code (see www.flrules.org).

The Board of Trustees of the Internal Improvement Trust Fund – Recommended Apiary Agreement Guidelines For Apiaries & Revisions to an Agreement for Apiary Activities on State Lands on September 23, 1986

S:\HSC\THCR\APIARY.BACKUP.POLICY\dlissupport@dos.state.fl.us_20100903_111446.pdf

Senate Resolution 580, September 21, 2006: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:sr580ats.txt.pdf

Attachments

Sample Apiary Agreement W/Attachments (Map Placeholder & Electric Fence Bulletin)

Sample Apiary Site Application Form W/Mission Statement

Best Management Practices for Maintaining European Honey Bee Colonies

Sample of Random Selection Process Procedure

APPROVED:

Division Director or Designee

DATE: _____

APIARY AGREEMENT

AGREEMENT FOR APIARY ACTIVITIES ON STATE LANDS

THIS AGREEMENT is made by and between the Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street, Tallahassee, FL 32399-1600, hereinafter known as “the COMMISSION,” and (Insert Name and Address of Apiarist Here), telephone number (Insert Phone Number of Apiarist Here), hereinafter known as “the USER.”

WITNESSETH

In consideration of the mutual promises to be kept by each and the payments to be made by the USER, the parties agree as follows:

1. TERM: This Agreement will begin (Insert date here) or the date signed by both parties, whichever is later, and will end five (5) years from the date of execution. Issuance of a new five (5) year Agreement is contingent upon satisfactory performance evaluation by the Area Biologist and approval of the THCR Section Leader.
2. The COMMISSION Agrees:
 - a. To provide apiary sites on state lands, which will be identified by the COMMISSION staff and located on the property identified in (4)(f) below.
 - b. To provide technical assistance for bear-proofing, if required by Area Biologist, of sites made available under this Agreement.
 - c. To allow the USER to place a total number of (insert number of hive boxes here) hive boxes on the COMMISSION-managed property at the apiary site(s).
3. The USER Agrees:
 - a. To pay (Insert Total Dollars Here) on or before the execution date of this Agreement and each year thereafter on or before anniversary date of the original contract execution date, with check or money order payable to the Florida Fish and Wildlife Conservation Commission. All payments shall be remitted to The Florida Fish and Wildlife Conservation Commission, Finance and Budgeting, Accounting Section, PO Box 6150, Tallahassee, FL 32399-6150, and a copy of the check to The Florida Fish and Wildlife Conservation Commission, Terrestrial Habit Conservation and Restoration Section, Attn: Section Leader, 620 South Meridian Street, Tallahassee, Florida 32399-1600.

- b. To have no more than (Insert Number of Hive boxes here) hive boxes on the property at one time.
- c. To comply with the Florida Honey Certification and Honeybee Law, Chapter 586, Florida Statutes, and Rule 5B-54, Florida Administrative Code, and all other applicable federal, state, or local laws, rules or ordinances.
- d. To not damage, cut or remove any trees in the course of preparing for or conducting operations under this Agreement.
- e. To repair within 30 days of occurrence any damage to roads, trails, fences, bridges, ditches, or other public property caused by USER'S operations under this Agreement based on discretion of the COMMISSION to ensure the WMA/WEA management goals are met. All repairs will be coordinated with the Area Biologist to ensure management goals are met. If USER does not comply within the 30 day requirement, then the COMMISSION may use a third party to perform the repairs and charge the USER accordingly.
- f. To report any forest fires observed and to prevent forest fires during the course of operations under this Agreement.
- g. To abide by all WMA/WEA rules and regulations in addition to items in this Agreement.
- h. To notify the Area Biologist within 24 hours when a bear depredation event occurs.
- i. To post their name in an agreed upon location at each site covered by this Agreement or otherwise use an identifying system that is approved by the Area Biologist.
- j. To furnish proof of general liability insurance prior to starting apiary activities on state property or within 30 days of execution of this Agreement, whichever is earlier, and proof of annual renewal of the general liability insurance policy prior to or upon expiration date of the policy. The USER shall maintain continuous general liability insurance throughout the term of this Agreement for no less than \$300,000 for bodily injury and \$100,000 for property damage for each occurrence. Such a policy shall name the COMMISSION as the Certificate Holder. The USER's current certificate of insurance shall contain a provision that the insurance will not be canceled for any reason during the term of this Agreement except after thirty (30) days written notice to the COMMISSION.

- k. To be liable for all damage to persons or property resulting from operations under this Agreement, and to release, acquit, indemnify, save and hold harmless the COMMISSION, its officers, agents, employees and representatives from any and all claims, losses, damages, injuries and liabilities whatsoever, whether for personal injury or otherwise, resulting from, arising out of or in any way connected with activities under this Agreement or activities occurring from any other source not under this Agreement and the USER further agrees to assume all risks of loss and liabilities incidental to any natural or artificial condition occurring on state lands cover by this Agreement.
 - l. To construct and maintain electric fences, if required by the Area Biologist at the Area Biologist's discretion, to provide protection of apiaries from black bear depredation consistent with the technical information bulletin attached to this agreement, and, if so required, to maintain an open buffer around the fencing of five (5) feet or more. (See Attachment 1)
 - m. To remove all personal property from the site within thirty (30) days of termination or expiration of this Agreement. The USER understands that after this time, all the USER'S personal property remaining on the WMA/WEA shall be deemed abandoned and become the property of the COMMISSION, which will be utilized or disposed of at the sole discretion of the COMMISSION, and that reasonable storage and/or disposal fees and/or costs may be charged to the USER.
4. The parties mutually agree:
- a. This Agreement is not transferable.
 - b. The USER's failure to submit payment by the due date established herein may result in cancellation of the Agreement by the COMMISSION.
 - c. The USER's failure to submit proof of general liability insurance or proof of annual renewal in compliance with (3) (j) above may result in cancellation of this Agreement by the COMMISSION.
 - d. This Agreement shall be in effect for a period of five (5) years and issuance of a new agreement will be contingent upon a satisfactory performance evaluation and approval of the Area Biologist and THCR Section Leader.
 - e. Each apiary site shall be situated so as to be at least one-half (1/2) mile inward from state property lines and there shall be at least one (1) mile separation

between sites. Exceptions to this rule must be reviewed by Area Biologist presented to and approved by the Terrestrial Habitat Conservation and Restoration Section Leader.

- f. The property covered by this Agreement is described as follows: That the property sites (Insert Area Name) Wildlife Management Area are represented by Attachment 2.
- g. In accordance with Section 287.134, Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal or reply on a contract to provide goods or services to any public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant with any public entity; and may not transact business with a public entity.
- h. As part of the consideration of this Agreement, the parties hereby waive trial by jury in action brought by either party pertaining to any matter whatsoever arising out of or in any way connected with this Agreement. Exclusive venue for all judicial actions pertaining to this Agreement is in Leon County, Florida.
- i. This Agreement may be terminated by the COMMISSION upon thirty (30) days written notice to the USER in the event the continuation of the apiary activities are found to be incompatible with the COMMISSION'S management plans or for any other reason at the sole discretion of the COMMISSION.

This Area Intentionally Left Blank

IN WITNESS WHEREOF, the parties have executed this Agreement on the day and year last below written.

USER SIGNATURE

Date: _____

Witness

Witness

FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

Mike Brooks, Section Leader
Terrestrial Habitat Conservation and
Restoration

Date: _____

Approved as to form and legality

Commission Attorney

Date: _____

AGREEMENT

ATTACHMENT 1

Use of Electric Fencing to Exclude Bears And Prevent Property Damage

Florida Fish and Wildlife Conservation Commission
Technical Information Bulletin (2001)

Electric fencing has proven effective in deterring bears from entering landfills, apiaries (beehives), livestock pens, gardens, orchards, and other high-value properties. Numerous electrical fence designs have been used with varying degrees of success. Design, quality of construction, and proper maintenance determine the effectiveness of an electric fence. The purpose of this technical bulletin is to assist the property owner in understanding and implementing electrical fencing as a tool to exclude and prevent damage caused by black bears.

Understanding Electric Fencing

Electric fencing provides an electrical shock when an animal comes into contact with the electrically charged wires of the fence. People unfamiliar with electric fencing often are afraid that it will injure, permanently damage, or kill an individual or pet that contacts the fence. **This is not true!** A properly constructed electric fence is safe to people, pets, and bears.

Components of Electric Fencing

An electric fence is composed of four main elements: a charger, fence posts, wire, and the ground rod.

Fence Charger. On a small scale electric fence (like that typically needed for bear exclusion), the largest cost is normally the fence charger. A fence charger's job is to send an electrical pulse into the wire of the fence. Contrary to popular belief, there is not a continuous charge of electricity running through the fence. Instead the charger emits a short pulse or burst of electricity through the fence. The intensity and duration of the electrical pulse varies with the type of charger or controller unit. Chargers with a high-voltage, short duration burst capacity are the best because they are harder to ground out by tall grass and weeds. These types are also the safest, because, even though the voltage is high (5 kilovolts) the duration of the burst is very short (2/10,000 of a second) (FitzGerald, 1984).

Two basic energy sources for chargers are batteries (12-volt automotive type) and household current (110 volt). Battery-type chargers are typically cheaper to purchase but require more maintenance because of the necessity of charging the battery. The advantage of a battery powered charger is that it can be used in a remote location where 110-volt current is not available. Most units that are powered by a fully charged 12-volt deep-cycle batteries can last three weeks before needing a charge. Addition of a solar trickle charger will help prolong the duration of effective charge in 12-volt batteries.

Fence Posts. On small scale fences, the posts are normally the second largest expense involved in construction. Therefore, when planning an electric fence it is a good idea to utilize existing fencing in order to save money. If no existing fence is available, posts will need to be placed around the area needing protection. Posts may be wood, metal, plastic, or fiberglass. Wood and metal posts will need to have plastic insulators attached to them which prevent the electric wire from touching the post causing it to ground out. Plastic and fiberglass posts do not need insulators, the wire may be affixed directly to these posts. Wood and metal posts are typically more expensive and require the added expense of insulators, however, they are more durable and generally require less maintenance.

Wire. Fourteen to seventeen gauge wire is the most common size range used in electric fencing. Heavier wire (a lower gauge number) is more expensive but carries current with less resistance and is more durable (FitzGerald, 1984).

The two most common types of wire are galvanized and aluminum. Galvanized wire is simply a steel wire with a zinc coating to prevent rust, which makes the wire last longer. Some wire is more galvanized than others. The degree or amount of zinc coating that is around the core steel wire is measured in three classes. A class I galvanization means the wire has a thinner coating of zinc than a class II galvanization. Class III galvanized wire has the heaviest zinc coating and will last longer than the class I and class II wire (FitzGerald, 1984). In general, the cost of galvanized wire increases as the class or amount of galvanization increases.

Aluminum wire is typically more expensive than the galvanized wire. Some advantages of aluminum wire are: it will not rust, it conducts electricity four times better, and it weighs one-third less than steel wire.

The Ground Rod. The ground is an often overlooked, but critical part of an electric fence. Without a good ground, electricity will not flow through the wire. When an animal touches a charged wire, the body of the animal completes the electrical circuit and the animal feels the “shock”. The current must travel from the charger through the wire to the animal and then back through the ground to the charger if the animal is to feel the shock. The soil acts as the return “wire” (ground) in the circuit. However, if a

bird was to land on a charged wire without touching the soil the bird would not complete the circuit and would be unaffected (FitzGerald, 1984). Some fence configurations use actual grounded wires within the fence to enhance the grounding system.

The ground may be a commercial ground rod or a copper tube or pipe driven six to eight feet in moist soil. Copper is expensive, so a copper coated steel pipe or any other good conducting metal pipe will work also. Very dry soil can effect the ability to create a good ground and has sometimes been a problem during drought conditions. Pipe may be a better choice than a solid rod during drought conditions, because water may be poured down the ground pipe to improve the ground. Some fence configurations use wires as the grounding system, rather than relying solely on the soil as a ground.

Recommended Electric Fence to Deter Black Bears

Conditions at fence sites will vary and will determine what the most effective fence configuration will be. Commission biologists welcome the opportunity to visit sites and provide custom tailored advice on constructing an effective electric fence. The following recommendation will cover most situations with low to moderate pressure from black bears. Use a five strand aluminum wire fence that is 40 inches high with wire spacing every eight inches apart using the previously mentioned wired grounding system (see Figure 1). The wire closest to the ground level (the lowest wire) should be a charged or “hot” wire. The second wire should be grounded. The third wire should be hot. The fourth wire should be grounded and the fifth wire should be hot. If using metal or wood posts, insulators must be used to keep the hot wires from grounding out. The cost of this type of electric fence utilizing fiberglass posts and a 110 volt fence charger is approximately \$200 for a 40' x 40' area (160 linear feet of fence).

Materials:

- 1 - 1, 312 foot roll (1/4 mile) 14 gauge aluminum electric fence wire
- 1 - 50 foot roll 12 gauge insulated wire
- 20 - 5 foot 5/8 inch dia fiberglass fence posts
- 5 - plastic gate handles
- 1 - 110 volt fence charger
- 1 - 10 foot ground pipe
- 4 - plastic electric fence signs

Installation. These instructions are for a square shape fence exclusion, but the process would be very similar for other applications. Drive 4 corner posts 1-foot deep into ground and stake with guy wires. Clip, rake, and keep clear any vegetation in a 15-inch wide strip under the fence and apply herbicide. Attach and stretch the aluminum wire at 8-inch increments starting 8 inches from ground level. A loop of wire should be left on each wire at the first corner post. Once the wire has been stretched around the outside of all the corner posts back to the first post a plastic gate handle should be attached to each wire and the gate handles should be attached to each

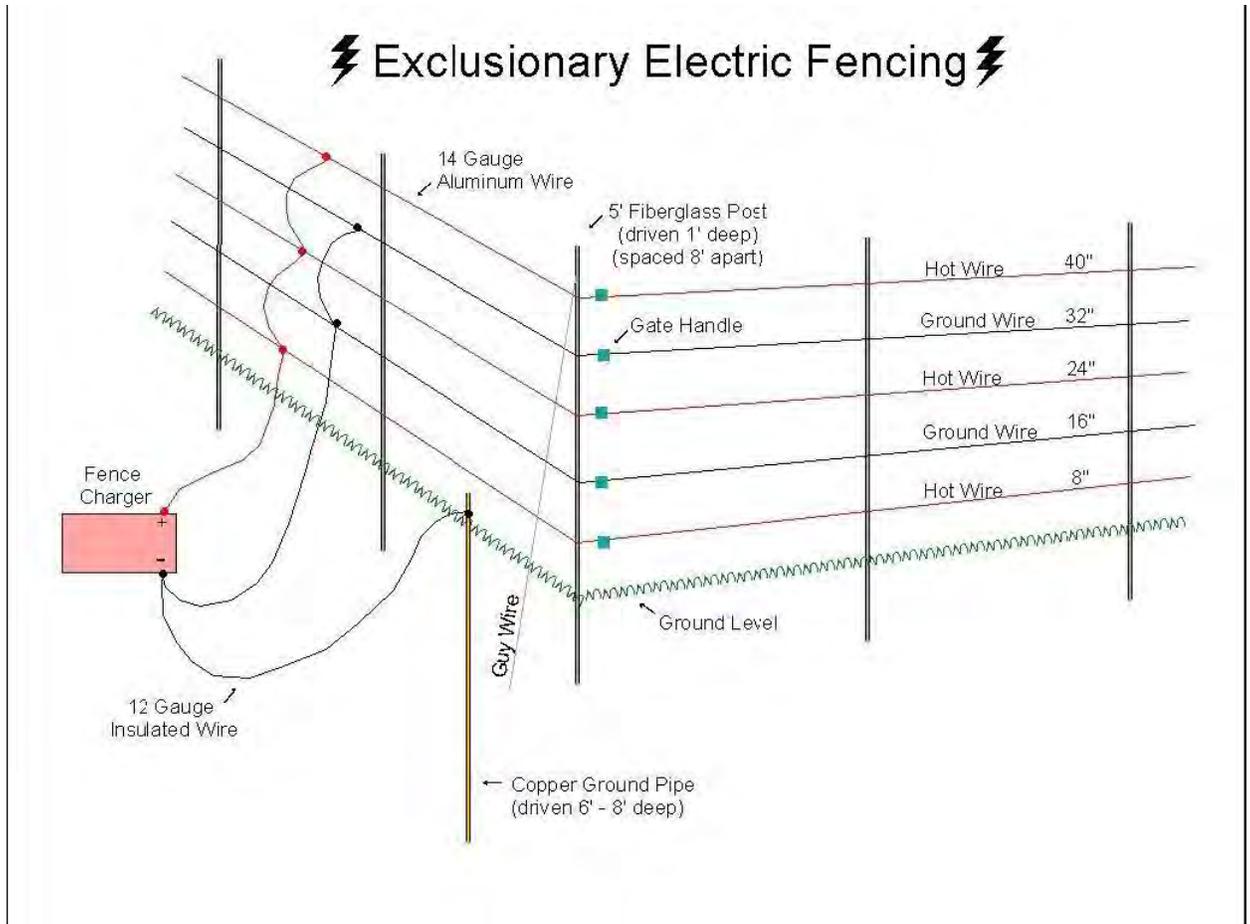
corresponding loop on the first corner post. Drive in the remaining 16 posts to the same depth at 8-foot intervals between corner posts. Secure each of the five wires to each of the posts with additional wire. Attach four plastic electric fence signs (one on each side) to the top wire of the fence. Attach a 12-gauge strand of insulated wire to the positive terminal of the fence charger and attach it to the first, third, and fifth wires of the fence. Attach another 12 gauge insulated wire to the negative terminal of the charger and attach this wire to the ground pipe which has been driven into the ground 6 to 8-feet deep. Attach another 12 gauge insulated wire from the negative terminal of the charger to the second and fourth wires on the fence. Plug the charger into a 110 volt power supply and the fence is in operation.

Tips to improve the effectiveness of your electric fence to deter black bears:

1. If using a 12-volt fence charger, ensure that the battery is charged; check every two weeks.
2. Make sure terminals on the charger and battery are free of corrosion.
3. Make sure hot wires are not being grounded out by tall weeds, fallen tree branches, broken insulators, etc.
4. If fence wires have been broken and repaired, make sure wires are corrosion free where they have been spliced together. Also, tighten the fence at each corner post as wires that have been spliced and are loose make poor connections.
5. Be sure to rake vegetation from under and around the outside of the fence as this may act as an insulator.
6. To improve the ground around the perimeter of the fence add a piece of 24 inch chicken wire laying on the ground around the outside of the fence. This should be connected to ground.
7. During periods of drought pour water down the ground pipe and around the ground pipe to improve the ground. Digging a 6 inch deep 6 inch diameter hole around the ground pipe and back filling with rock salt will also improve the ground. Additional ground pipes may also be added to portions of the fence farthest from the charger.
8. To ensure that the bear solidly contacts the charged portion of the fence, a bait like bacon strips, a can of sardines, or tin foil with peanut butter may be attached to one of the top hot wires. Make sure these do not contact the ground, thus shorting out the fence.
9. When protecting a specific structure (like a shed or rabbit hutch), the fence should be placed 3 to 5 feet away from the structure (rather than on it) so that the bear encounters the fence before reaching the attractant.
10. Protect the fence charger from the elements by covering it with a plastic bucket or a wooden box.
11. Place plastic electric fence signs around the perimeter of your fence to improve visibility and to warn other people.

LITERATURE CITED

FitzGerald, James (1984), *The Best Fences*. Storey Publishing Bulletin A-92, Pownal, Vermont. p. 14-16.



AGREEMENT
ATTACHMENT 2

Place Holder for Map

Of

Apiary Locations

At

WMA/WEA

APIARY SITE APPLICATION FORM

Florida Fish and Wildlife Conservation Commission

RETURN TO: The Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street, Tallahassee, FL 32399-1600. Please print or type all information. Attach additional sheets if necessary.

Name _____ Telephone Number _____

Mailing Address _____

City or Town _____ County _____ Zip Code _____

Physical Address (If Different from Mailing Address) _____

Company Name: _____

Email Address _____

Requested Wildlife Management or Wildlife and Environmental Area(s)(see attached list of WMA/WEAs with apiary sites):

WMA/WEA _____ County _____ # of Sites _____

WMA/WEA _____ County _____ # of Sites _____

WMA /WEA _____ County _____ # of Sites _____

WMA /WEA _____ County _____ # of Sites _____

Planned Number of Hives Per Site: _____ Permanent: ____ Seasonal: _____

Member of Beekeepers Association: Yes ____ No ____

Number of Years a Member _____

Name of Beekeepers Association: _____

Are you registered with Florida Department of Agriculture and Consumer Services/Division of Plant Industry (FDACS/DPI): _____ Yes _____ No _____ N/A If yes, please provide proof.

Are you current with any and all special inspection fees: _____ Yes _____ No _____ N/A. If yes, please provide proof.

Do you follow all recommended Best Management Practices from FDACS/DPI?: _____ Yes _____ No

If no, then please explain on a separate piece of paper.

Please provide below a chronological history of your beekeeping experience. If you need more space, please provide additional sheets:

References: If a new apiary contractor, please provide on a separate piece of paper at least 3 references who can verify your apiary experience. Provide each reference's name, address, phone number and email address (if applicable). Please attach reference sheet to this document and submit.

MISSION STATEMENT

**Management
Of
Florida Fish and Wildlife Conservation Commission's
Wildlife Management Areas
And
Wildlife and Environmental Areas**

The mission of the Florida Fish and Wildlife Conservation Commission (FWC) is to manage fish and wildlife resources for their long-term well-being and the benefit of the people. To aid in accomplishing this mission, one of FWC's management goals is to manage fire-adapted natural communities on our Wildlife Management and Environmental Areas (WMA/WEA) to support healthy populations of the plants and animal's characteristic of each natural community. In order to achieve this goal various habitat management techniques are used. These include prescribed burning, applications of herbicides and mechanical treatment of vegetation. These management efforts will take place at various times and locations on each of the FWC's WMA/WEAs. Staff on each WMA/WEA will work with and make users aware of these activities when necessary. Users must be aware and accept that these activities are necessary for the proper management of the area.

Note: This document is included as an attachment with each Application and executed Contract.

FDACS/DPI's BMP

Florida Department of Agriculture & Consumer Services

BEST MANAGEMENT PRACTICES FOR

MAINTAINING EUROPEAN HONEY BEE COLONIES

1. Beekeepers will maintain a valid registration with the Florida Department of Agriculture and Consumer Services/Division of Plant Industry (FDACS/DPI), and be current with any and all special inspection fees.
2. A Florida apiary may be deemed as European Honey Bee with a minimum 10% random survey of colonies using the FABIS (Fast African Bee Identification System) and/or the computer-assisted morphometric procedure (i.e., Universal system for the detection of Africanized Honey Bees (AHB) (USDA-ID) or other approved methods by FDACS on a yearly basis or as requested.
3. Honey bee colony divisions or splits should be queened with production queens or queen cells from EHB breeder queens following Florida's Best Management Practices.
4. Florida beekeepers are discouraged from collecting swarms that cannot be immediately re-queened from EHB queen producers.
5. Florida Beekeepers should practice good swarm-prevention techniques to prevent an abundance of virgin queens and their ready mating with available AHB drones that carry the defensive trait.
6. Maintain all EHB colonies in a strong, healthy, populous condition to discourage usurpation (take over) swarms of AHB.
7. Do not allow any weak or empty colonies to exist in an Apiary, as they may be attractive to AHB swarms.
8. Recommend re-queening with European stock every six months unless using marked or clipped queens and having in possession a bill of sale from an EHB Queen Producer.
9. Immediately re-queen with a European Queen if previously installed clipped or marked queen is found missing.
10. Maintain one European drone source colony (250 square inches of drone comb) for every 10 colonies in order to reduce supercedure queens mating with AHB drones.
11. To protect public safety and reduce beekeeping liability, do not site apiaries in proximity of tethered or confined animals, students, the elderly, general public, drivers on public roadways, or visitors where this may have a higher likelihood of occurring.
12. Treat all honey bees with respect.

RANDOM
SELECTION PROCESS
FOR VACANT APIARY SITE

When an apiary site becomes available the following procedure is used to randomly select the next apiarist (beekeeper) for an available apiary site on a WMA or WEA. Only those who have been evaluated and deemed qualified to be an apiarist on a WMA/WEA through the Apiary Application process will be eligible for this selection process. The steps below will be followed by the THCR Contract Manager when a site becomes available to be filled by a qualified apiarist:

1. The THCR Contract Manager will maintain an “Apiary Wait List Folder” on the THCR SharePoint for each WMA/WEA with apiary sites.
2. A wait list is either created or updated when an Apiary Application(s) is received by the THCR Contract Manager from a qualified apiarist.
3. Upon receipt of an apiary site application, the THCR Contract Manager will review the WMA/WEA folder to see if there is an “Apiary Wait List”.
4. If a list exists then the qualified applicant will be added to the list.
5. When an apiary site becomes available if there are more than one qualified apiarist then these apiarists will be contacted by certified letter to determine their interest.
6. The letter will request a response within 10 working days to make them eligible for the random drawing.
7. If there is no response or is negative then that apiarist will not be included in the random drawing and the name will be removed from the waiting list*.
8. If only one apiarist responds positively to the certified letter then the available site will be awarded to that interested apiarist.
9. If there are no apiarists on a wait list or all responses are negative then apiarists who currently have site(s) under Agreement and where not on the waiting list will be contacted to see if any have interest in the available site. If more than one responds then the random drawing process will be used to determine who will be awarded the site.

10. Steps to be performed by the THCR Contract Manager to execute the random selection for an available apiary site are listed below:

- a. The names of each interested apiarist will be noted on a 1" X 2" piece of paper and folded in half.
- b. The pieces of paper will be inserted into a "black film canister" which has a snap top and placed into a container and stirred up prior to the selection.
- c. A non-biased person will be selected to reach into the bowl (which will be held above the selection person's eyesight) and randomly select one of the canisters.
- d. The canister will be opened by the person performing the selection and the name is read aloud for those in attendance. Everyone in attendance will sign a witness sheet.
- e. The apiarist whose name is selected will be awarded the available site.
- f. A new Agreement will be developed by the THCR Contract Manager.

*A new apiary application must be submitted once requestor's name is removed from a waiting list.

13.11 Recreation Master Plan

Recreation Master Plan for John C. and Mariana Jones/Hungryland WEA



○ Florida Fish and Wildlife Conservation Commission



Office of Recreation Services

○ **Hungryland Wildlife and Environmental
Area Recreation Master Plan**

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I. Introduction

○ *Purpose of Plan/Planning Process*

This Master Plan serves as a guide for providing recreational and educational experiences focused on wildlife viewing and nature study on John C. and Mariana Jones Hungryland Wildlife and Environmental Area (WEA). The Plan contains specific recommendations for recreational enhancements and educational products and programs. It also provides guidelines for monitoring recreation-related use to ensure protection of the resources and meaningful experiences for visitors. The plan was developed by FWC's Office of Recreation Services in collaboration with Division of Habitat and Species Conservation/Terrestrial Habitat Conservation and Restoration/Hungryland Field Staff with input from a Technical Advisory Group of recreational stakeholders (Appendix 1).

○ *Location*

Hungryland WEA straddles the southern boundary of Martin and Palm Beach counties. It is situated five miles southeast of Indiantown, eight miles west of Jupiter, 15 miles northwest of Palm Beach Gardens, and one half mile east of the J.W. Corbett Wildlife Management Area. The main entrance is located along CR 711 (Pratt-Whitney Road) about two miles north of its intersection with SR 706 (Indiantown Road) (Figure 1).

Hungryland WEA is located just seven miles inland from the coastal city of Jupiter. Residential development is rapidly expanding westward along Indiantown Road and other major roads. The interstate and turnpike exits at Indiantown Road make Hungryland WEA easily accessible to tourists and to communities in Martin and Palm Beach counties. Martin and Palm Beach counties are both heavily urbanized along the coast and in many other areas very rural, with much of the land in agriculture and conservation lands. The 2008 population estimate for Martin County was 138,660 people with a projected growth to 149,800 in 2015 and 170,400 by 2030. The 2008 population estimate for Palm Beach County was 1,265,293 people with a projected growth to 1,346,000 in 2015 and 1,556,800 by 2030.

SR 706 along the south boundary of Hungryland WEA and CR 711 in Palm Beach County have been identified in the Palm Beach MPO 2035 Long Range Transportation Plan (LRTP) as needing to be expanded to four lanes. However, they are not in the 2035 Cost Feasible Plan. Hungryland WEA is located outside of the Martin County MPO Metropolitan Planning Area but is located within the East Coast Greenway proposed by Martin County. None of the roads near Hungryland WEA is identified in the Martin County Transportation Improvement Program (TIP) through 2014, but CR711 is listed in the 2030 Needs Assessment of the Martin/St. Lucie County LRTP as a needed expansion from two lanes to four lanes. Palm Beach County lands are currently zoned as Conservation in the current Zoning and Future Land Use component of the county comprehensive plan. Martin County lands are currently zoned as Interim or Public Service with a future land use of Agriculture/Conservation.

Hungryland WEA is not within an area of critical state concern or presently under study for such designation.

○ **Acquisition Purpose**

In the late 1960s, the area known as Pal Mar, which includes the area now designated as Hungryland WEA, was ditched to drain the property for development. Local citizens groups opposed the development and ultimately Martin County filed a successful lawsuit that ended the project. The property was purchased by the State of Florida in 1994 and 1997 under the Save Our Rivers program and in 1999 under the Conservation and Recreation Lands Program. The 12,735-acre area was purchased as a multiple use property to accomplish the following:

- 1) Conserve and protect environmentally unique and irreplaceable lands that contain native, relatively unaltered flora and fauna
- 2) Conserve and protect significant habitat for native, endangered and threatened species
- 3) Conserve, protect, manage, or restore important ecosystems, landscapes and forests
- 4) Provide areas for natural resource-based recreation

○ **Recreation Planning Context**

As the regional population increases, the public use pressures on the WEA will likely increase. Recreational user groups can be expected to urge connections to trails on lands outside the WEA. Hungryland WEA is within 15 miles of several other public recreation areas (Figure 1) that offer a variety of recreation opportunities:

Area	Hiking	Biking	Camping	Paddling	Fishing	Horseback Riding	Hunting	WV
Jonathan Dickinson SP	X	X	X	X	X	X		X
Dupuis WMA (SFWMD)	X	X	X	X	X	X	X	X
Corbett WMA	X	X	X		X	X	X	X
Allapattah Flats WMA (SFWMD)	X	X	X			X	X	X
Loxahatchee NWR	X	X		X	X			X
Grassy Waters Preserve (City of WPB)	X	X		X	X			
Pine Glades Natural Area (Palm Beach County)	X	X		X	X	X		X
Hobe Sound NWR	X			X	X			X
Riverbend Park (Palm Beach County)	X	X		X	X	X		X
Atlantic Ridge SP	Under development							

The Palm Beach County Department of Environmental Resource Management has initiated a regional recreation partnership that includes Hungryland WEA. This partnership, titled the

Northeast Everglades Natural Area, includes all public conservation lands in Palm Beach and Martin counties and seeks to link them with trails and trailheads.

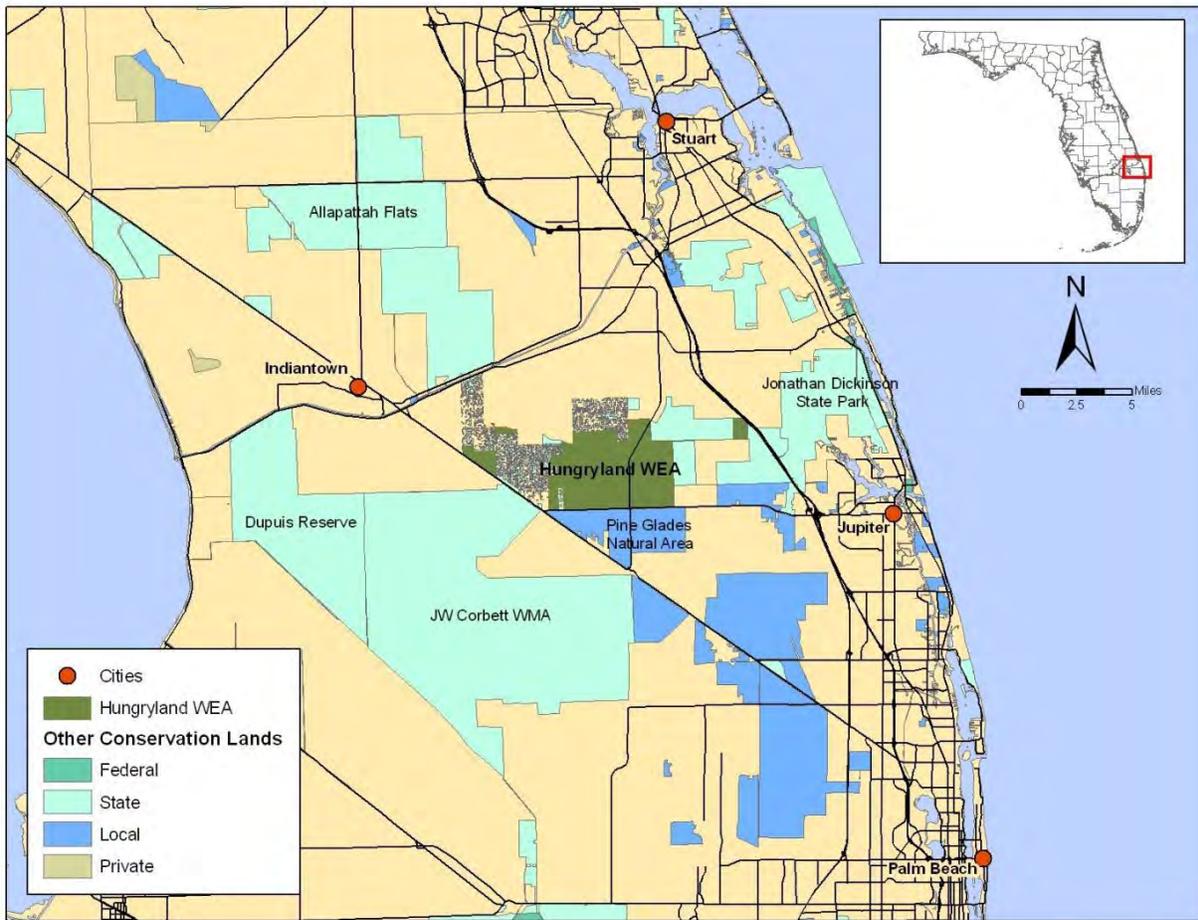


Figure 1: Location Map

II. Resource Inventory

Hungryland WEA is in the Eastern Flatwoods physiographic district which is characterized by low elevations and flat topography with sandy soils. Elevations are relatively uniform, ranging from 20 feet to 25 feet.

○ *Natural Communities*

Historically, the area was dominated by pine flatwoods interspersed with sloughs draining east toward the Loxahatchee River. In many places these sloughs have been channelized and diked, leaving isolated cypress strands, seasonal ponds and wet prairies (Figure 2). Although relatively pristine compared with pine flatwoods elsewhere in south Florida, this community has deteriorated due to fire suppression.

Natural Community	Acreage
Wet Flatwoods	3587
Mesic Flatwoods	1647
Wet Prairie	2803
Depression Marsh	1893
Basin Marsh	1567
Dome Swamp	208
Baygall	9
Improved Pasture	98
Ruderal	997

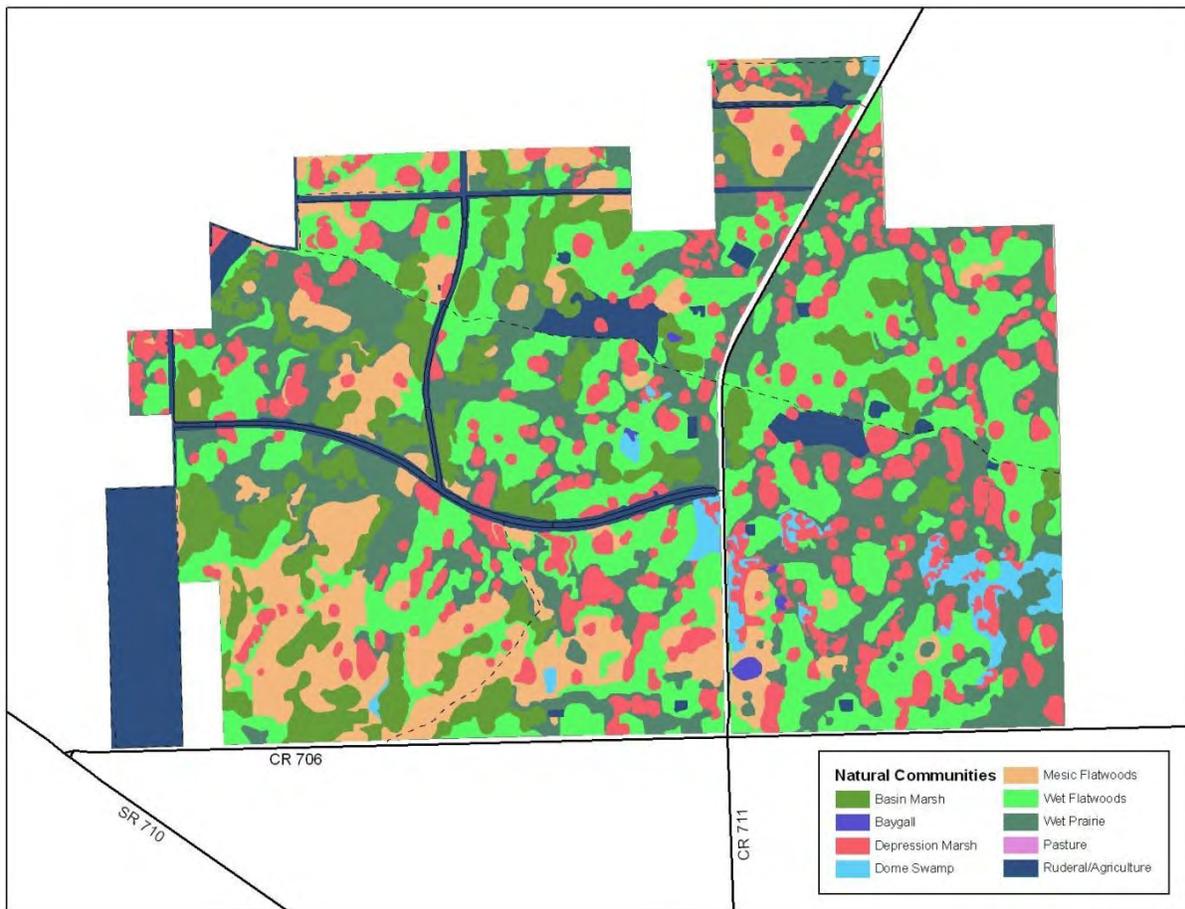


Figure 2: Hungryland WEA Natural Communities

○ ***Sensitive Areas***

Much of Hungryland WEA can be considered sensitive due to the large number of wetlands. A wading bird rookery located at the east end of the Old Jupiter-Indiantown Grade is a sensitive wildlife area.

• ***Wildlife***

Birding can be enjoyed year round but is particularly good as wetlands dry down and concentrate wading birds. More than 135 bird species are documented to occur on the area and several – snail kite, Florida sandhill crane, limpkin, and Bachman’s sparrow - are among the “top 20 most requested birds” compiled by ORS Wildlife Viewing Section. Hungryland offers opportunities to see butterfly species such as Gulf fritillary, white peacock, zebra longwing and the queen butterfly, as well as a variety of dragonfly species.

Other species of particular interest to visitors include the American alligator, Eastern indigo snake, gopher tortoise and most mammal species found on the area: river otter, coyote, marsh rabbit, bobcat, gray fox and wild hog. While not as well known to most visitors, numerous species of amphibians and reptiles occur here.

○ ***Cultural Resources***

The Seminole Indians, originally from Georgia and Alabama, sought refuge in this part of the state. The U.S. Army adopted the successful tactic of destroying the Seminole’s crops and food stores until starvation forced them to surrender. The region became known to local ranchers as the “Hungryland.”

Following the Seminole Wars, trading posts were established at Indiantown and Jupiter. Indians came to trade plumes, meat, hides and other natural products for manufactured goods. Around the turn of the century, pioneer families began settling the area, establishing citrus groves, farms and cattle ranches along the newly cut Jupiter-Indiantown Road. Virgin timber was harvested and processed in sawmills. Known as the Central-Dixie Highway and designated SR 29 by the State Road Department, the Jupiter-Indiantown Road was heavily used by area residents until paved roads were constructed from Indiantown to Jupiter in the late 1950s.

The Florida Master Site File does not contain archaeological or historical sites recorded within the WEA, however the area has not been systematically surveyed. An old sawmill site is thought to exist on the south side of the Jupiter-Indiantown Road, just west of its intersection with Canal Road 5.

○ ***Scenic Resources***

Roadsides in the area have recently been cleared of spoil created when the canals were dug. As a result, these disturbed areas look somewhat barren and unattractive. However, Hungryland’s expansive marshes, tall pines and colorful wildflowers offer numerous scenic vistas. A

particularly scenic view is located along Canal Road 3, where visitors can drive or walk along the edge of a sizeable pond or continue down to the end of the road. The view to the south looks out over a depression marsh that grades into pine flatwoods.

The abundance of wildflowers in the flatwoods, prairies and marshes on Hungryland, especially endangered and threatened species such as Catesby lilies, Blue Butterwort, and Grass Pinks add to the beauty of the area and are of interest to visitors who enjoy botanizing.

The scenic values of the area have been recognized locally. On January 26, 1993, the Martin County Board of County Commissioners designated the portion of Old Jupiter-Indiantown Road in Martin County a Scenic Byway (also referred to as the Old Jupiter-Indiantown Grade). The Byway extends from the Palm Beach County line to SR 76. Five miles of the Byway run through Hungryland WEA.

○ ***Resource Management***

The FWC's resource management goals for the area include those designed to enhance and maintain the native upland and wetland communities on the WEA. To accomplish this objective, the FWC is restoring disturbed sites, has instituted a program of prescribed burning and is eliminating or controlling non-native invasive plants through mechanical and chemical treatments. Plants such as melaleuca, Brazilian pepper, Japanese climbing fern, Australian pine, torpedo grass, earleaf acacia and downy rose myrtle are problematic on the area. Other management activities include re-establishing hydrologic regimes to benefit fish and wildlife habitats.

Borrow ponds and portions of the canals support populations of freshwater fish such as bluegill, Florida gar and largemouth bass, but they are not actively managed.

III. Interpretation

In this plan, emphasis is placed on integrating recreation and interpretive planning. Using this approach, the type of recreational experience offered and the location of recreation amenities provided, is strongly influenced by the interpretive goals for the area. Recreation opportunities thus become a means to an end - reaching visitors with important themes and concepts about an area's natural resources, plant communities, wildlife and wildlife management.

○ ***Visitor Experience Goals***

Hungryland has the potential to provide visitors with opportunities to see and learn about a variety of natural communities while engaging in recreational activities focused on fish and wildlife resources. Visitor experience goals are those concepts and experiences we want visitors to take away from their time at Hungryland. These goals guide both interpretive and recreation planning.

At Hungryland WEA, the FWC will provide opportunities for visitors to:

1. Become oriented to and participate in a range of recreational activities on Hungryland WEA and adjoining natural areas while:

Becoming acquainted with wildlife and natural plant communities, and Understanding Hungryland WEA's natural, cultural and commercial history, within the context of the state's history and prehistory.

2. Learn information and stories associated with major interpretive themes, and other related information, through interpretive materials at welcome kiosks, trails and wildlife viewing sites.
3. Have an enjoyable recreational experience without impairing the natural and cultural values of the site. In terms of wildlife viewing, FWC's goal will be to facilitate positive, memorable experiences that keep wildlife disturbances to a minimum.
4. Understand the management goals and activities of the FWC on Hungryland WEA.

○ ***Interpretive Themes***

Interpretive themes are categorized as primary and secondary. All interpretive materials revolve around one or two primary themes, which allow visitors to understand and remember important messages. Primary themes also help set visitor experience goals and priorities and are considered in the design of amenities offered to nature-based recreationists. Secondary themes expand upon and support primary themes. These themes guide the development of all interpretive products, which may include sign panels, printed materials, electronic media and educational programming. This detailed media prescription will be developed at a later date.

Primary Interpretive Themes:

Theme 1: Hungryland WEA protects the water quality in the Loxahatchee River watershed.

Discussion: Hungryland lies within the Loxahatchee River watershed, which connects to the Atlantic Ocean through the Jupiter inlet. Some of the water in the WEA's cypress sloughs, hardwood swamps, marshes and wet prairies slowly percolates into the aquifer, replenishing groundwater reserves; some flows slowly east to connections with the Loxahatchee River and its tributaries. As the surrounding area develops, water quality and quantity issues will assume a greater importance.

Theme 2: Management is not a "one-size fits all" process. FWC uses management regimes that are tailor-made for each site, species and habitat.

Discussion: FWC biologists use techniques such as prescribed fire and the removal of invasive nonnative plants to restore natural communities. This protects water quality and benefits

wildlife, including rare species such as the snail kite, sandhill crane, limpkin and wood stork.

Secondary Interpretive Themes:

Theme 3: FWC management at Hungryland WEA seeks to restore the natural communities of this area degraded by previous land uses: extensive logging of slash pines and cypress, fire suppression and the construction of a system of canals designed to drain the area for a residential development proposed in the 1960s. Restored, healthier ecosystems are better able to adapt to future environmental changes.

Discussion: This inherited set of conditions dictates some of the management efforts at Hungryland. Invasive nonnative plants that became established in the altered landscape are being removed. Regular prescribed burning has been introduced to reinvigorate the fire- adapted plant communities. The historic Jupiter-Indiantown Road, dating from the early 1900s, is being preserved for its historical significance. Restored habitat offsets some of the effects of global climate change by capturing more harmful carbon emissions than degraded habitat and by improving the resiliency of Florida’s wildlife.

Theme 4: As Florida grows, areas such as Hungryland are increasingly important to sustain Florida’s wildlife and nature-based recreation opportunities.

Discussion: Increasingly, urban areas directly abut wild lands such as Hungryland WEA. This creates management challenges for FWC biologists (smoke management, etc.) as well as pressure to convert public lands to human uses. Community residents must work with the FWC to ensure Hungryland and its fish and wildlife resources remain for future generations to enjoy.

IV. Recreation Assessment

○ Existing Recreational Use and Facilities

The purpose of this section is to identify and describe the existing recreational uses and facilities on Hungryland WEA and note their status and condition (Figure 3). This informs recommendations for achieving visitor experience goals and meeting future recreation demands and needs.

Hungryland WEA offers opportunities for a variety of high quality, wildlife-focused recreation activities. Based on the approved uses and activities as stated in the 2002-2006 Conceptual Management Plan (CMP), the analysis of existing resources and uses, and the interpretive themes developed for the area, the following activities should be continued and enhanced as described in Section V.

- Hunting
- Fishing
- Wildlife viewing
- Bird watching
- Naturestudy
- Photography

- Hiking
- Off-road Bicycling
- Horseback riding
- Picnicking
- Primitive camping

While boating and paddling are allowed on the area, the canals and heavily vegetated marshes do not offer desirable opportunities for these activities, except in support of fishing.

Geocaching was not mentioned as an approved use in the CMP but it is a popular activity that encourages exploration of the outdoors and should be allowed subject to the FWC policies and procedures for this activity.

Visitation, as recorded by three separate vehicle counters installed and monitored by FWC, has averaged 62 vehicle counts per day from 7 August, 2009, to 2 February, 2010, with peak use associated with hunts on the area. Average daily vehicle counts during hunting season (1 week before archery season to the last day of small game season) were 105 versus 62 per day outside of hunting season.

Hunting - Hunting is an approved use on Hungryland WEA with seasons for archery, muzzleloading, general gun, small game and migratory bird hunts. Hungryland hosts hunts during most weekends in September, October, November, and December (16 total weekends, 66 days in 2010-2011). There are only two weekends in this four-month period without hunts; however the area is open to other users, including equestrians, during hunt days. Quotas limit the number of hunters accessing the area during certain hunting seasons to provide a high-quality hunting experience.

All of the seasons are well attended, with most hunters coming out on the opening days. The northwest corner of the property, which includes the higher elevations at Hungryland WEA, is the most popular hunting area. Dogs are prohibited, except bird dogs or retrievers may be used for hunting during the small game and migratory birds.

The check station is located just inside the Main Gate but is staffed only during hunting seasons. During small game season, hunters are expected to use the self-check stations at the Main Gate and Gate 2.

Fishing/Boating/Paddling - Fishing is allowed year round. Popular species include largemouth bass and bluegill. When fish disperse during the rainy season, flag ponds provide good fishing opportunities.

Nine miles of deep canals (approximately 17 feet deep with sandy bottoms) and several borrow pit ponds provide good fishing opportunities at Hungryland WEA. The more popular fishing spots are at the terminus of Canal 3 (Gate 2) that opens into a picturesque pond and other ponds located along Indiantown Road. The ponds are within a quarter-mile of Indiantown Road; presently there are no designated trails leading to them. None of the waterbodies on the WEA is currently being managed for fishing. Visitors may canoe, kayak and boat in the canals or fish along the bank within the management area boundaries. While boating (with trolling motors, no airboats) and paddling are allowed, canals are broken into 1-2 mile sections and there are no improved launches. Accessing the water requires negotiating steep banks.

Trail Use – Hiking, biking and horseback riding are allowed on Hungryland WEA’s multi-use trail system 365 days a year. These uses also are allowed on numbered roads. There are four separate designated trails on the area.

The *Old Jupiter-Indiantown Grade* runs across Hungryland for more than five miles, spanning the entire area in an east-west direction. Martin County has claimed the entire 16-mile grade as public right-of-way and is committed to developing it into a recreational trail. The county plans to clear the entire length of the grade (parts of it are currently overgrown), remove fences and construct three shelters along the grade (two within the WEA boundary). Plans also include constructing a new trailhead along SR 76. In 2006, the county cleared the grade of obstructions and improved a number of swales across the grade with geotextiles.

The grade passes through flatwoods and freshwater marsh/wet prairie ecosystems, but views are often obscured by thick walls of vegetation on either side of the road. The road is raised and bordered by ditches, but is not capped. A spur trail diverges from the Grade about 0.5 miles from its western end. This unnamed trail is an old road that intersects with Canal 4 then follows the canal. Visitors can access the Grade from Pratt- Whitney Road (Gate 3 or 4) or from Canal Road 5.

The *West Jupiter Wetlands Trail* is two miles long and can be accessed from either end (Indiantown Road or Canal Road 6). The trail is an old, uncapped road that meanders through flatwoods and freshwater marsh ecosystems. The trail crosses the Martin County/Palm Beach County line. It also crosses a significantly wide (80-100 ft.) and deep (1-2 ft.) wetland.

The *Grove Trail* is 1.5 miles long, and follows an old raised road originating from the end of Canal 7. It travels south alongside an old lemon grove and terminates at Indiantown Road. Access is permitted only from Canal Road 7.

Another unnamed trail exists on the north end of the property. It is accessed by entering the area at Gate 2 and driving to the end of Canal Road 3. The trail is an old road and is about 1.5 miles long.

Trail use, though not monitored, is reported to be low throughout the year. No conflicts have been reported between various trail users or other users on the property. The trails are maintained by WEA staff. Only the West Jupiter Wetlands Trail and the various Canal Roads have posted signs. Each trail has its own trailhead(s), and none of the trails intersects another or forms loops. There are no existing trail-related amenities (benches, trash cans, bridges, bike racks, hitching posts, etc.). As existing trails coincide with existing service roads, they are well-maintained. The greatest challenges to traversing the trails on Hungryland WEA arise in areas where the wetlands have flooded the trails.

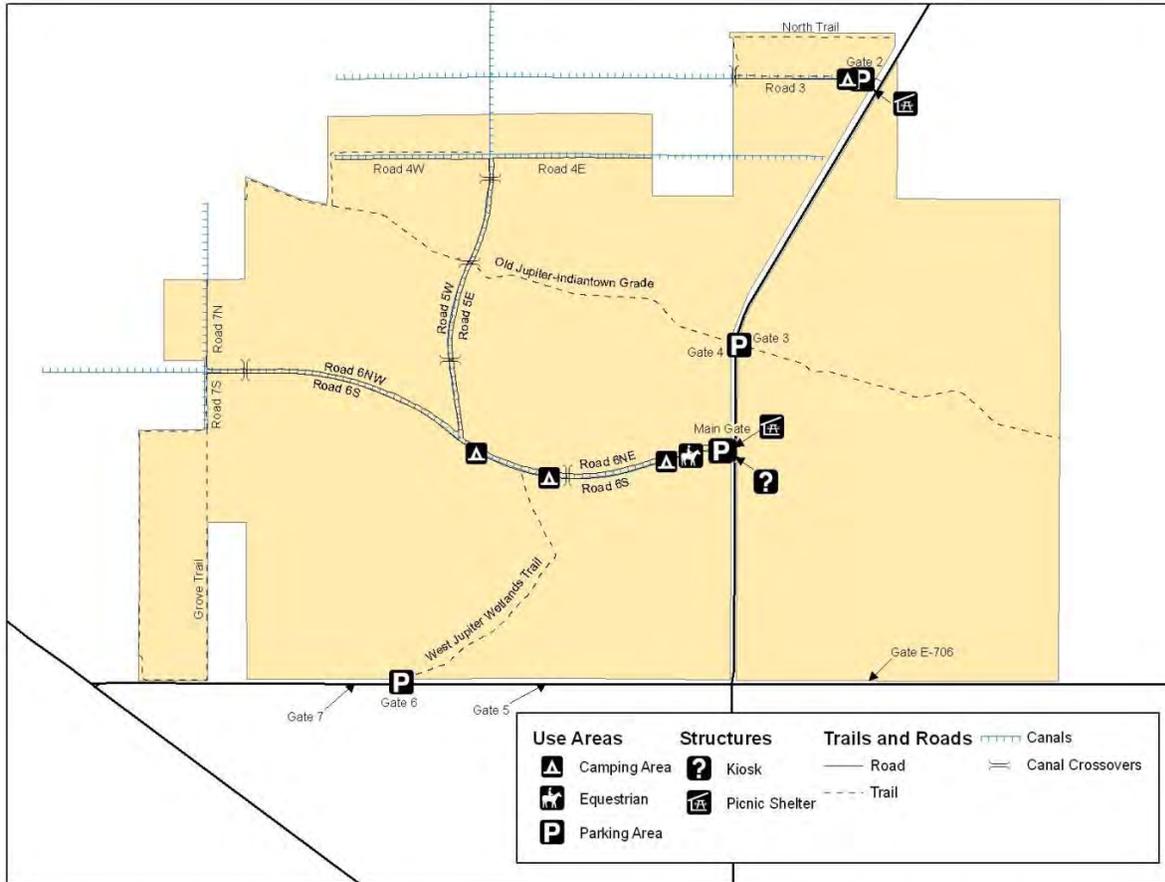


Figure 3: Existing Facilities

Visitor Contact Points and Roads/Vehicle Access- Access gates (pedestrian and/or vehicle) are open 24 hours a day. Entrance signs and kiosks are in place at the main entrance and at Gates 2, 3 and 6. There is an ADA parking space at the main gate. Vehicles are allowed to drive on 13 miles of roads on the area. No off-road vehicles are allowed on the property. The roads open to vehicle use on Hungryland WEA follow the banks of the canal system. These are unimproved roads, surfaced with fine, silty sand, but are graded on a regular basis. In dry weather, the roads are marginally appropriate for two-wheel drive passenger vehicles. In wet conditions, the roads quickly become muddy and slick and potentially hazardous to the typical passenger vehicle.

Main Entrance

Pratt-Whitney Road (CR 711) traverses the area from north to south, and provides access on both sides of the road at three different locations. The main entrance/gate is located on Pratt-Whitney Road about two miles north of the intersection with SR 706 (Indiantown Road). As visitors enter the main gate they have a panoramic view of a

canal flanked by large pines. The entrance sign is well placed in the center of the field of view. Just inside the gate, bordering the terminus of a large canal, is a kiosk, ADA- accessible check station, picnic shelter, vault toilet and a designated horse trailer parking area. The horse trailer parking area becomes slippery and muddy when wet. Directly across the road from the main entrance is a walk-through entrance.

Gate 2

This drive-in entrance is located on Pratt Whitney Road, about 2.5 miles north of the main entrance. Inside the gate are a small parking area, kiosk, picnic shelter and about one mile of drivable roads. There is a walk-through entrance directly across the road from Gate 2.

Gates 3 and 4

One additional access gate is located along Pratt Whitney Road between the two drive-in entrances. There is a small parking area and kiosk down a short driveway on the east side of the road. Using this parking area, visitors can walk onto the property along the Old Jupiter-Indiantown Road on either side of Pratt Whitney Rd through Gate 3 or 4.

Gates 5, 6, 7 and E-706

Indiantown Rd (SR 706) forms the southern boundary of the property and provides access at four different locations. The most developed public access point is Gate 6, the trailhead for the West Jupiter Wetlands Trail. The gate is located about 2 miles west of the intersection with Pratt-Whitney Rd. A short driveway leads to a newly constructed parking area with a kiosk. The additional gates E-706, Gate 5 and Gate 7 have limited parking and no trails.

Approach signs

Currently, highway signs mark the presence of the main entrance/gate and the Old Jupiter-Indiantown Trailhead.

Wildlife Viewing and Nature Study – Area roads and trails provide visitors the opportunity to view a variety of wildlife and plants. (See Wildlife and Scenic Resources section for more information.) Hungryland is a site on the Great Florida Birding Trail. An Internet search reveals Hungryland is fairly well known for its wildlife viewing opportunities. A bird checklist has been developed for the area. There are currently no viewing structures or interpretive trails on the area.

Picnicking - There are two picnic shelters in good condition at Hungryland WEA. Each shelter covers one free-standing aluminum picnic table. One shelter is located just inside the Main Gate, along Canal 6 near the entrance kiosk and parking area. The other shelter is located just inside Gate 2, along Canal 3 in the parking area. There are no facilities for groups larger than 4- 6 (a single picnic table). Picnic shelters do not have grills or trash cans.

Camping - Hungryland WEA is one of the few areas in the wildlife management system that provides year-round primitive camping opportunities. Along Canal 6 there are three canal-side areas (five total campsites), each able to accommodate two tents, and one canal-side site inside Gate 2 along Canal 3. Visitors are allowed to use only tents for camping and may have campfires at the designated sites.

The designated camping areas are relatively new and are located directly along canal roads where spoil berms were removed. Native vegetation was planted near the camping sites by area staff and will provide shade for visitors in the future. Currently they are wide open, sunny sites with no privacy from the road. The surface of the sites is the same silty sand that is found on the roads, and becomes excessively soft and sticky when wet. The sites are not named or numbered, but are marked with small signs. None has picnic tables, fire rings or toilet facilities. None is ADA accessible.

Geocaching – is allowed on the area. There are currently 4 FWC-permitted geocaches located on Hungryland WEA. Approval of new geocaches and disposition of existing geocaches is at the discretion of the site manager and coordinated by FWC’s Office of Recreation Services.

Special Events/Tours – On occasion guided hikes are conducted on Hungryland WEA, an adventure race was held there in 2005, and the Martin County Del Hagin 15k Run is held annually but there are no other regularly occurring special events or tours.

Staff/Volunteers- There is currently a Biological Scientist III and a Technician assigned to Hungryland WEA. There are no volunteers at this time.

○ ***Recreation Zoning***

Research of recreational use demonstrates that visitors come to recreate on public lands with many different expectations (NPS, 1997). Providing a variety of settings allows visitors to select the type of experience they desire, simplifies management and reduces conflicts between visitors who are seeking different types of experiences. The zones delineated by the planning team are provided in Figure 4. Each zone is described below in terms of the type of experience it offers, the natural resources related to the experience and the level of management required.

Semi-Primitive Non-motorized Zone

The semi-primitive zone provides a sense of being immersed in a natural landscape with opportunities for solitude. Observation structures, boardwalks, interpretative signs and unpaved trails are the types of recreational facilities that are appropriate in this zone. A moderate level of management is provided for resource protection and safety.

The primary community types that visitors will experience in this zone on Hungryland WEA are flatwoods and freshwater marshes/wet prairies. Throughout the area, visitors will be able to see the process of natural community restoration and management, especially in the flatwoods.

Semi-Primitive Motorized Zone

The semi-primitive motorized zone provides a sense of being in a natural landscape with minimal human modification and moderate opportunities for solitude. Interpretive signs, wayfinding signs, vehicle pull-offs, unimproved parking locations and unpaved roads are the types of recreational facilities that are appropriate in this zone. Roads are passable by two-wheel drive vehicle. A moderate level of management is provided for resource protection and safety.

Developed Zone

Developed zones are areas with visitor facilities such as check stations, trailheads and wildlife viewing/picnicking sites. These generally have kiosks, associated parking and may have vault toilets. The visitor's experience in this zone is relatively social. Trails may be paved or hardened to enhance access for people with disabilities. Visitors and facilities are more intensively managed in this zone for resource protection and safety purposes. Maintenance needs are higher in this zone. The most intensive interpretation is provided in the developed zone. This is the most appropriate zone for building construction. Currently, the main entrance is the most developed visitor contact zone on Hungryland WEA. Gate 2, which allows drive-in access, is another developed zone.

Sensitive Resource Protection Zone

Sensitive resource protection zones encompass areas with fragile habitats, rare and endangered species, archaeological/historical sites and steep slopes. This zone can support little visitor impact. Only limited and strictly controlled access should be allowed for interpretation purposes.

While public access to wetlands should be managed properly so as not to disrupt water flow and degrade sensitive vegetation, no especially sensitive areas warranting limited access were identified.

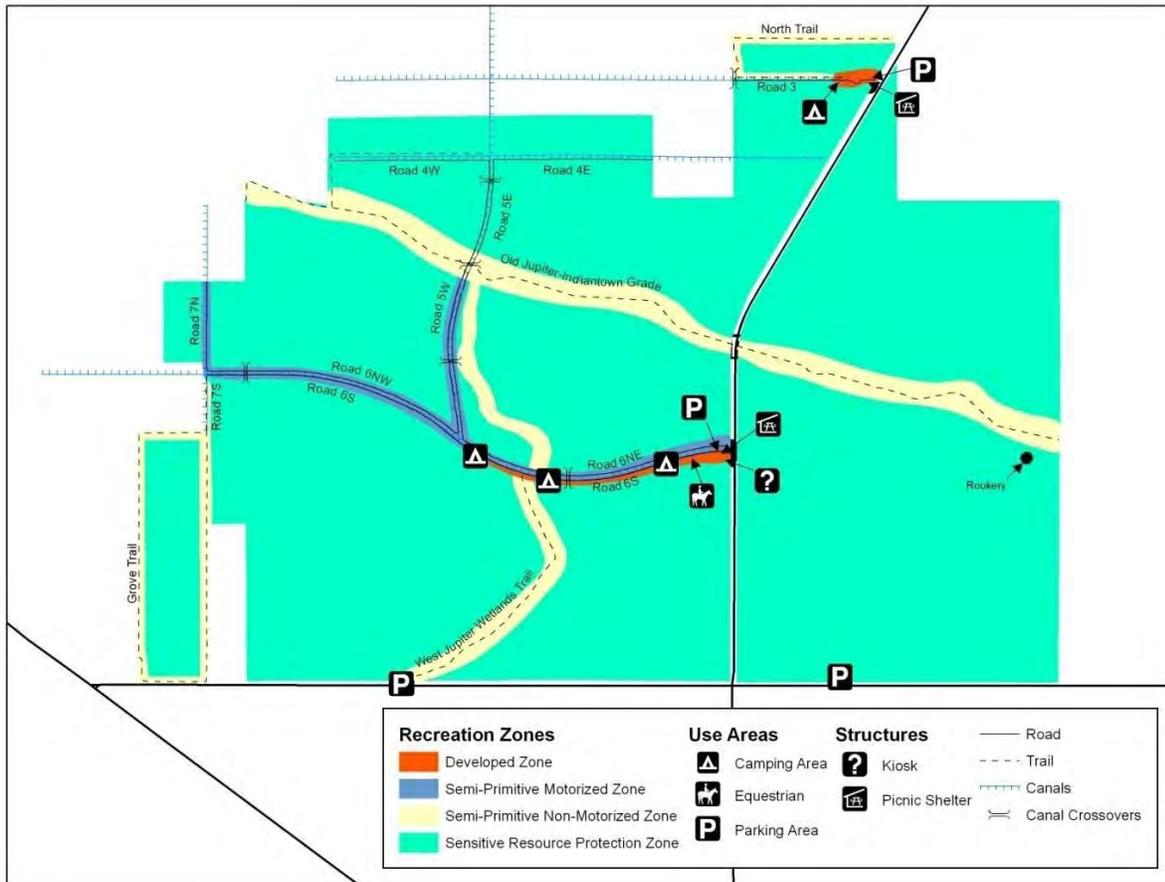


Figure 4: Recreation Zones

○ *Carrying Capacity*

In order to minimize disturbance of wildlife and other natural resources and to provide an enjoyable experience for visitors, FWC calculates a carrying capacity for its managed areas (Appendix 5) . This carrying capacity takes into consideration natural community sensitivity, known locations of sensitive natural communities, known archaeological and historic sites, existing recreation facilities and wildlife disturbance distances with a turnover rate of two times each day. FWC uses “opportunities” as a unit of measure for carrying capacity. This refers to either a single person or a small group of people utilizing a recreation opportunity on an area. Current capacity for Hungryland WEA is 274 opportunities per day and if all planned facilities are constructed, this capacity increases to 306 opportunities per day.

- ***Hungryland WEA Recreation Use Potential***

Hungryland provides an opportunity for visitors to learn about and see examples of natural communities that are rapidly being converted to other uses in south Florida. The following sections of the plan provide for comprehensive interpretation of these communities, common and listed species of interest to visitors, and FWC’s management. Recommended recreation enhancements are those that provide a range of enjoyable opportunities to view wildlife without negatively impacting resources.

V. Nature-based Recreation Recommendations

- ***Goals and Objectives***

Careful design and placement of recreational facilities can provide desirable visitor experiences and minimize impacts to the natural and cultural resources of the area. Construction and improvements will not harm wildlife, fragile habitats or historic and cultural sites. All planning and implementation should be done in accordance with guidelines in Appendix 4. A conceptual site plan for proposed recreation facilities is provided in Figure 5.

- **Goal A. Orient visitors to the area and its recreation opportunities and interpret WEA resources**

1. Work with county and state road departments to install approach signs on public roads.
2. Develop interpretive plan for site specific interpretation throughout the WEA.
3. Develop standard entrance panels to replace existing temporary map panels at kiosks.
4. Develop a recreation guide.
5. Stock regulation summaries, recreation guides and bird lists in brochure racks at entrance kiosks.

6. Maintain up-to-date information about the area on the FWC website.
- **Goal B. Improve vehicle access and parking**
 1. Upgrade Road 6S, 7S, and 5E to year-round, two-wheel drive condition.
 2. Delineate parking areas with fencing and parking stops at the main gate (including the horse trailer parking), Gate 2, Gate 3, Gate E-706, and Gate 6. Stabilize the parking surface for vehicles and horse trailers in the horse trailer parking area.
 3. Develop parking for trail users at the West Jupiter Wetlands Trailhead (north end) and at the intersection of Canal Road 5 with the Old Jupiter-Indiantown Road.
 - **Goal C. Enhance existing trails and explore new trail opportunities**
 1. Install standard wayfinding signs, including information on trail length and expected conditions (seasonally wet, etc.) at all trailheads.
 2. Install trail amenities such as benches, picnic tables, hitching posts and mounting blocks at appropriate locations along trails and at trailheads.
 3. Investigate the possibility of a three-mile loop trail using a combination of Canal Roads 5, 4, the unnamed spur and the Old Jupiter-Indiantown Grade.
 4. Assess the feasibility of constructing a boardwalk over the wetland crossing along the West Jupiter Wetlands Trail and extending the trail to the north to create a long-distance hiking opportunity.
 5. Plant additional trees along one side of the bank of the main canal (Canal Road 6) to provide shade for trail users and create a more attractive appearance.
 - **Goal D. Enhance fishing opportunities**
 1. Collaborate with Division of Freshwater Fisheries and Aquatic Habitat Resources staff to enhance fishing opportunities and access design.
 2. Construct hand launches at road crossovers where slopes are more gradual.
 3. Construct designated trails to selected borrow pits/flag ponds along Indiantown

Road. Enhance bank fishing at these sites with benches or platforms.

○ **Goal E. Enhance wildlife viewing and nature study opportunities**

1. Consider feasibility of constructing wildlife viewing structures along the Old Jupiter-Indiantown Road and near the West Jupiter Wetlands Trail north trailhead.
2. Consider developing an interpretive trail using the northern end of the West Jupiter Wetlands Trail (0.25-0.5 mi.), possibly terminating at a wildlife viewing structure.
3. Work with Audubon, Native Plant Society and other organizations as appropriate to offer tours on the WEA.

○ **Goal F. Enhance camping experiences**

1. Name camping areas and mark them with signs. Install standard fence to surround areas on three sides or mark corners with fence to visually define the camping areas.
2. Stabilize sites with vegetation or construct tent pads to correct and prevent erosion.
3. Outfit sites with picnic tables and fire rings.
4. Make one of the sites accessible to mobility impaired users.
5. Assess feasibility and desirability of installing vault toilets near camp locations.
6. Evaluate potential for installing fishing structures on canals across from campsites.

○ **Goal G. Direct and manage recreational use to minimize negative resource impacts and maximize visitor satisfaction**

1. Implement a monitoring strategy to assess resource impacts and institute corrective management actions if indicators begin to approach standards.

2. Collect and evaluate information about visitor use and satisfaction:
 - Number of visitors to the area and patterns of visitation.
 - User group conflicts.
 - Origin and length of stay.
 - Motivations for visiting and preferred experiences.
 - What they already know about the area and their understanding of the primary interpretive themes.
- **Goal H. Coordinate with local, state and federal agencies and organizations when planning and implementing nature-based recreation opportunities and enhancements**
1. Coordinate with Martin and Palm Beach counties on trail enhancements for the Old Jupiter-Indiantown Grade.
 2. Coordinate with Palm Beach County to explore the possibility of connecting the West Jupiter Wetlands Trail to the adjacent Pine Glades Natural Area.
 3. Maintain involvement with Palm Beach County's Northeast Natural Areas (NENA) project.

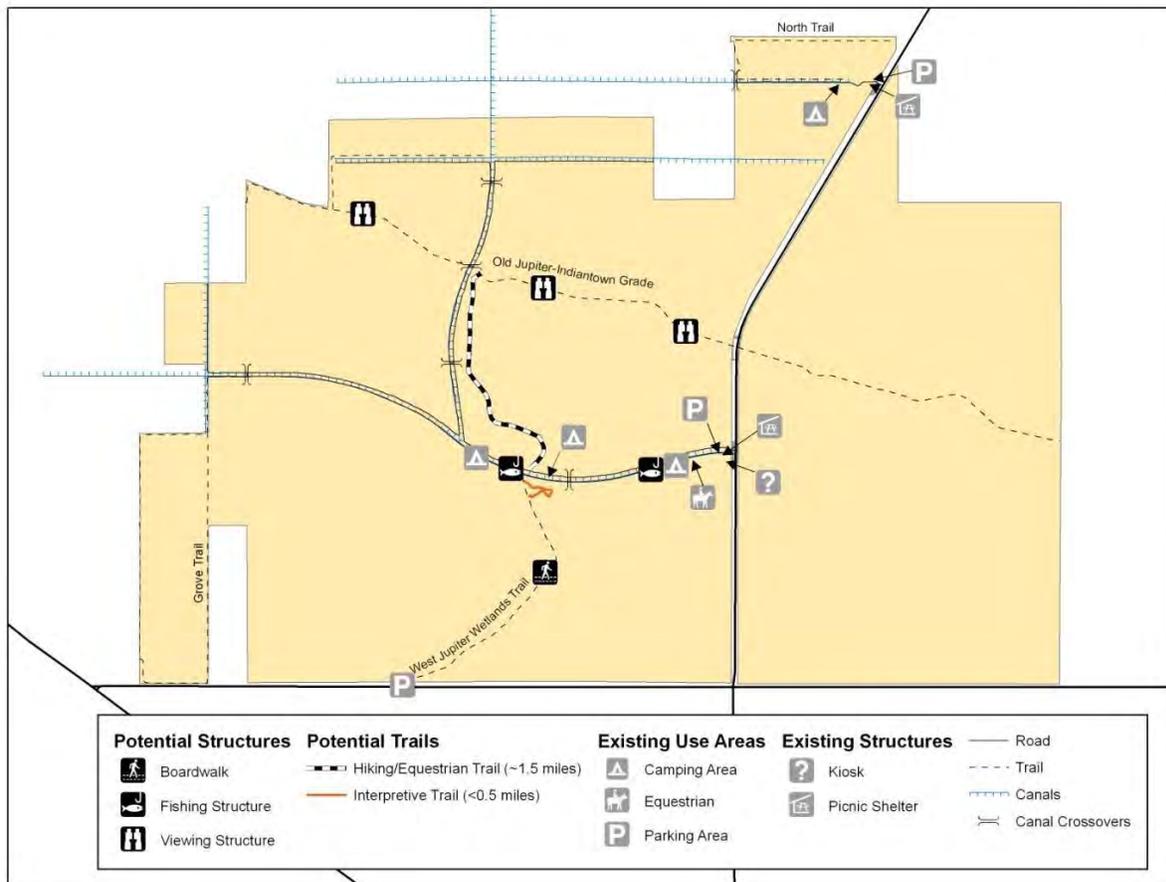


Figure 5: Proposed Recreation Facilities

○ **Challenges and Strategies**

There are several challenges facing the effective implementation and management of nature-based recreation opportunities on Hungryland WEA. Challenges and proposed strategies to address them are discussed in this section.

1. Challenge:

Hungryland has two gates with vehicular access, two popular walk-in gates and five other walk-in gates, all of which are located along the two highways that traverse the area. The variety of entrances enhances access but creates challenges for effective visitor contact and control of unlawful or inappropriate behavior.

Strategy:

Use the Main Gate as the primary point of visitor contact. Install visitor contact points and supportive interpretive materials at other popular entrances (Gate 2, Old Jupiter-

Indiantown Grade trailhead, West Jupiter Wetlands trailhead). Consider closing less popular entrances outside hunting seasons.

2. Challenge:

Much of Hungryland is quite wet, which concentrates all visitors on drier roads and trails. As the population density around Hungryland continues to expand, recreational use of the area will increase, potentially resulting in resource damage, wildlife disturbance and user conflicts.

Strategies:

- Prominently post hunt date calendars at area entrances. Use website, maps at entrances and communication with user groups to promote visitation at a range of sites within the WEA. Point out visitation characteristics for time of day, days of week and times of year.
- Maintain some non-hunting weekends during cool weather months.
- Provide opportunities for different user groups to volunteer together to maintain public access amenities or offer programs to the public.
- Ensure that user groups understand how to contact local staff to resolve concerns.
- Stabilize selected roads as well as parking areas and campsites. Install boardwalks and other structures as necessary to reduce impacts. Monitor trails and close wetland trails seasonally if indicators begin to approach standards.

3. Challenge:

Number of staff to manage public use are limited. Most public use occurs on weekends when staff are not working on the area.

Strategy:

Develop volunteer partnerships to assist with guided tours, answering questions, monitoring visitation and other public use management issues.

○ **Work Plans**

ORS will work with local staff to prepare annual work plans and budgets to implement the RMP for Hungryland WEA. ORS will be responsible for 1) developing cost estimates for recreation-related facilities; 2) coordinating design and permitting; and 3) obtaining construction bids and the work of contractors during the construction phase. This includes pre-construction meetings,

site visits at construction milestones and final reviews. Generally, the area manager and staff monitor construction sites frequently during the construction process to make sure contractor is not doing damage to the surrounding area.

ORS will design interpretive materials for the areas in consultation with management area staff. Generally, the cost of producing maps and interpretive products and maps comes out of the ORS budget.

- ***Monitoring and Management of Recreation Facilities***

ORS will monitor recreation infrastructure on the WEA biannually including trail and structure photopoints. ORS will also create an annual monitoring report at the end of each fiscal year. Any impacts encountered during each monitoring will be brought to the attention of ORS and WEA staff to determine the best course of action for correction and prevention.

Measurable indicators for monitoring key aspects of the visitor's experience and resources at Hungryland WEA are described in Appendix 4. Indicators should be monitored for each zone, and when necessary, management actions taken to ensure that visitor use and resource impacts remain within the established standards.

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Enterprise Florida. County Profiles: Palm Beach and Martin Counties. <http://www.eFlorida.com>

Florida Fish and Wildlife Conservation Commission. A Conceptual Management Plan for Hungryland Wildlife and Environmental Area (2002-2007).

Florida Statewide Comprehensive Outdoor Recreation Plan. Florida Department of Environmental Protection (2008).

Loxahatchee River Historical Society. Old Jupiter-Indiantown Road: Recreational Feasibility Study (1993).

National Park Service. The Visitor Experience and Resource Protection (VERP) Framework: A Handbook for Planners and Managers (1997).

- **Appendices**

○ **Appendix 1: Hungryland WEA Stakeholder Meeting Notes**

3 October, 2007 FWC South Region Office

○ **List of stakeholders in attendance:**

Joan Bausch – Florida Native Plant Society
Celine Becket – Florida Trail Association Tropical Trekkers Chapter Glenn
Brandon – Palm Beach County Air Boat & Halftrack club president Rosa
Durando – Audubon Society of the Everglades
Steve Hinkle – Jupiter Horse Association
Susan Kennedy – Jupiter Farms, Greenways and Trails
Dave Lithgow – United Waterfowlers of Florida Laurie
Odlum – Audubon of Martin County
Stella Rossi – Audubon Society (not invited)

○ **Invited but unable to attend:**

Joe Brannon – National Wild Turkey Federation
Mike Levitt – Florida Trail Association Loxahatchee Chapter
Tom Witt – Geocaching
Bishop Wright, Jr. – Florida Southern Conservation Association

○ **FWC staff in attendance:**

Jerrie Lindsey, Director, Office of Recreation Services
Lora Silvanima, Section Leader, Planning and Design
Tom M. Matthews, Recreation Planner
Beth Morford, Hungryland WEA Manager

○ **Meeting Agenda:**

Introduction and Overview of Recreation Planning – Jerrie Lindsey
Overview and History of Hungryland WEA – Beth Morford
Overview of Proposed Recreation Improvements – Tom M. Matthews
Stakeholder Input
Review of Stakeholder Suggestions – Jerrie Lindsey

○ **Responses to stakeholder comments and suggestions:**

- 1) The following suggestions can be implemented immediately or in the near future and will be incorporated in the Recreation Master Plan where appropriate:

- a) Create buffer areas around populations of listed plant species.
- Locations of listed animal and plant species are considered when recreation facilities and infrastructure are planned.

- b) Maintain the West Jupiter Wetlands Trail as a multiple use trail; maintain all trails as multi-use.

All trails currently designated as multi-use will remain multi-use. Accommodations will have to be made for passage of horses around the existing gates.

- c) Create a north-south trail connection between Canal Road 6 and the Old Jupiter-Indiantown Grade.
- The existing grade between these two locations will be evaluated for use as a trail.
- d) Provide additional benches along the trails.
- Benches or other structures will be constructed at appropriate locations on the trails.
- e) Limit additional structures.
- Each potential location for a structure will be evaluated to ensure maximum utility and accessibility of the structure while minimizing negative environmental and aesthetic impacts.
- f) Keep trails at or below grade.
- New trails will be constructed at existing grade and trailhead signage will inform visitors of trail characteristics and conditions.
- g) Establish a non-motorized poling/paddling trail off of SR706.
- FWC will evaluate the potential for this trail.
- h) Provide more access to hunters.
- All current access improvements will benefit all users of the WEA. Additional access points are not being considered at this time.

2) The following will not be implemented initially but will be evaluated for feasibility as the area develops:

- a) Create loop trails throughout the property, especially east of CR711.
- Loop trails using existing roads and trails will be designated on maps and in interpretive materials. Additional trails will be considered as use level warrants and

conditions allow. Currently public use is concentrated west of CR711 and the area east of CR711 is maintained as a primitive zone.

b) Establish single-use trails.

- Trail conditions, use levels and potential for conflict will be monitored and trail designations will be revisited if necessary. We will use signage and other materials to inform users of proper multi-use trail etiquette.

c) Provide regional equestrian trail connections.

- As regional trail opportunities develop we will evaluate the potential for FWC to play a role in these connections.

d) Provide a plant list for the WEA.

- FWC does not currently have the resources to independently produce a plant list. We would be willing to establish a partnership with outside groups and individuals to develop and produce this list.

e) Place limits on numbers of equestrian users; establish an equestrian reservation system.

- Use levels and impacts of all user groups will be monitored and access controls will be considered if appropriate.

f) Provide canal pullovers and launches for paddlecraft.

- We will assess potential locations for pullovers and launches and install them where practical.

g) Establish a trail along the "Old Wire Trail".

- Use levels will be monitored and additional trails will be considered if there is sufficient demand and need for additional trail capacity. The Old Wire Trail is very close to the West Jupiter Wetlands Trail and traverses the same types of natural communities.

h) Provide additional parking along the canals.

- There is currently very little space available along the canal roads. Additional parking will be considered in appropriate locations where space is available.

3) The following are not feasible to implement on the WEA for the reasons noted:

a) Provide an additional access point from SR706 at the SE corner of the WEA.

- There are currently 4 access points located on SR706 and additional access points would further complicate access control on the WEA. Additionally, the SE corner of the property is very wet which would limit the utility of an additional access point.

4) The following suggestions would require a change in the administrative rules that govern allowed uses on Jones/Hungryland WEA:

- a) Changes to Spring Turkey Season¹
- b) Establish a 3-point rule for deer²
- c) No Hunting Buffer Zones near WEA boundaries
- d) No Hunting Zones around rookeries
- e) Access to all roads and trails at all times
- f) Allow swamp buggies
- g) Allow fox hunts

5) The following suggestions are outside of the scope of our Recreation Master Plan and cannot be addressed through this process:

- a) Accelerate purchase of Nine Gems property.³

¹ *Spring Turkey Season established 2010-2011.*

² *3-point rule in effect as of 2009-2010..*

³ *SFWMD and Martin Co. have purchased the Nine Gems and Culpepper Properties. An establishment order to add 4,235 acres to Hungryland is pending.*

○ **Appendix 2: Work Plan for Recreation Enhancements**

Based on the prioritization of the goals and objectives listed above, the following list of projects and tasks has been ordered in terms of short and long term completion timeframes.

1. Tasks 2010-11

- Plan and write interpretive information to be posted at visitor contact points, at trails and facilities.
- Design trail connecting the West Jupiter Wetlands Trail and the Old Jupiter-Indiantown Road.
 - Design interpretive trail at north end of West Jupiter Wetlands Trail.
 - Install wayfinding signs along trails, internal roads.
 - Permit signs with county and state of Florida on adjacent highways.
 - Determine locations for wildlife viewing structures and/or fishing docks, identify sites to improve for mobility impaired visitors.
 - Develop site plans.
 - Plan and implement enhancements to the Main Gate entrance.
 - Determine the feasibility of constructing a footbridge over the wetland crossing along the West Jupiter Wetlands Trail.
 - Evaluate potential for paddling/poling trail.

2. Tasks 2011-12

- Produce interpretive information to be posted at visitor contact points.
- Design and permit feasible wildlife viewing/fishing structures.
- Construct wildlife viewing structures/fishing enhancements.
- Produce interpretive information that will be posted on trails and facilities.
- Design and permit footbridge along West Jupiter Wetlands Trail, if feasible.
- Improve existing campsites with surfacing and amenities.
- Construct and mark new trails.

3. Long Term Completion and Ongoing Tasks

- Replace existing kiosks with standard kiosks as needed.
- Install standard wayfinding signs as existing signage needs to be replaced. Implement
- a monitoring strategy to assess resource impacts and institute corrective management actions if indicators begin to approach standards.
- Collect and evaluate information about visitor use and satisfaction.
- Coordinate with recreational user groups and surrounding recreation planning efforts.

○ **Appendix 3: Recreation and Wildlife Viewing Facilities Design Guidelines**

● **Entrances**

Should welcome visitors to the area, identify the Commission, describe the range of potential experiences on the area, describe the wildlife viewing experiences by season, time of day or wildlife event.

○ ● **Viewing structures**

Structures should include wildlife identification or other interpretive information. The structure should be surrounded by and focused on wildlife and habitat, rather than being the focus itself. For towers, each level should focus visitor attention to a different habitat or feature.

● **Trails**

Trails should be described at the trailhead with length or time required. If the focus is wildlife viewing, include best seasons. Interpretive panels or brochure stops should be well-spaced and focused by season.

General considerations in developing facilities:

- Locate viewing facilities on previously disturbed properties wherever possible.
- Preserve a sense of solitude and limit impact on natural resources by concentrating recreation uses in small “developed” zones and along existing road/trail corridors. Site facilities and design trails to minimize user conflicts.
- Avoid sensitive areas such as wetlands and route trails to avoid fragmenting habitat.
- Consider physical characteristics and the historical and natural character of the location.
- Adapt parking lots, buildings and other physical developments to existing topography.
- Retain on-site surface water run-off generated by development.
- Use porous pavements where surface hardening is required.
- Consider sewage disposal needs.
- Use native plants representative of the area for all landscaping.
- Design and build trails and observation structures to avoid disturbing wildlife and to minimize negative impacts such as erosion.
- Use elevated boardwalks in wet areas and swamps and walkovers to protect other sensitive areas.
 - Incorporate wildlife viewing ethics into all interpretive materials.
 - Incorporate interpretive themes into all brochures, trail guides and other materials produced to support recreation opportunities.
 - Install interpretive signs and panels as appropriate at all recreation facilities.
 - Route trails to interpret restoration and wildlife management activities.

- Insure interpretation of highly desired species viewable on the area.

Universal Access

Nature-based recreation facilities and programs must be developed and implemented in compliance with the Americans with Disabilities Act. All facilities in developed zones should be universally accessible. Recreation facilities in semi-primitive or primitive zones should be planned to be accessible to the degree possible except where:

- compliance will cause harm to cultural, historic or religious sites or significant natural features or characteristics.
- compliance will substantially alter the nature of the setting or purpose of the facility (or a portion of the facility).
- compliance would require construction methods or materials prohibited by federal, state or local regulations or statutes, or compliance would not be feasible due to terrain or prevailing construction practices.

○ **Appendix 4: Carrying Capacity Methodology**

○ **FWC Recreation Carrying Capacity**

Carrying capacities for recreational users on FWC lands are developed using a methodology employing existing spatial data and models, recommended guidelines for spatial and temporal carrying capacity, recommended guidelines for minimizing wildlife disturbance by outdoor recreation, and site-specific characteristics. The intent of this methodology is to provide a realistic carrying capacity which is based on the best science and data available with a focus on minimizing wildlife and habitat disturbance and providing the type of recreation our visitors desire and FWC's managed areas can support. This methodology also provides a means of monitoring visitor impacts and allows for flexibility in responding to these impacts and adjusting the carrying capacity as necessary. The carrying capacities generated through this process are included in the overall area Management Plan and used as a tool to help plan and develop recreation opportunities.

○ **Sensitivity Analysis**

An initial analysis of site sensitivity to recreation impacts is conducted using: Integrated Wildlife Habitat Ranking System model results for the site Natural community values based on threat rankings developed for the Florida Wildlife Legacy Initiative using the rankings for Roads, Incompatible Recreation Activities, and Conversion to Recreation Areas

- Natural community values based on the sensitivity guidelines published by the Florida Park Service

Wetlands

Slope Soils

Known point locations of species-of-interest Known locations of sensitive resources

Division of Historic Resources Master Site File sites

Density of existing roads, trails and facilities Other datasets as available and appropriate

These data layers are converted to grids as necessary and normalized to a scale of 1-100. Then a weighted sum is calculated for all data resulting in a "Sensitivity Index" for the area with higher values being more sensitive to disturbance from recreation.

○ **Recreation Zoning**

Once the results of the Site Sensitivity model are obtained, a Recreation Zone Map is developed incorporating these results and any statutory or rule constraints for recreation

activities. These Recreation Zone Maps will show the different types of recreation experiences appropriate for each zone of the area. This guides potential trail lengths, trail types, types of facilities and other parameters related to recreation infrastructure.

○ **Carrying Capacity Development**

For linear recreation facilities (i.e. trails), a physical carrying capacity is developed based on trail length using a 100-meter buffer on either side of the trails. This buffer distance is consistent with the estimated area of wildlife disturbance along the trail. In addition, an additional 100-meter buffer is used between potential trail users to provide an undisturbed 100-meter area between users. This results in an estimate of 1 user or group every 300 meters along the trail. This estimate is generated using GIS and is adjusted to minimize disturbance “hot spots” such as overlapping disturbance buffers. Point facilities (i.e. observation structures) have a single 100-meter radius buffer. The temporal component of carrying capacity is developed based on the Florida Park Service turnover estimate of two per day on primitive hiking trails or four per day on shorter, improved nature trails. In addition, existing and planned parking and other trailhead limitations are factored into the estimate. If the site already has a Recreation Master Plan (RMP) developed, these estimates will be based on existing and planned facilities as detailed in the RMP. If the area does not have an RMP these estimates are based on potential trail corridors and potential point facility sites derived from the Recreation Zoning and site visits by ORS and area staff. Another product of this estimate is a “Wildlife Habitat Disturbance Index” based on the ratio of potentially impacted habitat to impact-free habitat expressed as a percentage of the area potentially impacted by recreation.

Camping Facility Carrying Capacities

- Primitive tent camping with no facilities or limited facilities (fire ring, picnic table): 4 people/site with a turnover of once per day.
- Standard camping site (fire ring, picnic table, improved or paved pad, toilet facilities): 8 people/site with a turnover of once per day.
- Generally group camping will be 30 people per 5 acres of camping area.

Picnic Areas

- 8 tables/acre and 4 people/table with a turnover twice a day.

Structures

- Structures dependent on trails for access will be included in the calculated trail capacity.
- Structures that can be accessed independently of trails will have a carrying capacity determined on a case-by-case basis based on the type and size of the structure.

Shoreline Fishing Areas

- Shoreline fishing areas will have a capacity of 1 angler per 25 linear feet.

Seasonal Hunting

- For those areas with seasonal hunting use carrying capacities range from one hunter per 75 acres to one hunter per 150 acres. The exact density chosen depends on a variety of factors with game management most paramount, but is also influenced by the layout of the area and the chosen hunting framework. Areas with dove fields will have a dove field capacity of one hunter to 1.75 acres of dove fields. This capacity is in addition to the calculated capacity for non-hunting recreation uses.

As needed, capacities for other uses not listed above will use the carrying capacity guidelines published by the Florida Park Service as a baseline.

○ **Recreation Impact Monitoring**

To provide a quantitative measure of recreation impacts, limits will be established as “No impact ranks greater than 1”, as observed during each biannual monitoring conducted by ORS field staff. If any ranking values are greater than 1, the site will be assessed to determine the source of the impact. If impacts are the result of recreation activities (as opposed to facility design or other sources), the carrying capacity will be revisited and corrective measures will be developed by ORS and area staff.

- **Appendix 5: Management and Monitoring**

- **Recreation Facility Monitoring Protocol**

Florida Fish and Wildlife Conservation Commission Office of Recreation Services

- **Introduction**

In order to better plan and manage recreation opportunities on lands managed by the Florida Fish and Wildlife Conservation Commission (FWC), FWC's Office of Recreation Services has developed a monitoring program for recreation-related facilities and infrastructure. Using both qualitative and semi-quantitative methods this program will encompass trails, signs, wildlife viewing structures and other facilities. Data obtained through this program will help FWC better plan, construct and maintain facilities to provide recreation experiences that are meaningful, enjoyable and safe.

Materials Digital

camera Tripod

Kaidan panoramic photo mount

VRWorx, or other software for creating panoramic photos

Monitoring forms

Tape measure Compass

GPS (loaded with waypoints for monitoring points) Hand tools for checking structure hardware

- **Monitoring Procedures**

Photopoints

Photopoints should be recorded with GPS, which can also be used to navigate back to the photopoint location on future monitoring visits. A description of the location should be recorded to ensure maximum accuracy in relocating the photopoint.

Trails

Trails are monitored with a panoramic photopoint at the trailhead and every mile for trails over two miles and every ½ mile for trails two miles and less. Additional photopoints may be needed for problem areas encountered on the trail. Photopoints are centered in the trail tread.

Assemble the panoramic photo gear and set the tripod over the photopoint, making sure the panoramic head is level. Standard photopoint height is 60" to the center of the camera lens while mounted on the panoramic mount. This may be modified for some photopoints depending on surrounding vegetation or other considerations, but the new height should be

recorded and used each time that photopoint is taken. The easiest way to set the height is to assemble the tripod, panoramic mount, and camera on level ground, adjust the legs to their full length and adjust the center column to achieve the proper lens height. The center column can be marked with a permanent marker, tape, or scored with a small file or engraver and each mark should be labeled with the height and camera model. This will have to be done for each different camera that will be used for photopoints, although it is preferable that the same camera be used for all photopoints.

Cameras should be set to full wide zoom, landscape mode if available, with flash off. All photopoints begin with the detent closest to due north and continue in a clockwise direction. A log should be kept to record the photo numbers and their corresponding photopoint. After downloading the images they should be processed into a flat panorama (a digital image composed of all of the photos for a particular photopoint). These panoramas, along with the component images, should be kept in a central location organized by WMA, photopoint number and photopoint date.

Use areas

Use areas have 2 photopoints. One is a panoramic photo taken at the center of the use area which follows the procedure for trail photopoints. The other is a single photo taken from the perimeter of the area. The compass bearing of the photo should be recorded and used for all subsequent photos taken at that photopoint.

Structures

Structures have a single photopoint. This is a single photo and the compass bearing of the photo should be recorded and used for all subsequent photos taken at that photopoint. If desired, a panoramic photo can be taken to represent the view from the structure (such as the top of a tower).

○ **Physical inspections**

- Check for presence or absence (smaller amenities such as fire rings and benches)
- Check for proper location (smaller amenities such as fire rings and benches)
- Inspect for damage (signs and structures)
- Check hardware and tighten or replace if necessary (signs and structures)

Trails should be traversed in their entirety, either on foot for shorter trails or by vehicle for longer trails. Trouble spots (erosion, trail braiding, shortcuts, litter, excess vegetation encroachment, etc.) should be recorded by GPS and noted on the monitoring form.

○ **Monitoring Forms and Record Keeping**

Monitoring forms are completed in the field. This can be done electronically using the Recon field computer or manually. If done manually, they should be transferred to an electronic

version by filling out the form on computer. Completed electronic forms are then placed in the appropriate location on the Project Management Site for that WMA along with any relevant GPS data (converted to Shapefile), photographs, photopoints and other notes. Any issues that need attention should be entered into the “Issues” section of the Project Management Site for that WMA, which will generate a notification to the project manager (in most cases the Recreation Planner for that area) and Section Coordinator. The project manager is responsible for ensuring the issue is brought to the attention of the appropriate personnel outside of ORS, if necessary, and ensuring that once resolved, the issue entry is closed out.

○ **Trail Monitoring Form**

Observer: _____ **Date:** _____

Site: _____

LITTER IMPACTS:

- 1 = None
- 2 = Very Little (small, isolated pieces of litter)
- 3 = Some (frequent small pieces or isolated large pieces of litter)
- 4 = Extensive (small areas used for trash dumping or multiple areas of high litter concentration)
- 5 = Very Extensive (large areas used for trash dumping)

Problem area locations/comments:

STRUCTURE DAMAGE (signs, boardwalks, bridges, benches, blinds, towers, platforms, etc.):

- 1 = None
 - 2 = Very Little (dirty, crooked, loose bolts, etc.)
 - 3 = Some (minor wood repair, graffiti)
 - 4 = Extensive (hazardous damage)
 - 5 = Very Extensive (structure is ruined or missing)
- *FILL OUT A *STRUCTURE DAMAGE FORM* FOR ANY STRUCTURE THAT RANKS "2" OR HIGHER.*

List of trail-related structures with rankings:

EROSION PROBLEMS

- 1 = Very Little
- 2 = Some: Tree roots or standing water evident
- 3 = Moderate: Exposed roots/rocks but little evidence of widening, some patches of exposed soil.
- 4 = Extensive: Many tree roots exposed, many spots of exposed soil, ruts and/or trail widening.

Problem area locations/comments:

CORRIDOR CONDITION

- 1 = Within standards (minimal vegetation encroachment)
- 2 = Exceeds standards (trail needs some mowing/lopping/chain sawing, blowdowns, obstructions)
- 3 = Unacceptable (trail is generally overgrown and difficult to find)

If there were problem areas, please describe condition and exact location:

PHOTOPOINT INFORMATION

All photopoints should be taken with a lens height of 60", the flash set to "off", and no zoom. All panoramic photopoints start with a photo taken towards north, and then continue in a clockwise direction.

New photopoints taken (photopoint type, coordinates, location description, lens azimuth, image numbers)

Existing photopoints taken (photopoint number, image numbers)

○ **Use Area Monitoring Form**

Observer: _____ Date: _____

Site: _____

LITTER IMPACTS:

- 1 = None
- 2 = Very Little (small, isolated pieces of litter)
- 3 = Some (frequent small pieces or isolated large pieces of litter)
- 4 = Extensive (small areas used for trash dumping or multiple areas of high litter concentration)
- 5 = Very Extensive (large areas used for trash dumping)

Comments:

STRUCTURE DAMAGE (shelters, picnic tables, kiosks, trash cans, signs, grills, benches, etc.):

- 1 = None
 - 2 = Very Little (dirty, crooked, loose bolts, etc.)
 - 3 = Some (minor wood repair, graffiti)
 - 4 = Extensive (hazardous damage)
 - 5 = Very Extensive (structure is ruined)
- *FILL OUT A STRUCTURE DAMAGE FORM FOR ANY STRUCTURE THAT RANKS "2" OR HIGHER.*

List of use-area structures with rankings:

EROSION PROBLEMS

- 1 = Very little
- 2 = Some: tree roots or standing water evident
- 3 = Moderate: exposed roots/rocks but little evidence of widening, some patches of exposed soil.
- 4 = Extensive: many tree roots exposed, many spots of exposed soil, ruts and/or trail widening.

Problem area locations/Comments:

PHOTOPOINT INFORMATION

All photopoints should be taken with a lens height of 60", the flash set to "off", and no zoom. All panoramic photopoints start with a photo taken towards north, and then continue in a clockwise direction.

New photopoints taken (photopoint type, coordinates, location description, lens azimuth, image numbers)

Existing photopoints taken (photopoint Number, image numbers)

○ **Structure Damage Reporting Form**

Observer: _____ Date: _____

Site: _____

Structure name/type: _____

Structure location (written description, coordinates): _____

Please rate and explain the extent of the damage in the following areas, where...

- 1 = None
- 2 = Very Little (dirty, crooked, loose bolts, etc.)
- 3 = Some (minor wood repair, graffiti)
- 4 = Extensive (hazardous damage)
- 5 = Very Extensive (structure is ruined)

TAKE CLOSE-UP PHOTOS OF ALL REPORTED DAMAGE

Cleanliness (graffiti, mildew, debris build-up, odor, etc.)

Structural Integrity (crooked, wobbly, or leaning)

Wood condition (rotten, vandalized)

Hardware (rusted, loose, missing)

Other (please describe)

WMA Visit Checklist

- Trail maintenance needs
- Sign maintenance needs
- Structure maintenance needs
- Day-use area condition/maintenance needs
- Sufficient ORS publications in field office
- Brochure boxes adequately stocked
- Hunting calendar posted and up-to-date
- Users encountered on area (number, activity, address for future surveys)
- Geocaches inspected
- Manager concerns
- New ideas for area enhancement

13.12 Management Procedures Guidelines - Management of Archaeological and Historical Resources

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. 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

13.13 Operation Plan Fiscal Year 2014 – 2015

Land Management Uniform Accounting Council Categories and Subcategories

1. Resource Management

- a. Exotic Species Control. -- Invasive exotic plant and animal removal activities and costs for inventorying, planning, preparing, executing, evaluating, monitoring and reporting. Also includes equipment, chemicals, protective clothing and supplies. Includes nuisance native feral animal and plant control.
- b. Prescribed Burning. -- Prescribed burning activities and costs for assessing, planning, preparing, executing, evaluating and reporting. Also includes equipment, protective clothing and supplies.
- c. Cultural Resource Management. -- Management activities and costs for assessing, planning, executing, evaluating and reporting, and for all maintenance, restoration or monitoring activities for prehistoric and historic sites, features and collection objects.
- d. Timber Management. -- Activities and costs related to the establishment of a stand of potentially merchantable timber, harvest of merchantable timber, and cultural treatments intended primarily to improve the growth and overall health of a stand of merchantable timber. Also includes activities and costs related to the cutting of merchantable timber in natural community and habitat restoration projects.
- e. Hydrological Management. -- Hydrological management and restoration activities and costs for assessing, monitoring, planning, preparing, executing, evaluating and reporting. Includes water level management, repair, removal or back-filling of ditches, canals, berms and dams. Also includes water quality and water quantity monitoring.
- f. Other. -- All other resource management activities and costs not captured in other specific subcategories. Examples include natural community and habitat restoration through other techniques; plant, animal or biological community survey, monitoring and research; listed species management; technical assistance; and evaluating and commenting on resource impacts to parks.

2. Administration

- a. Central Office/Headquarters. -- Headquarters units conducting general administration of land under management by the agency. Includes upper management direction, administration and fiscal, budget, personnel, purchasing and record keeping required for operations oversight and specific programs. Includes all duties unless they specifically relate to other categories or subcategories.
- b. Districts/Regions. -- Sub-state administrative districts or regions conducting general administration of the properties under their management. Includes all

duties, unless they specifically relate to other categories or subcategories. General operating costs of district or region administrative facilities are included.

- c. Units/Projects. -- Conducting general administration duties at a specific management unit (state park, state forest, state wildlife management area, etc.). Includes supervisory duties, fiscal and record keeping duties, and any other duties that do not specifically relate to other categories or subcategories. General operating costs for the property, such as utilities, telephones and garbage collection, are included.

3. Support

- a. Land Management Planning. -- Developing land management plans required by Sec. 253.034, F.S. Includes researching and compiling plan information, materials and maps, coordinating planning activities, conducting review activities (internal reviews, public meetings, advisory group meetings, ARC, etc.), and promulgating draft plans and final plans.
- b. Land Management Reviews. -- Planning, organizing and conducting land management reviews by teams created under Sec. 259.036, F.S. Includes preparing and responding to land management review reports. Also includes similar work conducted as part of internal agency land management reviews.
- c. Training/Staff Development. -- Staff training and development costs incurred in any facet of the agency's land management activities.
- d. Vehicle Purchase. -- Acquisition of any vehicle purchased primarily for land management purposes or to support any category of land management activity by the agency.
- e. Vehicle Operation and Maintenance. -- Costs of operating and upkeep of any vehicle used by the agency to support any category of land management activity.
- f. Other. -- Any other support activity or cost not captured by other categories or subcategories.

4. Capital Improvements

- a. New Facility Construction. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all new facility design and construction activities. Includes new roads, parking and all other infrastructure.
- b. Facility Maintenance. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all repairs or renovations to existing facilities, roads or other infrastructure. Also includes ADA accessibility improvements and renovations.

5. Visitor Services/Recreation

- a. Information/Education Programs. -- Interpretive, environmental education and marketing programs that explain or promote the agency's mission or instill in visitors an understanding and appreciation for Florida's natural and cultural resources and their proper use and care. Includes signs, brochures, maps and other public information materials that are produced or disseminated.
- b. Operations. -- Includes the non-administrative and non-support costs involved in providing public access to lands. Includes all actions required to manage visitor activities in a way to ensure safe and enjoyable use by the public. Includes routine maintenance, cleaning and other work required to provide safe and efficient utilization of facilities and resources that support visitor use and recreation. Includes protection activities required by staff to safeguard natural and cultural resources, facilities, material, staff and visitors.

6. Law Enforcement

The provision of all activities for enforcing criminal, conservation and boating laws on land, freshwater and marine environments and all costs associated with these services. Includes the provision of uniform patrol. Includes overt and covert criminal investigations. Includes regulation of commercial wildlife trade. Also includes the direction and administration of all law enforcement programs and activities, and all associated costs.

Land Management Uniform Accounting Council Categories and FWC Activity Codes

Resource Management

Exotic Species Control

- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)

Prescribed Burning

- 205 Prescribed burning
- 206 Prescribed burning C growing season (April 1 to September 30)
- 207 Prescribed burning C dormant season (October 1 to March 31)
- 208 Firebreaks

Cultural Resource Management

- 201 Cultural resource management

Timber Management

- 202 Timber management

Hydrological Management

- 215 Hydrology management
- 216 Dams, dikes, levees
- 217 Canals
- 218 Water level management
- 194 Lake restoration

Other

- 185 GIS

186	Biometrics
200	RESOURCE MANAGEMENT
203	Tree and shrub planting
213	Wildlife management
214	Listed Species management
219	Upland restoration
282	Herbaceous seeding
283	Clearings
289	Native vegetation management (mechanical)
290	Native vegetation management (chemical)
221	Animal surveys
228	Inland aerial surveys
235	Vegetation and plant surveys
250	MONITORING AND ASSESSMENTS
252	Biomedical monitoring
253	Ecological monitoring
256	Habitat monitoring analysis
263	Nest box monitoring
264	Population demographics
295	Biological data collection, analysis, and reporting
275	Permits and authorizations
276	Commission rule development and review
277	Relocation
278	CITES tags
281	Other resource management
284	Feeding/watering
285	Nest structures
286	Population control
287	Stocking enhancements/population augmentation
288	Nuisance animal complaints
293	Mortality investigations
294	Program coordination and implementation C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
296	Habitat protection technical assistance
750	URTD assessment
789	Site Preparation – GCR
790	Irrigation – GCR
791	Seed Collection – Hand
792	Seed Collection – Mechanical
793	Herbicide Maintenance Treatment

Administration

Central Office/Headquarters

100	ADMINISTRATION C administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
104	Budget/purchasing/accounting

Support

Land Management Planning

- 103 Meetings C includes workshops, conferences, staff, and other meetings.
- 204 Resource planning

Land Management Reviews

- 209 Land Management Reviews
- 101 Project inspection C field inspections of projects.

Training/Staff Development

150 PERSONNEL MANAGEMENT C recruitment, hiring, training, counseling, and supervising.

Vehicle Purchase

- 128 New Vehicle and Equipment Purchase

Vehicle Operation and Maintenance

- 923 FEM C vehicles/equipment

Other

- 140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
- 141 Grant applications
- 180 SYSTEMS ADMINISTRATION AND MANAGEMENT
- 182 Data management
- 184 Metadata development and management
- 187 IT
- 188 Web development
- 721 Geospatial analysis techniques
- 191 Stamp design coordination
- 226 Human dimensions surveys

Capitol Improvements

New Facility Construction

- 910 New facility construction C buildings/structures
- 912 New construction C roads/bridges
- 913 New construction C trails
- 914 New construction C fences

Facility Maintenance

- 920 Facility and equipment maintenance (FEM) C buildings/structures
- 921 FEM C utilities
- 922 FEM C custodial functions
- 925 FEM C boating access
- 926 FEM C roads/bridges
- 927 FEM C trails
- 928 FEM C fences

Visitor Services/Recreation

Information/Education Programs

- 145 Technical bulletin

Operations

- 311 Boundary signs
- 312 Informational signs
- 320 Outreach and education C attending or developing educational or informational materials or events for the public

- 327 Becoming an Outdoor Woman C enhancement
- 331 Wings Over Florida
- 339 Range safety operations
- 341 Public use administration (hunting)
- 342 Public use administration (non-hunting)
- 350 Customer service support C disseminating written or verbal information or assistance to the public
- 700 STUDIES
- 740 EVALUATIONS AND ASSESSMENTS

Law Enforcement

FWC Activity Code Numeric Listing

- 100 ADMINISTRATION C administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
- 101 Project inspection C field inspections of projects.
- 103 Meetings C includes workshops, conferences, staff, and other meetings.
- 104 Budget/purchasing/accounting
- 128 New Vehicle and Equipment Purchase
- 140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
- 141 Grant applications
- 145 Technical bulletin
- 150 PERSONNEL MANAGEMENT C recruitment, hiring, training, counseling, and supervising.
- 180 SYSTEMS ADMINISTRATION AND MANAGEMENT
- 182 Data management
- 184 Metadata development and management
- 185 GIS
- 186 Biometrics
- 187 IT
- 188 Web development
- 191 Stamp design coordination
- 194 Lake restoration
- 200 RESOURCE MANAGEMENT
- 201 Cultural resource management
- 202 Timber management
- 203 Tree and shrub planting
- 204 Resource planning
- 205 Prescribed burning
- 206 Prescribed burning C growing season (April 1 to September 30)
- 207 Prescribed burning C dormant season (October 1 to March 31)
- 208 Firebreaks
- 209 Land Management Reviews
- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)
- 213 Wildlife management
- 214 Listed Species management

215	Hydrology management
216	Dams, dikes, levees
217	Canals
218	Water level management
219	Upland restoration
221	Animal surveys
226	Human dimensions surveys
228	Inland aerial surveys
235	Vegetation and plant surveys
250	MONITORING AND ASSESSMENTS
252	Biomedical monitoring
253	Ecological monitoring
256	Habitat monitoring analysis
263	Nest box monitoring
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275	Permits and authorizations
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285	Nest structures
286	Population control
287	Stocking enhancements/population augmentation
288	Nuisance animal complaints
289	Native vegetation management (mechanical)
290	Native vegetation management (chemical)
293	Mortality investigations
294	Program coordination and implementation C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
295	Biological data collection, analysis, and reporting
296	Habitat protection technical assistance
311	Boundary signs
312	Informational signs
320	Outreach and education C attending or developing educational or informational materials or events for the public
327	Becoming an Outdoor Woman C enhancement
331	Wings Over Florida
339	Range safety operations
341	Public use administration (hunting)
342	Public use administration (non-hunting)
350	Customer service support C disseminating written or verbal information or assistance to the public
700	STUDIES
721	Geospatial analysis techniques 740 EVALUATIONS AND ASSESSMENTS
750	URTD assessment

- 789 Site Preparation – GCR
- 790 Irrigation – GCR
- 791 Seed Collection – Hand
- 792 Seed Collection – Mechanical
- 793 Herbicide Maintenance Treatment
- 910 New facility construction C buildings/structures
- 912 New construction C roads/bridges
- 913 New construction C trails
- 914 New construction C fences
- 920 Facility and equipment maintenance (FEM) C buildings/structures
- 921 FEM C utilities
- 922 FEM C custodial functions
- 923 FEM C vehicles/equipment
- 925 FEM C boating access
- 926 FEM C roads/bridges
- 927 FEM C trails
- 928 FEM C fences

JCMJHWEA Fiscal Year 2014 Projects: 7307

Activity Title	Man Days	Salary	FuelCost	Other	Total	Unit s
100 Administration	20.00	\$4,231.80	\$365.00	\$2,000.00	\$6,596.80	0
103 Meetings	20.00	\$4,231.80	\$365.00	\$2,500.00	\$7,096.80	0
104 Budget/purchasing/accounting	5.00	\$1,057.95	\$91.25	\$0.00	\$1,149.20	0
150 Personnel management	20.00	\$4,231.80	\$365.00	\$0.00	\$4,596.80	3
182 Data management	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
200 Resource Management	40.00	\$8,463.60	\$730.00	\$12,000.00	\$21,193.60	0
203 Tree and shrub planting	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
204 Resource planning	25.00	\$5,289.75	\$456.25	\$0.00	\$5,746.00	0
206 Prescribed burning - growing season	25.00	\$5,289.75	\$456.25	\$3,300.00	\$9,046.00	3300
207 Prescribed burning - dormant season	15.00	\$3,173.85	\$273.75	\$1,700.00	\$5,147.60	1000
208 Firebreaks	15.00	\$3,173.85	\$273.75	\$0.00	\$3,447.60	36
212 Exotic plant control (chemical)	25.00	\$5,289.75	\$456.25	\$250,000.00	\$255,746.00	4880
216 Dams, dikes, levees	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
218 Water level management	10.00	\$2,115.90	\$182.50	\$0.00	\$2,298.40	0
221 Animal surveys	50.00	\$10,579.50	\$912.50	\$18,000.00	\$29,492.00	0
235 Vegetation and plant surveys	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
256 Habitat monitoring and analysis	25.00	\$5,289.75	\$456.25	\$0.00	\$5,746.00	0
263 Nest box monitoring	5.00	\$1,057.95	\$91.25	\$500.00	\$1,649.20	0
275 Permits and authorizations	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
289 Native vegetation management (mechanical)	10.00	\$2,115.90	\$182.50	\$35,000.00	\$37,298.40	0
294 Program coordination and implementation	5.00	\$1,057.95	\$91.25	\$0.00	\$1,149.20	0
295 Biological data collection, analysis, and reporting	55.00	\$11,637.45	\$1,003.75	\$5,000.00	\$17,641.20	1

Activity Title	Man Days	Salary	FuelCost	Other	Total	Unit s
311 Boundary signs	5.00	\$1,057.95	\$91.25	\$250.00	\$1,399.20	0
312 Informational signs	5.00	\$1,057.95	\$91.25	\$9,250.00	\$10,399.20	16
320 Outreach and education	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
341 Public use administration (hunting)	15.00	\$3,173.85	\$273.75	\$0.00	\$3,447.60	0
342 Public use administration (non-hunting)	5.00	\$1,057.95	\$91.25	\$500.00	\$1,649.20	5
910 New facility construction -- buildings/structures	5.00	\$1,057.95	\$91.25	\$6,500.00	\$7,649.20	1
920 FEM -- buildings/structures	5.00	\$1,057.95	\$91.25	\$500.00	\$1,649.20	3
921 FEM -- utilities	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
922 FEM -- custodial functions	35.00	\$7,405.65	\$638.75	\$1,000.00	\$9,044.40	0
923 FEM -- vehicles/equipment	45.00	\$9,521.55	\$821.25	\$12,000.00	\$22,342.80	0
926 FEM -- roads/bridges	25.00	\$5,289.75	\$456.25	\$200,000.00	\$205,746.00	0
927 FEM -- trails	5.00	\$1,057.95	\$91.25	\$1,000.00	\$2,149.20	0
928 FEM -- fences	5.00	\$1,057.95	\$91.25	\$2,000.00	\$3,149.20	0
<hr/>						
All totals	525.00	\$111,084.75	\$9,581.25	\$563,000.00	\$683,666.00	9245

13.14 Arthropod Control Plan



CHARLES H. BRONSON
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Chapters 388.4111, F.S. and 5E-13.042(4)(b), F.A.C.
Telephone: (850) 922-7011

For use in documenting an Arthropod control plan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein.

Name of Designated Land:
John C. and Mariana Jones/Hungryland Wildlife and Environmental Area

Is Control Work Necessary: Yes No

Location:
northern Palm Beach County and southern Martin County north of SR-706/Indiantown Road, east of I-95/Turnpike, south of CR-708/SE Bridge Road and SR-76/Kanner Highway, west of SR-710/SW Warfield Boulevard/Beeline Highway

Land Management Agency:
Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary? Yes No
If "Yes", please explain:

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

- Landing Rate Counts
- Light Traps
- Sentinel Chickens
- Citizen Complaints
- Larval Dips
- Other

If "Other", please explain:

DACS-13668 07/08

Arthropod Species for Which Control is Proposed:
none

Proposed Larval Control:

Proposed larval monitoring procedure:

Are post treatment counts being obtained: Yes No

Biological Control of Larvae:

Might predacious fish be stocked: Yes No

Other biological controls that might be used:

Material to be Used for Larvaciding Applications:

(Please Check All That Apply:)

Bti

Bs

Methoprene

Non-Petroleum Surface Film

Other, please specify:

Please specify the following for each larvacide:

Chemical or Common name:

Ground Aerial

Rate of application:

Method of application:

Proposed Adult Mosquito Control:

Aerial adulticiding Yes No

Ground adulticiding Yes No

Please specify the following for each adulticide:

Chemical or common name:

Rate of application:

Method of application:

Proposed Modifications for Public Health Emergency Control: Arthropod control agency may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture.

Proposed Notification Procedure for Control Activities:

Records:

Are records being kept in accordance with Chapter 388, F.S.:

Yes No

Records Location: 9011 W. Lantana Rd. Lake Worth, Fla. 33467

How long are records maintained:
10 years

Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?
none

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed:
none

Include proposed operational schedules for water fluctuations:
none

List any periodic restrictions, as applicable, for example peak fish spawning times.

Proposed Modification of Aquatic Vegetation:
none

Land Manager Comments:

Arthropod Control Agency Comments:

No mosquito control activities are performed either on or over any environmentally sensitive and biologically highly productive lands as designated by the State of Florida within Palm Beach County.

 12/11/12
Signature of Lands Manager or Representative Date

 11/29/12
Signature of Mosquito Control Director/Manager Date

DACS-13668 07/08



CHARLES H. BRONSON
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Chapters 388.4111, F.S. and 5E-13.042(4)(b), F.A.C.
Telephone: (850) 922-7011

For use in documenting an Arthropod control plan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein.

Name of Designated Land:
ohn C. and Mariana Jones/Hungryland Wildlife and Environmental Area

Is Control Work Necessary: Yes No

Location:
northern Palm Beach County and southern Martin County north of SR-706/Indiantown Road, east of I-95/Turnpike, south of CR-708/SE Bridge Road and SR-76/Kanner Highway, west of SR-710/SW Warfield Boulevard/Beeline Highway

Land Management Agency:
Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary? Yes No
If "Yes", please explain:

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

- Landing Rate Counts Light Traps Sentinel Chickens
- Citizen Complaints Larval Dips Other

If "Other", please explain:

DACS-13566 07/08

Arthropod Species for Which Control is Proposed:
none

Proposed Larval Control: *none*

Proposed larval monitoring procedure:
Are post treatment counts being obtained: Yes No

Biological Control of Larvae:

Might predacious fish be stocked: Yes No
Other biological controls that might be used:

Material to be Used for Larvaciding Applications:

(Please Check All That Apply:)

- Bti
- Bs
- Methoprene
- Non-Petroleum Surface Film
- Other, please specify:

Please specify the following for each larvacide:

Chemical or Common name:

Ground Aerial

Rate of application:

Method of application:

Proposed Adult Mosquito Control:

Aerial adulticiding Yes No

Ground adulticiding Yes No

Please specify the following for each adulticide:

Chemical or common name:

Rate of application:

Method of application:

Proposed Modifications for Public Health Emergency Control: Arthropod control agency may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture

Proposed Notification Procedure for Control Activities: *Email*

Records:

Are records being kept in accordance with Chapter 388, F.S.:

Yes No

Records Location:

How long are records maintained:

Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?
none

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed:
none

Include proposed operational schedules for water fluctuations:
none

List any periodic restrictions, as applicable, for example peak fish spawning times.

Proposed Modification of Aquatic Vegetation:
none

Land Manager Comments:

Arthropod Control Agency Comments:

 12/11/12
Signature of Lands Manager or Representative Date

 11-25-12
Signature of Mosquito Control Director / Manager Date

13.15 Letter of Compliance with Local Government Comprehensive Plan

13.15.1 Martin County

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13.15.2 Palm Beach County



**Department of Planning,
Zoning & Building**

2300 North Jog Road
West Palm Beach, FL 33411-2741
(561) 233-5000

Planning Division 233-5300
Zoning Division 233-5200
Building Division 233-5100
Code Enforcement 233-5500
Contractors Certification 233-5525
Administration Office 233-5005
Executive Office 233-5228
www.pbcgov.com/pzb



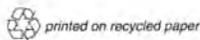
**Palm Beach County
Board of County
Commissioners**

- Shelley Vana, Mayor
- Mary Lou Berger, Vice Mayor
- Hal R. Valeche
- Paulette Burdick
- Steven L. Abrams
- Melissa McKinlay
- Priscilla A. Taylor

County Administrator

Verdenia C. Baker

"An Equal Opportunity
Affirmative Action Employer"



October 30, 2015

Lance Jacobson
Florida Fish & Wildlife Conservation Commission
Division of Habitat & Species Conservation
Land Conservation & Planning
620 S. Meridian Street
Tallahassee, Florida

RE: Review of the John C. and Mariana Jones/Hungryland Wildlife and Environmental Area (JCMJHWEA) 2014-2024 Management Plan

Dear Mr. Jacobson:

Palm Beach County Planning Division staff have completed a review of the update to the John C. and Mariana Jones/Hungryland Wildlife and Environmental Area (JCMJHWEA) 2014-2024 Management Plan.

The review of the update to the JCMJHWEA management plan found that the Plan conforms with the Comprehensive Plan as approved and adopted for Palm Beach County, Florida.

If you have any questions or need further information, please call me at 561-233-5327, or Bryan Davis, Principal Planner at 561-233-5308.

Lorenzo Aghemo
Planning Director

- c: Patrick Rutter, Deputy Director, Planning Division
- Bryan Davis, Principal Planner, Planning Division
- Michael Howe, Senior Planner, Planning Division

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