



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT - CORPS OF ENGINEERS
415 RICHARD JACKSON BOULEVARD, SUITE 411
PANAMA CITY BEACH, FLORIDA 32407

Regulatory Division
North Branch Section
Panama City Permits Section

January 10, 2020

PUBLIC NOTICE

Regional General Permit SAJ-86
SAJ-2004-01861

Residential, Commercial, Residential, and Institutional Fill in
West Bay, Lake Powell, and Choctawhatchee Bay Basins
Bay and Walton Counties, Florida

TO WHOM IT MAY CONCERN: The Jacksonville District, U.S. Army Corps of Engineers (Corps) proposes to reissue Regional General Permit SAJ-86 (SAJ-86) pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344), as described below:

WATERWAY & LOCATION: The reissued SAJ-86 would be limited to non-navigable and non-tidal waters, including wetlands, which are located within: 1) The Lake Powell watershed, 2) Various drainage basins of the Choctawhatchee Bay watershed, 3) Various drainage basins of the West Bay watershed, and 4) Two small areas which drain either directly to the Gulf of Mexico, or via the Camp Creek Lake watershed into the Gulf of Mexico, all within an area encompassing approximately 48,150 acres in southeastern Walton County and southwestern Bay County, Florida (Exhibit 3).

PURPOSE & WORK: The purpose of SAJ-86 is to authorize the discharge of fill or dredged material into non-tidal waters of the United States, including wetlands, for the construction of residential, commercial, recreational and institutional projects and their attendant features, including roads, utility lines and stormwater treatment facilities within an area of rapid residential and commercial development, while protecting the aquatic environment on a watershed scale by authorizing a forward-looking, flexible and predictable permitting program, that would minimize unavoidable direct impacts to highest quality aquatic resources, minimize impacts to lower quality aquatic resources, and mitigate for direct, indirect and cumulative impacts within the affected watersheds of an approximately 48,150-acre area in southeastern Walton County and southwestern Bay County.

BACKGROUND: Pursuant to 33 CFR 325.2.e(2) regional general permits shall be issued for a period of no more than five years. SAJ-86 was originally issued on June 30, 2004 and was reissued on June 23, 2009 and March 25, 2015. The reissued SAJ-86 expires on March 25, 2020. The Environmental Assessment/Statement of Findings (EASOF) for SAJ-86, as issued in 2004, and the Supplement to the EASOF for the reissuance of SAJ-86 in 2009 and 2015, can be found at the Jacksonville District's website:

https://www.saj.usace.army.mil/Portals/44/docs/regulatory/sourcebook/permitting/general_permits/SAJ-86/20150327_SOFs_Addendums.pdf.

Twenty-one projects have been authorized by the Corps using RGP SAJ-86, since it was issued in 2004 and reissued in 2009 and 2015.

PROPOSED EDITS, CLARIFICATIONS, UPDATES and MODIFICATIONS: Minor proposed modifications to SAJ-86 include addition of clarification text, updating of application forms, changing the identification of appendices to exhibits, and re-numbering the exhibits.

Substantive proposed modifications include the following:

- 1) Change naming convention from 'low quality' wetland to 'altered' wetland;
- 2) Altering SAJ-86 sub-basins to reflect the Hydrologic Unit Code (HUC) 12 basins;
- 3) Increasing road width allowances to be consistent with Florida Department of Transportation (FDOT) standards, i.e. from 100 feet to 160 feet;
- 4) Addition of a conservation easement template to be utilized for preservation of areas outside of project-specific compensatory mitigation areas which allows limited maintenance activities.
- 5) Revised time limit to record conservation easements over Conservation Unit areas from 30 days from issuance to annually (February 15th).

A complete copy of the updated and modified draft SAJ-86 and its exhibits proposed for this reissuance are enclosed with this notice.

Comments regarding the reissuance of SAJ-86 should be submitted in writing at the letterhead address to the District Engineer within 45 days from the date of this notice. Written comments can also be sent to the Corps project manager, as identified below, by electronic mail or by fax. A public meeting will be held on Thursday, January 23, 2020 at the Panama City Beach City Hall, Panama City Beach, Florida.

If you have questions concerning this public notice, you may contact the Corps project manager, Mrs. Lisa S. Lovvorn, at the letterhead address, by electronic mail at lisa.s.lovvorn@usace.army.mil or by telephone at (850) 285-9533.

IMPACT ON NATURAL RESOURCES: Coordination with U.S. Fish and Wildlife Service, Environmental Protection Agency (EPA), the National Marine Fisheries Services, and other Federal, State, and local agencies, environmental groups, and concerned citizens generally yields pertinent environmental information that is instrumental in determining the impact the proposed action will have on the natural resources of the area.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including cumulative impacts thereof; among these are conservation, economics, esthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food, and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people. Evaluation of the impact of the activity on the public interest will also include application of the guidelines promulgated by the Administrator, EPA, under authority of Section 404(b) of the Clean Water Act or the criteria established under authority of Section 102(a) of the Marine Protection Research and Sanctuaries Act of 1972. A permit will be granted unless its issuance is found to be contrary to the public interest.

The US Army Corps of Engineers (Corps) is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other Interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this determination, comments are used to assess impacts to endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

COASTAL ZONE MANAGEMENT CONSISTENCY: In Florida, the State approval constitutes compliance with the approved Coastal Zone Management Plan. In Puerto Rico, a Coastal Zone Management Consistency Concurrence is required from the Puerto Rico Planning Board. In the Virgin Islands, the Department of Planning and Natural Resources permit constitutes compliance with the Coastal Zone Management Plan.

REQUEST FOR PUBLIC HEARING: Any person may request a public hearing. The request must be submitted in writing to the District Engineer within the designated comment period of the notice and must state the specific reasons for requesting the public hearing.



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Regulatory Division

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

Department of the Army Permit

Regional General Permit SAJ-86
SAJ-2004-01861

Residential, Commercial, Recreational, and Institutional Fill in the
Choctawhatchee Bay, Lake Powell, and West Bay Basins
Bay and Walton Counties, Florida

Upon recommendation of the Chief of Engineers, pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), general authority is hereby given for the discharge of fill and dredged material into non-tidal waters of the United States, including wetlands, for residential, commercial, recreational, and institutional development in portions of the Choctawhatchee Bay, Lake Powell, and West Bay basins in accordance with the following special conditions:

SPECIAL CONDITIONS:

1. Projects qualifying for SAJ-86 must be authorized under Part IV of Chapter 373, *F.S.* by the Florida Department of Environmental Protection (DEP) or the Northwest Florida Water Management District (NFWFMD) under Part IV of Chapter 373, *F.S.*, or a local government with delegated authority under Section 373.441, *F.S.*, as well as any authorizations as required for the use of sovereign submerged lands under Chapters 253 and 258, *F.S.* Water quality certification for a portion of the Regional General Permit (RGP) area may be granted by the Ecosystem Management Agreement (EMA), executed between the DEP and The St. Joe Company (Exhibit 1) for those projects located within the EMA portion of the RGP area. All of the conditions specified in the EMA water quality certification must be complied with as special conditions to this RGP. All projects outside the EMA area authorized by this RGP will require separate water quality certifications from DEP, NFWFMD, or delegated local government. The conditions specified in such certifications constitute special conditions of this RGP for those specific projects.
2. Surface water management systems for all projects authorized by this RGP shall be designed, constructed, operated, and maintained in compliance with the *Stormwater System Design and Review Criteria Manual, February 2004* (Exhibit 2).
3. This permit applies to discharges of dredged or fill material into non-tidal waters of the United States for the construction of residential, commercial, recreational and institutional projects, including building foundations, building pads and attendant features that are necessary for the use and maintenance of the structures.

Attendant features may include, but are not limited to, roads, parking lots, garages, yards, utility lines, and stormwater management facilities. Residential developments include multiple and single unit developments. Examples of commercial developments include retail stores, light industrial facilities, restaurants, business parks, and shopping centers. Examples of recreational facilities include playgrounds, playing fields, golf courses, hiking trails, bike paths, horse paths, stables, nature centers, and campgrounds. Examples of institutional developments include schools, fire stations, government office buildings, judicial buildings, public works buildings, libraries, hospitals, and places of worship. This permit applies only to the portions of Bay and Walton Counties, Florida, as depicted by Exhibit 3, as being within the "GP Boundary."

4. This RGP authorizes impacts to wetlands that are defined as altered and high quality. Altered wetlands are wetlands that are planted in pine trees. Altered wetlands include ditches. High quality wetlands are all other jurisdictional wetlands. Altered wetlands are typically hydric pine plantations. High quality wetlands are typically cypress domes/strands, bay/gallberry swamps, harvested cypress swamp areas, titi monocultures, and *Hypericum* bogs.

5. Impacts to wetlands must meet all of the following criteria:

a. Impacts to altered wetlands shall not exceed 20% of the total altered wetlands in any one sub-basin. The area within a particular sub-basin to be used to make the 20% calculation does not include areas within either mitigation banks or conservation units located within the sub-basin. Sub-basins are depicted in Exhibit 4.

b. Projects may impact more than 20% of the altered wetlands within an individual project site, if cumulative altered wetland impacts for all approved projects within the sub-basin do not exceed 20% at any time. Examples of how this may occur include:

(1) An individual project impacts only 15% of the altered wetlands in the project site and the remaining on-site wetlands are preserved through a conservation easement to the DEP. A subsequent project owned by the same applicant within that sub-basin may impact more than 20% of the altered wetlands in the project site, as long as the total impact to altered wetlands for all approved projects for the same landowner within the sub-basin does not exceed 20%.

(2) An individual project impacts 30% of the altered wetlands on the project site. As a part of the project, a sufficient area of altered wetlands are preserved through a conservation easement to DEP elsewhere within the same sub-basin so as not to exceed the maximum 20% impact to altered wetlands for all approved projects within the sub-basin,

c. Impacts to high quality wetlands shall be limited to road and bridge crossings necessary to support the associated development. The impacts shall typically not exceed a width of 100 feet of combined filling or clearing at each crossing, but may on a case-by-case basis, be allowed up to a total width of 160 feet. Florida Department of Transportation roads may be allowed up to a width of 200 feet consistent

with criteria in this section. The aggregate total filling or clearing of high quality wetlands for road crossings within the RGP area shall not exceed 125 acres. The first preference for new high quality wetland road crossings will be at existing silviculture road crossings. Road crossings at locations other than existing silviculture crossings are allowed if the crossing is designed and constructed to minimize wetland impacts. In addition, for each crossing proposed at a point where no previous crossing existed, an existing silviculture road crossing within the sub-basin must be removed and the wetland connection restored. All road or bridge crossings in wetlands shall be designed so that the hydrologic conveyance is not reduced or impaired. Bridging is encouraged wherever practicable. The following factors shall be considered when determining if bridging of the wetlands is practicable: (1) the degree of water flow within the wetland, (2) the length of the wetland crossing, (3) the topography of the wetland and associated upland, and (4) the degree to which a roadway would adversely affect the movement of wildlife expected to use the wetland.

d. All wetlands not authorized for impact on each project site shall be preserved. Conservation easements shall be placed over such wetlands (see Special Condition 13.b below). Individual project sites, including offsite preservation areas to meet the requirement in Special Condition 5.b(2) above, shall have reasonable boundaries that include intermixed and adjacent low and high quality wetlands. The following activities are allowed within these preserved areas placed under conservation easements:

- (1) Wetland and upland habitat enhancement and restoration.
- (2) Wetland mitigation.
- (3) Firefighting or fire suppression activities.
- (4) Mechanical clearing of fire lanes/fire breaks as part of controlled burn activities, firefighting, or fire suppression.
- (5) Installation of fences for land management or habitat protection purposes.
- (6) Removal or extermination of nuisance or exotic animal species.
- (7) Hunting of deer, quail, and other indigenous animal species pursuant to properly issued hunting permits only where consistent with the St. Joe Hunt Plan approved by and on file with Grantee at the time of the recording of the conservation easement.
- (8) Installation of signs for land management, facilitation of passive recreation or habitat protection purposes.
- (9) Maintenance of unpaved nature trails.
- (10) Installation of interpretive signs for nature trails.
- (11) Maintenance of existing drainage ditches to original as-built

dimensions and configurations. All materials removed for the maintenance of existing ditches must be disposed of within an upland disposal site, which is not located within any preserved lands subject to this RGP.

6. No fill material may be placed in wetlands for septic tanks or drainfields.

7. Buffers are required around Lake Powell. A 100-foot buffer between the lake from the ordinary high water line (OHWL) and development is required in Walton County. A 30-foot buffer between the lake from the OHWL and development is required in Bay County. All buffers, whether upland or wetland, will be preserved and maintained in a natural condition, except boardwalks for dock access and on-grade trails. Buffers may be enhanced or restored to a more natural condition. Application of fertilizers, herbicides, or pesticides is prohibited in all buffers, except for the use of herbicides for the eradication of exotic and invasive plants.

8. In general, altered wetlands shall buffer high quality wetlands throughout the RGP area. Except at road crossings on a per project basis, upland and/or altered wetland buffers adjacent to high quality wetlands shall be an average of 50 feet wide, with a minimum 30-foot width for each individual project. All buffers, whether upland or wetland, will be preserved and maintained in a natural condition, except for the construction of boardwalks for dock access and on-grade trails. Buffers may be enhanced or restored to a more natural condition. Application of fertilizers, herbicides, or pesticides is prohibited in all buffers, except for the use of herbicides for the eradication of exotic and invasive plants. Such buffers shall be placed under conservation easements (see Special Condition 13.b below). The following activities are allowed within these preserved buffers placed under conservation easements:

- a. Wetland and upland habitat enhancement and restoration.
- b. Wetland mitigation.
- c. Firefighting or fire suppression activities.
- d. Mechanical clearing of fire lanes/fire breaks as part of controlled burn activities, firefighting, or fire suppression.
- e. Installation of fences for land management or habitat protection purposes.
- f. Removal or extermination of nuisance or exotic animal species.
- g. Hunting of deer, quail, and other indigenous animal species pursuant to properly issued hunting permits only where consistent with the St. Joe Hunt Plan approved by and on file with Grantee at the time of the recording of the conservation easement.
- h. Installation of signs for land management, facilitation of passive recreation or habitat protection purposes.
- 1. Maintenance of unpaved nature trails.

j. Installation of interpretive signs for nature trails.

k. Maintenance of existing drainage ditches to original as-built dimensions and configurations. All materials removed for the maintenance of existing ditches must be disposed of within an upland disposal site, which is not located within any preserved lands subject to this RGP.

9. Only clean fill and rock material compatible with existing soils (e.g., soil, rock, sand, marl, clay, stone, and/or concrete rubble) shall be used for wetland fills.

10. No wetland fill shall sever a jurisdictional connection or isolate a jurisdictional area.

11. Compensatory mitigation:

a. Compensatory mitigation for individual project wetland impacts may be satisfied within: (1) two specified regional offsite mitigation banks, (2) designated conservation units, or (3) within the project area. However, mitigation at a mitigation bank shall not be an available option for a project within the Lake Powell basin. Mitigation for projects within the Lake Powell basin can only be located within the Lake Powell basin. Mitigation for impacts within the Lake Powell basin can be within the project site, or within a designated Conservation Unit in the Lake Powell basin.

b. The first priority for compensatory mitigation of permitted wetland impacts in the RGP area, except for impacts within the Lake Powell basin as described above, is restoration/ enhancement-based activities at one of the two following mitigation banks: (1) the Breakfast Point Mitigation Bank for projects within the Breakfast Point Basin; and (2) the Devils Swamp Mitigation Bank for projects within the Devils Swamp Basin. The location of the two mitigation banks and their respective basins within the RGP area, as well as the Lake Powell basin, are depicted in Exhibits 3, 5 and 6.

c. The U.S. Army Corps of Engineers (Corps) on a case-by-case basis may approve compensatory mitigation projects located within the conservation units or within individual project sites. Conservation easements shall be placed over areas on which compensatory mitigation projects are located (see Special Condition 13.c. below). The activities, as described by Special Condition 12.b below, are allowed within compensatory mitigation project areas within conservation units, unless otherwise prohibited or modified by the specific compensatory mitigation plan for the site. The following activities are allowed in compensatory mitigation project areas not located within conservation units, unless otherwise prohibited or modified by the specific compensatory mitigation plan for the site:

(1) Wetland and upland habitat enhancement and restoration.

(2) Wetland mitigation.

(3) Fire fighting or fire suppression activities.

(4) Mechanical clearing of fire lanes/fire breaks as part of controlled burn activities, fire fighting, or fire suppression.

(5) Installation of fences for land management or habitat protection purposes.

(6) Removal or extermination of nuisance or exotic animal species.

(7) Hunting of deer, quail, and other indigenous animal species pursuant to properly issued hunting permits only where consistent with the St. Joe Hunt Plan approved by and on file with Grantee at the time of the recording of the conservation easement.

(8) Installation of signs for land management, facilitating passive recreation or habitat protection purposes.

(9) Maintenance of unpaved nature trails.

(10) Installation of interpretive signs for nature trails.

(11) Maintenance of existing drainage ditches to original as-built dimensions and configurations. All materials removed for the maintenance of existing ditches must be disposed of within an upland disposal site, which is not located within any preserved lands subject to this RGP.

d. Except in the specific circumstance, as described in 10.e below, compensatory mitigation credits and debits are defined in terms of functional units (FU) as determined using the *Uniform Mitigation Assessment Method (UMAM)*, as set forth in *Chapter 62-345, Florida Administrative Code*. Each acre of impact to altered wetlands shall be valued at 0.53 FU, and each acre of impact to high quality wetlands shall be valued at 0.87 FU.

e. Only in the specific circumstance when an ecologically appropriate bank does not have a UMAM credit ledger approved by the Corps, but does have a Corps approved credit ledger determined by using the *Wetland Rapid Assessment Procedure (WRAP)*, *Technical Publication REG-001, September 1997*, then for that specific circumstance the compensatory credits and debits are determined using WRAP with each acre of impact to altered wetlands valued at 0.65 FU, and each acre of impact to high quality wetlands valued at 0.92 FU.

f. Compensatory mitigation will occur prior to or be implemented concurrent with permitted impacts.

g. Compensatory mitigation projects required for projects authorized by this RGP must be maintained in perpetuity in the enhanced/restored ecological condition, as described in the individual compensatory mitigation project's plan.

12. Conservation units:

a. Ten conservation units (Exhibits 7 through 17) will be excluded from development and preserved, as described Special Condition in 12.b below, by the

St. Joe Company, commencing with the first authorization issued under this RGP for any project of the St. Joe Company or any of its constituent companies.

b. Conservation units may only be used for conservation purposes, wetland or habitat mitigation, and limited passive recreational purposes. The uses and activities authorized in the conservation units are limited to the following:

(1) Wetland and upland habitat enhancement and restoration.

(2) Forest management shall be conducted so as to enhance conservation and habitat restoration, using Best Management Practices and uneven age management regimes in accordance with the *Principles for Forest and Wildlife Management of Conservation Units within the Regional General Permit Area and Ecosystem Agreement Area - Revision 2014* (Exhibit 18). Timber management for the sole purpose of timber production is prohibited. No timbering of cypress or wetland hardwoods will occur in conservation units. Clear cutting is prohibited except as allowed in the referenced management plan.

(3) Hunting pursuant to properly issued hunting permits, fishing, and birding.

(4) Prior approval from the Corps is required for construction of nature trails, boardwalks, gathering shelters, restroom facilities and other similar passive recreational activities in the conservation units. These activities shall result in no more than minimal impacts to the conservation units. Additional activities may be approved after review by the Corps, and only if the Corps determines the proposed activity to be consistent with the purpose of this RGP.

(5) Wetland mitigation. The management plan, as provided in Exhibit 18, may be replaced by a wetland mitigation plan, upon the written approval of the Corps.

(6) Effluent disposal, including necessary transmission lines, distribution facilities, and attendant structures, in the Cypress and Wet Pine Flats Conservation Unit, if authorized by separate DEP and Corps permits. Treatment facilities shall not be allowed in the conservation unit.

(7) Reinstitution of fire regime, including necessary firebreaks, which mimics natural conditions.

(8) Incorporation into adjacent developments as open space and limited to the uses outlined above.

(9) Maintenance of roads and ditches where needed to implement activities listed above.

(10) Maintenance of existing drainage ditches to original as-built dimensions and configurations. All materials removed for the maintenance of existing ditches must be disposed of within an upland disposal site, which is not located within any preserved lands subject to this RGP.

(11) Construction of five new or improved road crossings, as shown on Exhibit 19. Crossing Number 4, through the Wildlife Corridor Conservation Unit, shall be bridged. These road crossings shall be subject to the road crossing criteria and wetland impact limitations as required in Special Condition 5.c above.

(12) Activities needed to maintain, in current condition, existing access within and through the conservation units. With the exception of the crossings identified in Special Condition 12.b (11) above, these do not include activities to improve, enlarge or relocate such access.

c. By February 15th of each year, The St. Joe Company shall have placed perpetual conservation easements with the DEP as the grantee (or ensure that conservation easements are placed on sold or transferred parcels) on portions of conservation units equal to the percentage of the total acreage of approved projects in each sub-basin. Conservation easements for projects authorized 45 days prior to February 15th may be recorded by the following year. To determine the acreage of the conservation units that must be placed under an easement:

(1) Using the EMA area only, divide the total acreage within an approved project boundary in a sub-basin (including off-site wetland preservation areas) by the total acreage of land within the sub-basin minus the area of any conservation units with the same sub-basin.

(2) This percentage of the conservation units in each sub-basin shall be placed under conservation easement.

(3) The cumulative acreage of conservation units conveyed to governmental entities or 501c (3) conservation organization buyers shall count toward the acreage placed under a conservation easement.

d. Sale or transfer of a conservation unit is limited to a governmental entity or 501c (3) private conservation owner, and only when the requirements in Special Conditions 12.a & 12.b above are met. If conservation units, or any portion thereof or interest therein, are conveyed to subsequent owners, if not already subject to a conservation easement pursuant to Special Condition 12.c above, The St. Joe Company shall place conservation easements on such property to assure the perpetual conservation use of the conservation units, as described in Special Condition 12.b above. The perpetual conservation easement shall be in the form of Exhibit 20 and comply with Special Condition 13.d. Within seven days of conveyance of any portion or interest of a conservation unit, The St. Joe Company shall provide to the new owner a complete copy of the RGP, including the U.S. Fish and Wildlife Service's (FWS) revised Biological Opinion (BO) dated March 3, 2005 and the re-issued BO letter dated May 19, 2009 (Exhibit 21). Written assurance that a complete copy of the RGP has been given and received shall be provided to the Corps by The St. Joe Company within fourteen days of any such conveyance. The written assurance shall consist of a letter to the Corps stating that the exchange has taken place and shall be signed by the appropriate representatives of The St. Joe Company and the new owner.

13. Conservation easements. This section addresses the placement of

conservation easements, as required by this RGP, under three different scenarios:

a. Perpetual conservation easements with the DEP as the grantee will be placed on conservation units as described in Special Condition 12.d above. The easement shall be in the form of Exhibit 21.

b. Perpetual conservation easements with the DEP as the grantee will be placed on wetlands, not authorized for impact on each project site; and will include any buffers, as required by Special Condition 8 above. The conservation easements will be in place following individual project approval, but prior to commencing any activities authorized by this RGP or according to the timeframe specified in the approval. The easement shall be in the form of Exhibit 21.

c. For areas to be used for compensatory mitigation conducted outside of a mitigation bank, a perpetual conservation easement with the DEP as the grantee, will be placed on the mitigation area prior to commencing any activities authorized by this RGP on the individual project for which the mitigation is approved. The easement shall be in the form of Exhibit 20.

d. In addition to the above, the following shall apply for all conservation easements:

(1) The permittee shall have the conservation easement, including a legal description, survey, and scaled drawings, of the areas in question, prepared and sent for legal review and approval to the U.S. Army Corps of Engineers, Regulatory Division, Enforcement Section, 41 North Jefferson Street, Suite 301, Pensacola, Florida 32502.

(2) Within 30 days of U.S. Army Corps of Engineers' approval of the proposed easement, the permittee shall record the easement in the public records of Bay or Walton County, Florida. A certified copy of the recorded document, plat, and verification of acceptance from the grantee will be forwarded to the Corps at the address in Special Condition 13.d(1) above.

(3) The Permittee must show that it has clear title to the real property and can legally place it under a conservation easement. Along with the submittal of the draft conservation easement, the Permittee shall submit a title insurance commitment, in favor of the grantee, for the property that is being offered for preservation. Any existing liens or encumbrances on the property must be subordinated to the conservation easement. At the time of recordation of the conservation easement, a copy of a title insurance policy written in favor of the DEP must be provided to the Corps in an amount equal to the current market value of the property.

(4) In the event the permit is transferred, proof of delivery of a copy of the recorded conservation easement to the subsequent permittee or permittees must be submitted to the Corps together with the notification of permit transfer.

(5) Grantee shall not assign its rights or obligations under a conservation

easement except to another organization qualified to hold such interests under the applicable state and federal laws, including §704.06 Florida Statutes, and committed to holding this conservation easement exclusively for conservation purposes. The Corps shall be notified in writing of any intention to reassign the conservation easement to a new grantee and must approve selection of the grantee. The new grantee must accept the assignment in writing and deliver a copy of this acceptance to the Corps. The conservation easement must then be re-recorded and indexed in the same manner as any other instrument affecting title to real property, and a certified copy of the recorded conservation easement shall be furnished to the Corps.

14. The St. Joe Company shall establish and maintain a GIS-based ledger and map depicting the amount, type and percentage of wetland impact, project area, and conservation easement area implemented in the EMA area. An updated ledger balance sheet demonstrating compliance with this RGP shall be submitted with each individual request for project approval. The ledger shall include the following by sub-basin:

- a. Total high quality and altered wetlands in the EMA area.
- b. Total project size - uplands and wetlands.
- c. Project impacts - high quality and altered wetlands amount and percent of total.
- d. Mitigation required and location.
- e. Cumulative project impacts (acreage total and percentage).
- f. Total wetlands by quality remaining in the EMA area.
- g. The St. Joe Company shall submit an annual report by February 15 of each year for the proceeding calendar year identifying:

- (1) The location and acreage of any mitigation activity undertaken;
- (2) Conservation easements recorded;
- (3) Conservation units conveyed to other owners;
- (4) Activities undertaken within conservation units; and
- (5) Other activities that may impact this RGP.

15. For the purposes of Section 404 of the Clean Water Act under this RGP, the identification and delineation of wetlands must be in accordance with the most recent guidance and wetland delineation manual and/or manual supplement issued by the Corps (which as of this date are the *Corps of Engineers Wetlands Delineation Manual (1987)* and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010)*), or the State of Florida methodology prescribed in Chapter 62-340, F.A.C., *Delineation of the*

Landward Extent of Wetlands and Surface Waters, or a combination of both, in order to establish one jurisdictional wetland line for all Individual Project Approvals that is the most landward line of wetlands. Wetlands may be delineated using aerial photo- interpretation (API) and ground-truthing, and, if necessary, mapped using the Global Positioning System (GPS) and other Geographical Information System (GIS) mapping techniques. In much of the project area, historical aerial photography will be used to obtain pre-pine plantation wetland community signatures. If a construction line falls within 250 feet of a wetland boundary, estimated using the method described in this paragraph, then a documented field wetland jurisdictional determination based on ground-truthing with flagged wetland delineation lines, which have been surveyed and approved by the Corps, will be required for that segment of the proposed project

16. Listed and protected species:

a. This RGP does not authorize the take of an endangered species, with the exception of the flatwoods salamander, *Ambystoma bishopi*. In order to legally take a listed species, separate authorization under the Endangered Species Act (ESA) is required (e.g., an ESA section 10 permit, or a biological opinion (BO) under ESA section 7, with "incidental take" provisions with which permittees under this RGP must comply). The enclosed FWS's revised BO dated March 3, 2005 and the re-issued BO letter dated May 19, 2009 contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with the "incidental take" that is specified in the BO (Exhibit 22). Authorization under this RGP is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO, which terms and conditions are incorporated herein by reference. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, will constitute an unauthorized take, and will also constitute non-compliance with this RGP. The FWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

b. Reticulated flatwoods salamander (*Ambystoma bishopi*): A site evaluation for the reticulated flatwoods salamander shall be performed by completion of the *RGP-86 Flatwoods Salamander Pre-application Evaluation* (Exhibit 23). The completed site evaluation shall be provided at the pre-application meeting, as described in Special Condition 18 below.

c. Bald eagle (*Haliaeetus leucocephalus*) In order to avoid potential impacts to the bald eagle nests located within the RGP area measures will be implemented as dictated by the *National Bald Eagle Management Guidelines* (May 2007) (U.S. Fish and Wildlife Service (USFWS)), attached as Exhibit 24; and the *FWC Bald Eagle (Haliaeetus leucocephalus) Management Plan Handbook* (June 2010) (Florida Fish and Wildlife Commission (FWC)), attached as Exhibit 25.

d. Telephus spurge (*Euphorbia telephioides*): A site evaluation for Telephus spurge shall be performed by the completion of the *RGP-86 Telephus Surge Pre-application Evaluation* (Exhibit 26). The completed site evaluation shall be provided at the pre-application meeting, as described in Special Condition 18 below.

e. Eastern indigo snake (*Drymarchon corais coupen*): The Permittee shall comply with FWS's *Standard Protection Measures for the Eastern Indigo Snake* dated February 12, 2004 (Exhibit 27).

f. State listed/protected species: If any state listed/protected species are encountered, coordination with Florida Fish and Wildlife Conservation Commission (FWC) will be initiated. The FWS web-site includes a reference to state-listed species

17. Cultural resources and/or historic properties:

a. No structure or work shall adversely affect, impact, or disturb properties listed in the *National Register of Historic Places (NRHP)* or those eligible for inclusion in the *NRHP*. (see Special Condition 18.a(7) below).

b. If during the ground disturbing activities and construction work within the permit area, there are archaeological/cultural materials encountered which were not the subject of a previous assessment survey (and which shall include, but not be limited to: pottery, modified shell, flora, fauna, human remains, ceramics, stone tools or metal implements, dugout canoes, evidence of structures or any other physical remains that could be associated with Native American cultures or early colonial or American settlement), the Permittee shall immediately stop all work in the vicinity and notify the Corps. The Corps shall then notify the Florida SHPO and the appropriate Tribal Historic Preservation Officer(s) (THPO(s)) to assess the significance of the discovery and devise appropriate actions.

c. A cultural resources assessment may be required of the permit area, if deemed necessary by the SHPO, THPO(s), or Corps, in accordance with 36 CFR 800 or 33 CFR 325, Appendix C (5). Based on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume on non-federal lands without written authorization from the SHPO and the Corps,

d. In the unlikely event that unmarked human remains are identified on non-federal lands, they will be treated in accordance with Section 872.05 Florida Statutes. All work in the vicinity shall immediately cease and the Permittee shall immediately notify the medical examiner, Corps, and State Archeologist. The Corps shall then notify the appropriate SHPO and THPO(s). Based on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume without written authorization from the State Archeologist, SHPO, and the Corps.

18. Individual project approval:

a. The evaluation process to determine if an individual project conforms to the requirements and criteria of this RGP shall begin with a pre-application meeting to which the appropriate representatives from the Corps, DEP, FWS,

National Marine Fisheries Service, U.S. Environmental Protection Agency, FWC and NFWFMD are invited. The primary purpose of the pre-application process is to identify and produce preliminary data necessary for evaluation during the application phase and to conduct an informal analysis of the project and evaluate how it complies with the RGP criteria. The pre-application meeting shall also provide an opportunity to discuss the proposed project design and the opportunity for habitat corridors between on-site wetlands, the conservation units, and other wetlands in the RGP area. At the pre-application meeting, the following information will be provided by the applicant:

(1) Scope of the project - Type of project and how it comports with activities authorized by the RGP.

(2) Location / project boundaries - Exhibits showing general project location within the project area boundaries and specific location (1"=200' or other appropriate scale).

(3) The identification and delineation of wetlands must be in accordance with the most recent guidance and wetland delineation manual or manual supplement issued by the Corps, which as of this date are the *Corps of Engineers Wetlands Delineation Manual (1987)* and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010)*, or the State of Florida methodology prescribed in Chapter 62-340, F.A.C., *Delineation of the Landward Extent of Wetlands and Surface Waters*, or a combination of both, in order to establish one jurisdictional wetland line for all Individual Project Approvals that is the most landward line of wetlands. Applicants shall complete a preliminary jurisdictional determination for each Individual Project Approval under this RGP utilizing the Corps's most recent guidance. Wetlands may be delineated using API and ground-truthing, and if necessary, mapped using GPS and other GIS mapping techniques. In much of the project area, historical aerial photography will be used to obtain pre-pine plantation wetland community signatures. If the construction line falls within 250 feet of a wetland boundary estimated using the method described in this paragraph, then a documented field wetland jurisdictional determination with ground-truthing with flagged jurisdiction lines, which have been surveyed and approved by the Corps, will be required for that segment of the proposed project.

(4) Maps of high quality and altered wetlands onsite. For sites within the EMA area, the existing high quality/altered wetland map shall be used as a starting point for delineation of onsite wetlands (Exhibit 28). During or after wetland boundaries have been established using the method described in Special Condition 18.a(3) above, the resulting wetland areas will be classified and mapped by quality, as defined in Special Condition 4 above. The procedure will use a combination of GPS technology, visual inspection of photography, and ground-truthing. Additional data that may be used including overlays involving timber stand data.

(5) Proposed wetland impacts. The number, type, location, and acreage of all wetland impacts, as well as drawings and other exhibits that sufficiently depict that the proposed project fully complies with this RGP.

(6) Stormwater management systems for projects authorized under this RGP area will be in accordance with the *Stormwater System Design and Review Criteria Manual, February 2004* (Exhibit 2). A signed statement by a Florida licensed engineer which verifies that the project conforms to the aforementioned manual will be submitted.

(7) Documentation for coordination with the State Historic Preservation Officer (SHPO) and/or the appropriate Tribal Historic Preservation Officer(s) (THPO(s)). When required by the SHPO, THPO(s) or the Corps, the applicant shall conduct archeological and historical surveys on each individual project site. This information shall be provided to the SHPO, THPO(s) and the Corps, so that measures can be identified to avoid, minimize or mitigate adverse impacts to historic properties listed, or eligible for listing in the *NRHP*, or otherwise of archeological or historical value.

(8) Reticulated flatwoods salamander (*Ambystoma bishop*): Documentation of a site evaluation for the reticulated flatwoods salamander shall be provided by completion of the *RGP-86 Flatwoods Salamander Pre-application Evaluation* (Exhibit 23).

(9) Bald eagle (*Haliaeetus leucocephalus*): Documentation shall be provided that states whether or not a bald eagle's nest is located on or in the vicinity of the project site. If a bald eagle's nest occurs within 660 feet of a project, the applicant will implement measures in order to avoid potential impacts to bald eagle nests, as dictated by the *National Bald Eagle Management Guidelines* (May 2007) (FWS)), attached as Exhibit 24, and the *FWC Bald Eagle (*Haliaeetus leucocephalus*) Management Plan Handbook* (June 2010), attached as Exhibit 25. Appropriate protections shall be incorporated in the project and documentation shall be provided showing how the appropriate protections will be implemented.

(10) Telephus spurge (*Euphorbia telephioides*): Documentation of a site evaluation for Telephus spurge shall be provided by the completion of the *RGP-86 Telephus Surge Pre-application Evaluation* (Exhibit 26).

(11) Eastern indigo snake (*Drymarchon corais coupen*): The applicant shall provide documentation that Special Condition 16.b above shall be implemented.

(12) The applicant shall provide documentation whether coordination with the FWC was required and/or initiated regarding any needed fish and wildlife surveys for the project area, and any measures needed to avoid, minimize, or mitigate adverse impacts to state listed/protected fish and wildlife species and their habitats including any plan to obtain a permit if required by Chapter 68A-27, F.A.C.

b. Application to the Corps for individual projects under this RGP will be made using the current form required. The exhibits and information referenced in Special Condition 18.a above shall be included in their final form with the application. No regulated work may proceed until after written authorization under this RGP has been issued.

19. On a case-by-case basis, the Corps may impose additional Special Conditions that are deemed necessary to minimize adverse environmental impacts.

20. Failure to comply with all conditions of this Permit will constitute a violation of the Federal authorization.

21. **As-Built Certification:** Within 60 days of completion of the work authorized by this permit, the Permittee shall submit as-built drawings of the authorized work and a completed "As-Built Certification By Professional Engineer" form to the Corps. The as-built drawings shall be signed and sealed by a registered professional engineer and include the following:

a. A plan view drawing of the location of the authorized work footprint, as shown on the permit drawings, with transparent overlay of the work as constructed in the same scale as the permit drawings on 8½-inch by 11-inch sheets. The plan view drawing should show all "earth disturbance," including wetland impacts and water management structures.

b. A list of any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the attached "As-Built Certification By Professional Engineer" form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or "As-Built Certification By Professional Engineer" form does not constitute approval of any deviations by the Corps.

c. Include the Department of the Army permit number on all sheets submitted.

22. This Permit will be valid for 5 years from the date of issuance unless suspended or revoked by issuance of a public notice by the District Engineer. The Corps, in conjunction with the Federal resource agencies will conduct periodic reviews, which will include compliance reviews, to determine if continuation of the permit is not contrary to the public interest. The permit can be reissued for 5-year periods indefinitely, if it is found not to be contrary to the public interest.

23. If this RGP expires prior to the completion of work verified by an Individual Project Approval, authorization of activities that have commenced or are under contract to commence in reliance on the Individual Project Approval will remain in effect provided the activities are completed within 12 months of the date this RGP expires.

GENERAL CONDITIONS:

1. The time limit for completing the work authorized ends on
If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature and mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

FURTHER INFORMATION:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

() Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

BY AUTHORITY OF THE SECRETARY OF THE ARMY

Andrew D. Kelly, Jr.
Colonel, U.S. Army
District Commander

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Submit this form and one set of as-built engineering drawings to the U.S. Army Corps of Engineers, Enforcement Section, 41 North Jefferson Street, Suite 301, Pensacola, Florida, 32502. If you have questions regarding this requirement, please contact the Enforcement Branch at 904-232-3131.

1. Department of the Army Permit Number: SAJ- - (-)

2. Permittee Information:

Name: _____

Address: _____

3. Project Site Identification (physical location/address):

4. As-Built Certification: I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled, and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

Signature of Engineer

Name (*Please type*)

(FL, PR, or VI) Reg. Number

Company Name

City

State

ZIP

(Affix Seal)

Date

Telephone Number

Date Work Started: _____ Date Work Completed: _____

Identify any deviations from the approved permit drawings and/or special conditions (attach additional pages if necessary):

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

DEPARTMENT OF THE ARMY PERMIT TRANSFER REQUEST
FOR REGIONAL GENERAL PERMIT SAJ-86

PERMIT NUMBER: _____

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. Although the construction period for works authorized by Department of the Army permits is finite, the permit itself, with its limitations, does not expire.

To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below and mail to the U.S. Army Corps of Engineers, Panama City Permits Section, 415 Richard Jackson Boulevard, Suite 411, Panama City Beach, FL 32407.

(TRANSFeree-SIGNATURE)

(SUBDIVISION)

(DATE)

(LOT)

(BLOCK)

(NAME-PRINTED)

(MAILING ADDRESS)

(CITY, STATE, AND ZIP CODE)

List of Exhibits for Regional General Permit SAJ-86

Exhibit 1: Ecosystem Management Agreement

Exhibit 2: *Stormwater System Design and Review Criteria Manual, February 2004*

Exhibit 3: SAJ-86 Boundary Map/Mitigation Strategy

Exhibit 4: Hydrologic Unit Code (HUC) Map

Exhibit 5: Breakfast Point Mitigation Bank

Exhibit 6: Devils Swamp Mitigation Bank

Exhibit 7: Conservation Units Map

Exhibit 8: Conservation Unit 1 - Point Washington State Forest

Exhibit 9: Conservation Unit 2 - Wildlife Corridor

Exhibit 10: Conservation Unit 3 - Side Camp Road

Exhibit 11: Conservation Unit 4 - Lake Powell Headwater

Exhibit 12: Conservation Unit 5 - Cypress and Wet Pine Flats

Exhibit 13: Conservation Unit 6 - Ward Creek

Exhibit 14: Conservation Unit 7 - South American Swamp

Exhibit 15: Conservation Unit 8 - Southwest West Bay

Exhibit 16: Conservation Unit 9 - Salamander Triangle

Exhibit 17: Conservation Unit 10 - Breakfast Point Peninsula

Exhibit 18: Principles for Forest and Wildlife Management of Conservation Units within the General Permit Area and Ecosystem Management Area - Revision 2014

Exhibit 19: Conservation Unit Road Crossings

Exhibit 20: Conservation Easement

Exhibit 21: Type I Conservation Easement

Exhibit 22: Biological Opinion and Updates

Exhibit 23: *RGP-86 Flatwoods Salamander Pre-Application Evaluation*

Exhibit 24: *National Bald Eagle Management Guidelines (May 2007) (USFWS)*

Exhibit 25: *FWC Bald Eagle (Haliaeetus leucocephalus) Management Plan Handbook (June 2010) (FWC)*

Exhibit 26: *RGP-86 Telephus Spurge Pre-application Evaluation*

Exhibit 27: *Standard Protection Measures for the Eastern Indigo Snake*

Exhibit 28: High/Altered Wetlands

Exhibit 29: Checklist for Department of the Army Regional General Permit SAJ-86 (2020 Reissuance Version) for Residential, Commercial, Recreational, and Institutional Fill in the Choctawhatchee Bay, Lake Powell, and West Bay Basins Bay and Walton Counties, Florida

St. Joe Ecosystem Management Agreement
For Bay and Walton Counties

This agreement is made and entered into by The St. Joe Company (St. Joe) and the Florida Department of Environmental Protection (DEP).

I. Threshold and Procedural Matters

1. This Ecosystem Management Agreement (the "Agreement") is entered into pursuant to the authority provided by Sections 403.0752, Florida Statutes (F.S.). It is intended to be a binding agreement under Subsections 403.0752(7) and 403.0752(8). Governmental approvals addressed herein will be subject to public notice, hearing and decision-making procedures (including points of entry for third parties) as set forth in the applicable provisions of state law and this Agreement.
2. The ecosystem management process established herein coordinates the regulatory responsibilities of the DEP and the U.S. Army Corps of Engineers (USACE) with the interests of the business community, private landowners and the public, as partners in a streamlined and effective program to protect the environment and to provide net ecosystem benefits (403.0752(1), F.S.).
3. This Agreement is intended to coordinate and facilitate flexible permitting for community and economic development and to achieve Net Ecosystem Benefit (NEB) and related public objectives for the region. The Parties acknowledge that the permitting process described in this EMA will provide reasonable

assurance the objectives and requirements of subsections 403.0752(1), (2), (3), (4), F.S. are met.

4. Subsection 403.0752(2), F.S. provides that an ecosystem management agreement may be entered into by DEP and regulated entities when DEP determines that:
 - a. Implementation of such an agreement meets all the applicable standards and criteria, so that there is a net ecosystem benefit to the subject ecosystem more favorable than operation under applicable rules;
 - b. entry into such an agreement will not interfere with the Department's obligations under any federally delegated or approved program;
 - c. implementation of the agreement will result in a reduction in overall risks to human health and the environment compared to activities conducted in the absence of the agreement; and
 - d. the regulated entity has certified to the Department that it has in place internal environmental management systems or alternative internal controls sufficient to implement this Agreement.

The Department has determined that these requirements of subsection 403.0752(2) are satisfied by the approach outlined in this Agreement.

II. Agreement Overview

This Agreement addresses regulatory approvals for development within a 31,369 acre tract of land in Bay and Walton Counties owned by St. Joe, identified as the Agreement Area on Exhibit 1. Specifically, this Agreement sets forth the procedures

and criteria to be followed by DEP and St. Joe for pre-application meetings, and procedures for application submittal, review and approval for individual projects within the Agreement Area, as well as coordination with federal agencies and notice to the public. Execution of the Agreement by DEP shall constitute final agency action for dredge and fill, storm water, and mitigation banking permits pursuant to Chapters 403 and 373, F.S. and Rules 62-312, 62-25, and 62-342, Florida Administrative Code (F.A.C.). This Agreement is intended to be the sole mechanism used by St. Joe for authorization to conduct the specific activities included in the Agreement within the Agreement Area.

This Agreement constitutes a finding that reasonable assurance has been provided that the activities described herein meet or exceed the substantive criteria of Rules 62-312, 62-25 and 62-342, F.A.C. This agreement also constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. Prior to construction, individual projects must demonstrate compliance with the conditions of this Agreement under an individual project approval process outlined in subsequent sections of this Agreement.

This Agreement does not constitute approval by the Board of Trustees of the Internal Improvement Trust Fund to conduct activities on sovereign submerged lands. Such approval, if needed, must be obtained separately by St. Joe prior to conducting any activities on sovereign submerged lands.

III. Description of Agreement Area & Ecosystem Characteristics

Located within the St. Andrew Bay Watershed and Gulf Coastal Lowland

physiographic region of Northwest Florida, the Bay and Walton County Agreement Area encompasses 31,369 acres of St. Joe Company property. General cardinal boundaries are as follows: Northern boundary = the Intracoastal Waterway (ICW), Eastern boundary = St. Andrew Bay-West Bay, Southern boundary = U.S. Highway 98, Western boundary = Peach Creek. These boundaries include portions of Walton & Bay Counties, the City of Panama City Beach, and West Bay Township.

The Agreement Area has been divided into three basins: Breakfast Point, Devil's Swamp and Lake Powell. These three basins have been further subdivided into a total of 17 sub-basins. Basins and sub-basins are shown on Exhibit 1a.

IV. EMA Process

The St. Joe Company has extensive landholdings in northwest Florida, some of which it intends to develop, requiring dredge and fill and stormwater permits. The USACE and DEP initiated discussions with St. Joe and several federal and state commenting agencies to improve communication and coordination on many pending permit applications. Since September 2000, meetings have been held on a regular, usually quarterly, basis. Early on it was recognized that a more comprehensive approach to the evaluation and regulation of development would benefit all involved. The ensuing discussions were guided by an interagency team of senior staff representatives from the USACE, DEP, Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Northwest Florida Water Management District (NFWFMD) and The St. Joe Company. The interagency team continues to meet on a regular basis and will provide ongoing guidance and monitoring of the Agreement. The team meetings provide the forum for identification of issues and set work scopes for a

smaller "technical team". to research, conduct field studies and report back to the full interagency team. The smaller technical team consists of field biologists and scientists from USACE, DEP, USFWS, NMFS, EPA, St. Joe and its consultant team. Workshops and specific field exercises were conducted on topics including wetland functional assessment, flat woods salamander habitat identification, selection of suitable regional offsite mitigation areas, identification and mapping of conservation units, and field verification of GIS data used in the analysis.

V. Conservation Units

Central to this Agreement is the concept of "Conservation Units", areas of high quality habitat and landscape function, which have been identified and are to be excluded from development. The 10 Conservation Units within the Agreement Area are identified on Exhibit 2. Future development will be planned and designed to accommodate and complement the Conservation Units, in order to maximize their habitat values and functions. As community and economic development occurs within the Agreement Area, the Conservation Units and open space within individual project sites will be designed with connective qualities, primarily to link Conservation Units. Over time, this will increase the value of the conservation landscape within the Agreement Area.

These Conservation Units link wildlife corridors and protected upland/wetland habitats from St. Andrew Bay to the Point Washington State Forest and Devil's Swamp mitigation bank (discussed in Section VIII), which in turn continues the connection to Northwest Florida Water Management District lands and eventually the Choctawhatchee floodplain and Bay systems. The result is a two-pronged "Bay to Bay" wildlife corridor which will help to preserve the ecological integrity of two of

Northwest Florida's most rapidly developing watersheds. The Conservation Units also provide wetland, water resource and wildlife protection within the watershed of Lake Powell, an Outstanding Florida Water.

Five ecological criteria were adopted by the EMA Interagency Team to analyze and select appropriate areas for inclusion in Conservation Units: Regional Significance, Biodiversity, Water Quality, Essential Fish Habitat and Nursery/Living Marine Resources (Appendix C). Many of these Conservation Units are presently in planted pine plantations, but are restorable to more natural conditions. Their specific locations were chosen based on their present and potential contributions to the ecosystems in and surrounding the Agreement Area. Conservation Units may only be used for conservation purposes and limited passive recreational purposes. The uses and activities authorized in the conservation units are limited to the following:

1. Wetland and upland habitat enhancement and restoration.
2. Forest management, which shall be conducted through sustainable forestry, uneven age management regimes and best management practices, in accordance with, and as defined in the Principles for Forest and Wildlife Management of Conservation Units within the Bay-Walton Sector Plan Ecosystem Management Agreement and RGP SAJ-114 ("Forest and Wildlife Management Plan", see Exhibit 17). No timbering of cypress or wetland hardwoods or clear cutting is permitted except as allowed in the Forest and Wildlife Management Plan.
3. Hunting, fishing and birding.
4. Passive recreational facilities including hiking and biking trails, boardwalks, gathering shelters, restrooms, camping platforms, horseback trails and hitching areas and other facilities of a similar nature. These facilities shall result in no more than

minimal impacts. Trails and boardwalks may cross wetlands, but must be minimized to the maximum extent practicable. All other facilities must be located in uplands.

5. Wetland mitigation as required by any future permit.
6. Green Burial Council certified *Conservation Burial Grounds*. This level of certification employs burial/scattering programs that aid in the restoration, acquisition and/or stewardship of natural areas.
7. Reinstitution of fire regime, including necessary firebreaks, which mimics natural conditions.
8. Linear utilities and infrastructure facilities, which shall be defined as (i) electric transmission, collection and/or distribution lines, (ii) water transmission, collection and/or distribution lines, (iii) sewer transmission, collection and/or distribution lines, (iv) natural gas transmission, collection and/or distribution lines, (v) data and/or telecommunications transmission, collection and/or distribution lines (phone, cable, fiber optics, internet), and (vi) stormwater conveyances, but not stormwater ponds. In addition, ancillary facilities that are part of and support the linear utilities and infrastructure facilities described above shall be allowed. All linear utilities and infrastructure facilities shall, when practical, be co-located with road crossings and be installed by direct bore methods. The linear infrastructure shall be subject to the criteria and wetland impact limitations as set forth in sub-paragraph 3 of Article VII below.
9. Activities needed to maintain, in current condition, existing access, roads and ditches within and through the Conservation Units. These allowable maintenance activities do not include activities to relocate such access, roads and ditches.
10. Nature centers, including single access roads. A Leadership in Energy and Environmental Design ("LEED") certification of silver or higher must be obtained for any enclosed structures. Nature centers may only be located in uplands. Access roads to serve nature centers must comply with paragraph 3 of Article VII below and paragraph 12 below.

11. Within buffers that are required to be preserved by the Individual Project Approval and that are part of the property, construction of boardwalks for dock access and on-grade trails will be permitted. Also, application of herbicides and pesticides is authorized to the extent herbicides and pesticides are used to control exotic plant vegetation within the buffers.
12. Construction of five new or improved road crossings shown on Exhibit 3.
13. Crossing Number 4, through the Wildlife Corridor Conservation Unit, shall be bridged. These road crossings shall be subject to individual project approval as required in Section IX, and shall be subject to the wetland impact limitations of Section VII.

VI. Permitted Activities

This Agreement authorizes dredging and filling in waters of the State, establishment of two mitigation banks, and construction and maintenance of stormwater facilities, associated with residential, commercial, recreational and institutional projects, including supporting infrastructure, by St. Joe within the identified 31,369-acre Agreement Area, excluding the Conservation Units described in Section V. Subject to the conditions of this Agreement, dredging and filling for the referenced activities is authorized in wetlands and ditches. Dredging and filling in, on or over other surface waters is limited to road, bridge, or boardwalk crossings.

Specifically, this permit includes activities such as the construction of building foundations, building pads and attendant features that are necessary for the use and maintenance of the structures. Attendant features may include, but are not limited to, roads, parking lots, garages, yards, utility lines, and storm water management facilities. Residential developments include multiple and single unit developments.

Examples of commercial developments include retail stores, light industrial facilities, restaurants, business parks, and shopping centers. Examples of recreational facilities include playgrounds, playing fields, golf courses, hiking trails, bike paths, horse paths, stables, nature centers, and campgrounds. No marinas or docking structures are authorized under this Agreement. Examples of institutional developments include schools, fire stations, government office buildings, judicial buildings, public works buildings, libraries, hospitals, and places of worship.

VII. Wetland Impacts and Stormwater

The Agreement Area, as depicted in Exhibit 1, is divided into three basins: Breakfast Point, Lake Powell and Devil's Swamp. Wetland jurisdiction was assessed using the USACE wetland delineation methodology. The USACE wetland boundaries will be used as the Department wetland jurisdictional line, providing the state with a "safe" upland line to represent the landward edge of waters of the State. For projects under the Agreement, the state will be allowed to exercise regulatory jurisdiction over a significantly larger area than presently allowable under state law.

Wetlands in each basin have been identified, mapped and classified as either high quality or altered, Exhibit 5. Altered wetlands are jurisdictional areas, which are in silviculture. Altered wetlands also include ditches. High quality wetlands are all other jurisdictional areas. Altered wetlands are typically hydric pine plantations. High quality wetlands are typically cypress domes/strands, bay/gallberry swamps, harvested cypress swamp areas, titi monocultures, and hypericum bogs.

In order to be approved, wetland impacts must meet all of the following criteria:

1. Impacts to altered wetlands shall not exceed 20% of the total altered wetlands

in any one sub-basin. The areas within a particular sub-basin to be used to make the 20 percent calculation do not include areas within either mitigation banks or conservation units located with the sub-basin. Sub-basins are depicted in Exhibit 1a.

2. Projects may impact more than 20% of the altered wetlands within an individual project site if cumulative altered wetland impacts for all approved projects within the sub-basin do not exceed 20% at any time. Examples of where this may occur include:
 - a. An individual project impacts only 15% of the altered wetlands in the project site and the remaining on-site wetlands are preserved through a conservation easement to DEP in the form of the applicable easement document in Exhibit 6. St. Joe may request that a subsequent project within that sub-basin impact more than 20% of the altered wetlands in the project site, as long as the total impact to altered wetlands for all approved projects within the sub-basin does not exceed 20%.
 - b. An individual project impacts 30% of the altered wetlands on the project site. Simultaneously with approval of the project, a sufficient amount of altered wetlands are preserved through a conservation easement to DEP, in the form of the applicable easement document in Exhibit 6, elsewhere within the same sub-basin so as not to exceed the maximum 20% impact to altered wetlands for all approved projects within the sub-basin.
3. Impacts to high quality wetlands shall be limited to road and bridge crossings, boardwalks and paths, linear infrastructure (which includes stormwater conveyances but not stormwater ponds), utility corridors, and any other linear

access facilities necessary to support the associated development and shall typically not exceed a width of 100 feet of combined filling or clearing at each crossing, but may in certain cases, consistent with the criteria in this section, be allowed up to a total width of 160 feet. Florida Department of Transportation roads may be allowed up to a width of 200 feet consistent with criteria in this section. The aggregate total filling or clearing of high quality wetlands for crossings and other linear infrastructure within the Agreement Area shall not exceed 100 acres. The first preference for new high quality wetland road crossings will be at existing silviculture road crossings. Crossings at locations other than existing silviculture roads can be authorized on a case-by-case basis. All crossings, whether at existing silviculture roads or locations other than existing silviculture roads, will be designed and constructed to minimize high quality wetland impacts. In addition, for each crossing proposed at a point where no previous crossing existed, an existing silviculture road crossing within the same sub-watershed must be removed and the wetland hydrologic connection including any associated natural stream or tributary within the area of removal, shall be restored. Restoration in this section is defined as re-establishment of natural soil surface grades and appropriate vegetation is naturally re-emerging no later than the 365th day following the date of the initiation of construction of the new crossing. All road or bridge crossings in wetlands shall be designed so that the hydrologic conveyance is not reduced or impaired. Bridging is encouraged wherever practical. The following factors shall be considered when determining if bridging of the wetlands is practical: 1) the degree of water flow within the wetland, 2) the length of the wetland crossing, 3) the topography of the wetland and associated upland, and 4) the degree to which a roadway would adversely affect the movement of wildlife

expected to use the wetland.

4. Surface Water management systems for all projects authorized by this Agreement shall be designed, constructed, operated and maintained in compliance with Chapter 62-330 Florida Administrative Code (F.A.C.) and Applicant's Handbook, Volume 2 and shall include an additional level of treatment that is 50% above the treatment that is required for a non-OFW. Although the Surface Water Management systems will be designed to meet OFW standards, water quality standards appropriate to the receiving waters shall be applied for determining compliance with water quality standards.

VIII. Mitigation

Within the Agreement Area, individual project wetland impact mitigation may be satisfied within: (1) the two specified mitigations banks, (2) designated Conservation Units, or (3) within the project area. Mitigation at a mitigation bank shall not be an available option for a project within the Lake Powell basin. Projects within this basin must provide mitigation within the basin. Mitigation for impacts within the Lake Powell basin can be within the project site, or within a designated Conservation Unit in the basin.

The first priority for mitigation of permitted wetland impacts in the Agreement Area, except for impacts within the Lake Powell basin as described above, is restoration/enhancement-based activities at one of two designated mitigation banks.

1. Breakfast Point mitigation bank, 4,637 acres in size, is only available for projects within the Breakfast Point Basin.
2. Devil's Swamp mitigation bank, 3,049 acres, is only available for projects

within the Devil's Swamp Basin.

The two mitigation banks and their respective basins, as well as the Lake Powell basin, are depicted in Exhibit 4. Together with the 10 Conservation Units discussed above, these wildlife corridors and significant habitats traverse the Agreement Area, actively linking public resources from Choctawhatchee Bay to St. Andrew Bay, filling gaps roughly 15 miles long.

The mitigation potential for each mitigation bank has been evaluated using WRAP analysis and field observations, and mitigation credits have been assigned pursuant to Rule 62-342. The number and type of mitigation credits available in each mitigation bank are given in Appendices A and B. Based on representative impacts to altered and high quality wetlands within the Agreement area, the number of credits required within either the Breakfast Point or Devil's Swamp mitigation bank for impacts to altered and high quality wetlands has been determined, and are shown in Appendices A and B.

Mitigation for impacts to estuarine wetlands and other surface waters may be higher than indicated above based on an individual project evaluation. Factors to be considered in determining if additional mitigation is needed shall include: 1) the extent of direct impacts from fill, including pilings and support structures, 2) the amount of shading or other secondary impacts expected to result from the activity, and 3) impacts from construction methodologies, such as barge access or the use of heavy equipment. Mitigation for impacts to estuarine wetlands shall be conducted either on site or within a conservation unit that contains estuarine species.

Each mitigation bank shall be constructed, managed and monitored according to the approved mitigation plans, included as Appendices A and B. The conditions included

in Appendices A and B are considered conditions of this Agreement.

IX. Individual Project Approval

Pre-Application Process

The evaluation process to determine if an individual project conforms to the requirements and criteria of this Agreement shall begin with a pre-application meeting to which the appropriate representatives from DEP, USACE, USFWS, NMFS, EPA and NFWMD are invited. The primary purpose of the pre-application process is to identify and produce preliminary data necessary for evaluation during the application phase and to conduct an informal analysis of the project and evaluate how it complies with the Agreement criteria. The pre-application meeting shall also provide an opportunity to discuss the proposed project design and the opportunity for habitat corridors between on-site wetlands, the Conservation Units, and other wetlands in the Agreement Area.

Additionally, the Department and St. Joe will discuss the need for a separate approval to use sovereign submerged lands to implement the proposed project. If sovereign submerged lands approval is needed, every effort will be made to process such approval concurrently with the individual project review required by this Agreement.

At the pre-application meeting, the following information will be provided:

1. Scope of the Project- Type of project and how it comports with activities authorized by the Agreement.
2. Location/ Project Boundaries - Exhibits showing general project location within the Project Area boundaries and specific location (1"=200' or other appropriate scale).

3. The identification and delineation of wetlands and other surface waters within the individual project area. Wetlands may be delineated using aerial photo-interpretation (API) and ground-truthing, and if necessary, mapped using GPS and other GIS mapping techniques. The identification and delineation of wetlands must be in accordance with the USACE's Wetlands Delineation Manual (1987). In much of the project area, historical aerial photography will be used to obtain pre-pine plantation wetland community signatures. If the construction line falls within 250 feet of a wetland boundary estimated using the method described in this paragraph, then a ground-truthed wetland jurisdictional determination will be required for that segment of the proposed project.
4. Maps of high quality and Altered wetlands onsite - The existing high quality/altered wetland map shall be used as a starting point for classification of onsite wetlands (Exhibit 5). During or after the estimation of jurisdictional wetland boundaries using the API method described in 3. above, the resulting wetland area will be classified and mapped by quality. The procedure will use a combination of GPS technology, visual inspection of photography, and ground- truthing. Additional data that may be used include overlays involving timber stand data.
5. Proposed Wetland Impacts - The number, type, location, and acreage of all wetland impacts, as well as drawings and other exhibits that accurately and sufficiently depict the proposed project.
6. Stormwater attenuation and treatment options under consideration.
7. Documentation of submittal of project to the State Historic Preservation Officer (SHPO) and the Florida Fish and Wildlife Conservation Commission. When required by the SHPO, the applicant shall conduct a

Phase I archeological and historical survey on each individual project site. This information shall be provided to the SHPO and the USACE, so that measures can be identified to avoid, minimize or mitigate adverse impacts to historic properties listed, or eligible for listing in the National Register of Historic Places, or otherwise of archeological or historical value.

Formal Individual Project Review

Following the pre-application meeting, St. Joe shall formally submit the individual project for approval using the current Form required by the State. A processing fee shall accompany each application in an amount consistent with the fee schedule in Rule 62-330.071, F.A.C. for dredge and fill permits. Form #62-330.060 shall be completed pursuant to the instructions, with the exception of items 7 and 8, which shall be completed as follows:

Item 7. Desired Permit Duration (see Fee Schedule): *Duration of the individual project approvals shall be 10 years.*

Item 8. General Permit or Exemption Requested: *St. Joe Ecosystem Management Agreement for Bay and Walton Counties should be referenced here.*

In addition to the application form, the submittal shall include:

1. The necessary technical information, drawings and calculations describing the stormwater management system proposed for the individual project, and,
2. Documentation of coordination with the State Historic Preservation Officer regarding any needed archaeological and historical surveys for the project area, and any measures needed to avoid, minimize or mitigate adverse impacts to sites of historical or archaeological value.

3. Documentation of coordination with the Florida Fish and Wildlife Conservation Commission.

Upon receipt of the complete application for individual project approval, DEP will have 60 days to review the information for compliance with the terms of this Agreement. The review shall also consider St. Joe's history of compliance with previously issued permits, and individual project approvals granted under this Agreement, as a factor in determining if reasonable assurance has been provided that the terms of the Agreement or individual project approval will be met. A history of non-compliance with previously issued permits and approvals may serve as the basis for project denial, modification, or the addition of specific conditions, based on the nature, severity, and extent of the non-compliance.

If the application is found to provide reasonable assurance that the project complies with the terms of this Agreement, DEP shall approve the individual project. DEP shall issue a letter of approval or denial of the individual project that shall include a point of entry for challenging the agency action. The letter will also include a public notice of the agency action that St. Joe shall publish in a newspaper of general circulation in the county where the individual project is located and publication shall be accomplished in the same manner as provided in Rule 62-110.106(3)(a), F.A.C. Any challenge to the agency action on the individual project shall be limited to whether or not the individual project complies with the terms of this Agreement.

Preservation of Third Party Rights

This Agreement is not intended to alter or modify the rights of third parties to challenge agency actions, except that the requirements imposed by this Agreement for stormwater management systems, dredge and fill of wetlands, and wetlands impact mitigation shall govern rather than the requirements of Florida Statutes and Florida

Administrative Code.

If the DEP proposes to issue an Individual Project Approval pursuant to section IX of this Agreement, any Florida corporation not for profit which meets the requirements of 403.412(6), Fla. Stat., and any person whose substantial interests will be determined or affected by individual project approvals under the Agreement may petition the Department for a formal administrative hearing pursuant to 120.569 or 120.57, Fla. Stat.

The scope of a challenge to an Individual Project Approval is limited to whether the Individual Project Approval complies with this Agreement. General issues that may be raised include, as applicable, whether the stormwater management system, the dredging and filling of waters of the state and the mitigation to offset wetland impacts, proposed for an individual project approval comply with this Agreement. Examples of specific issues which may be raised in such hearings, to determine compliance with this Agreement, include the following:

Stormwater Management Systems:

- a. Whether an activity is subject to the stormwater management system requirements contained in Applicant's Handbook Volume 2 of this Agreement which shall include the following:
 - i. whether the activity is below the thresholds of section 2.1.1 of Appendix E,
 - ii. whether the activity qualifies for an exemption under rule 62-330 FAC.
 - iii. whether the activity qualifies for a noticed general permit

under Chapter 62-330, F.A.C.

- b. If an activity exceeds the thresholds of section 2.1.1 of Appendix E of this Agreement, whether reasonable assurance has been provided that the proposed stormwater management system meets the requirements of Part IV of

Appendix E of this Agreement.

c. If a stormwater management system exceeds the thresholds of section 2.1.3 of Appendix E of this Agreement, whether reasonable assurance has been provided that the proposed stormwater management system (with all criteria as further defined in Part III of Appendix E of this Agreement):

i. will not cause adverse water quantity impacts to receiving waters and adjacent lands;

ii. will not cause flooding to on-site or off-site property;

iii. will not cause adverse impacts to existing surface water storage and conveyance capabilities;

iv. will not adversely impact the value of functions provided to fish and wildlife and listed species by wetlands and other surface waters;

v. will not result in discharges from the system to surface and ground water of the state that cause or contribute to violations of state water quality standards as set forth in chapters 62-4, 62-302 and 62-520, F.A.C., including any antidegradation provisions of paragraphs 62-4.242(1)(a) and (b), subsections 62-4.242(2) and (3), and section 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in subsections 62-4.242(2) and (3), F.A.C.;

vi. will not cause adverse secondary impacts to the water resources;

vii. will not adversely impact the maintenance of surface or ground water levels or surface water flows established pursuant to Section 373.042, Fla. Stat.;

viii. will be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed;

ix. will be conducted by an entity with the financial, legal, and

administrative capability of ensuring that the activity will be undertaken in accordance with the terms and conditions of the permit, if issued; and

x. will comply with any applicable special basin or geographic area criteria rules within the EMA area including, but not limited to, whether the water quality design and performance criteria meet OFW standards for those stormwater systems discharging to the Lake Powell Basin.

2. Dredging and Filling of Waters of the State:

a. Whether reasonable assurance has been provided that wetlands boundaries set forth in any individual project approval sought pursuant to this Agreement have been accurately identified and delineated in accordance with the USACE's Wetlands Delineation Manual (1987) as set forth in Section VII of this Agreement.

b. Whether reasonable assurance has been provided that wetlands proposed to be impacted meet the altered or high quality wetland definitions set forth in section VII of this Agreement.

c. Whether reasonable assurance has been provided that impacts to high quality wetlands do not exceed area, width, and use limitations and impacts to altered wetlands do not exceed use limitations specified in section VII of this Agreement.

d. Whether reasonable assurance has been provided that the appropriate width of upland or altered wetland buffers are proposed to be established around high quality wetlands as set forth in section X. 17. of this Agreement.

e. Whether reasonable assurance has been provided that any proposed road or bridge crossing is designed so that hydraulic conveyances are not reduced or

impaired as set forth in section VII and Appendix E of this Agreement.

3. Wetlands Impact Mitigation:

a. Whether mitigation credits are properly assigned to compensate for wetlands impacts as set forth in section VIII and Appendices A and B of this Agreement.

b. Whether mitigation for wetlands impacts occurs within the appropriate mitigation bank, Conservation Unit, or project area depending upon the applicable basin as set forth in section VIII of this Agreement.

4. General:

a. Whether the application for Individual Project Approval was submitted to and coordinated with the State Historic Preservation Officer and the Florida Fish and Wildlife Conservation Commission as set forth in section IX. 7. of this Agreement.

b. Whether the appropriate public notice of the proposed individual project approval was provided as set forth in section IX of this Agreement.

c. Whether the individual project approval incorporates the applicable St. Joe commitments set forth in section X of this Agreement.

Individual Project Approval General and Specific Conditions

The General Conditions contained in Appendix F shall be conditions of any individual project approval.

If mitigation for the project is provided in a mitigation bank, the approval shall specify the number of credits to be used to offset the project impacts, pursuant to Section VIII. If mitigation for the individual project is to be provided either on-site

or in a Conservation Unit, rather than a mitigation bank, the individual project approval shall also include Specific Conditions describing the details of the required mitigation, and any associated requirements for monitoring the success of the mitigation.

As part of reasonable assurance that the mitigation provided outside of the mitigation bank will be maintained in perpetuity in its enhanced or restored state, the individual project approval shall also include a requirement for the placement of a conservation easement over the mitigation site. The conservation easement shall be in the form of the applicable easement document in Exhibit 6. Prior to issuing a letter of approval for the individual project, St. Joe shall submit a draft of the conservation easement, along with documentation that the property over which the conservation easement will be granted has no encumbrances or liens that would be contrary to the purpose of the conservation easement. The individual project approval shall include a condition requiring that the conservation easement be executed, delivered and recorded prior to conducting the activities authorized in the project approval letter.

St. Joe shall use best management practices during individual project construction to minimize impacts to wetlands and other surface waters not authorized to be dredged or filled, and to control erosion and turbidity to ensure that state water quality standards are not violated. The Department may include specific conditions related to project construction techniques in the individual project approval letters to address these issues.

Web Site for Public Information

The Department agrees to maintain a web site, accessible to the public, containing information regarding individual projects reviewed under the Agreement. At a minimum, the web site will include information on the individual projects approved, or pending approval by the Department. This information may be viewed at the following web address: <https://floridadep.gov/northwest/nw-permitting/content/st-joe-company-development-project-information> Posting of such information does not constitute public notice of a point of entry to challenge the Department's action on individual project approvals. Such public notice shall be accomplished as set forth in Section IX.

X. St. Joe Commitments

St. Joe Corporation agrees to the following commitments:

1. This Agreement is intended to be the sole mechanism used by St. Joe for authorization to conduct the specific activities included in the Agreement within the Agreement Area. Any change in authorized activities, or any other deviation from the terms of the Agreement, will require amendment of the Agreement. Separate individual or general permits may be applied for within the Agreement Area for activities that are not addressed by this Agreement, including but not limited to marinas and docking facilities.
2. The Conservation Units shall be excluded from development plans or activities, other than those authorized under Section V.
3. St. Joe will manage the Conservation Units and mitigation banks consistent with their ultimate conservation use unless or until transferred in accordance with paragraph 4 below.
4. If Conservation Units, or any portion thereof or interest therein, are conveyed to subsequent owners, if not already subject to a conservation easement pursuant to paragraph 11 below, St. Joe shall place conservation easements on

such property to assure the perpetual conservation use of the Conservation Units. The conservation easement shall be in the form of the applicable easement document in Exhibit 6.

5. Ownership or interest in a mitigation bank, other than the sale of mitigation credits to a third party, may only be transferred to a governmental agency for conservation purposes, or to a 501c(3) conservation organization. If a mitigation bank, or any part thereof or any interest therein, is conveyed to a subsequent conservation owner, St. Joe will ensure that the new owner is bound by the conditions and requirements of the mitigation plan approved by this Agreement. Prior to the conveyance, the Department must approve the instrument(s) that ensure compliance with the Agreement, and may require execution of a subsequent agreement with the conservation owner to provide for continued compliance with the approved mitigation plan. The Department's approval of the assurance instruments shall be contingent on the conservation owner providing reasonable assurance that such owner has the technical and financial resources to comply with the approved mitigation bank plan.
6. Mitigation of project impacts will be conducted in a manner consistent with the approved mitigation plan for each of the mitigation banks, or in accordance with the conditions of the individual project approval if mitigation is to be conducted on the project site or within a Conservation Unit.
7. Mitigation will occur prior to or be implemented concurrently with permitted impacts.
8. A perpetual conservation easement will be placed on each mitigation bank, or each approved phase of a mitigation bank, prior to commencing any development that will use the bank or phase of the bank for mitigation. The

conservation easement shall be in the form of the applicable easement document in Exhibit 6.

9. For mitigation conducted outside of a mitigation bank, a perpetual conservation easement will be placed on the mitigation area prior to beginning work on the individual project for which the mitigation is approved and shall be in the form of the applicable easement document in Exhibit 6.
10. Perpetual conservation easements will be placed on the wetlands not authorized for impact on each project site following the individual project approval and according to the timeframe specified in the approval. The easement shall be in the form of the applicable easement document in Exhibit 6.
11. By February 15 of each year, St. Joe shall have placed a perpetual conservation easement, in the form of the applicable easement document in Exhibit 6, on portions of Conservation Units equal to the percentage of the total acreage of approved projects in each sub-basin. To determine the acreage of the Conservation Units that must be placed under conservation easement:
 - a. Divide the total acreage within approved project boundaries in a sub-basin (including impact and preserved area) by the total acreage of land within the sub-basin minus the area of any conservation units within the sub-basin contained within the Agreement area.
 - b. This percentage of the Conservation Units in each sub-basin shall be placed under a conservation easement by the end of each annual reporting period.
12. Stormwater management systems in project areas within the Agreement Area will be designed, constructed and maintained to meet the criteria in

13. There will be no wetland fill for septic tanks or drain fields.
14. St. Joe base maps will depict the location of Conservation Units to assure each business unit within the company is aware of their location and restrictions placed upon them to assure that there is no encroachment or activity incompatible with conservation use.
15. Forest management activities within the Conservation Units will be based on uneven age management, with no clear cutting except as part of mitigation plans for forest restoration as set forth in Appendix D.
16. Buffers are required around Lake Powell, a coastal dune lake. A 100-foot buffer between the lake from the Ordinary High Water Line (OHWL) and development is required in Walton County. A 30-foot buffer between the lake from the OHWL and development is required in Bay County. All buffers, whether upland or wetland, will be preserved and maintained in a natural condition, except for boardwalks for dock access and on-grade trails. Application of fertilizers, herbicides and pesticides is prohibited within all buffer areas.
17. In general, high quality wetlands shall be buffered from development by uplands/and or altered wetlands. Except at road crossings, upland and/or altered wetland buffers adjacent to high quality wetlands shall be an average of 50 feet wide, with a minimum 30-foot width for each individual project area. All buffers, whether upland or wetland, will be preserved and maintained in a natural condition, except for boardwalks for dock access and on-grade trails. Application of fertilizers, herbicides and pesticides is prohibited within all buffer areas.
18. Only clean fill and rock material compatible with existing soils (*e.g.*, soil, rock,

sand, marl, clay, stone, and/or concrete rubble) shall be used for wetland fill.

19. No wetland fill will sever jurisdiction.
20. No work is authorized under this Agreement on properties listed or eligible for listing in the *National Register of Historic Places*.
21. When required by the State Historic Preservation Officer, St. Joe will conduct a Phase I archeological and historical survey on each individual project site. This information will be provided to the State Historic Preservation Officer, the Department and the USACE so that measures can be identified to avoid, minimize or mitigate adverse impacts to historic properties listed, or eligible for listing in the *National Register of Historic Places*, or otherwise of historical or archeological value.
22. No activity is authorized by this Agreement that is likely to adversely affect a federal or state listed threatened or endangered species or a species proposed for such designation, or destroy or adversely modify its designated critical habitat.
23. St. Joe certifies that it has and will maintain internal systems and controls to ensure adherence to these commitments and implementation of this Agreement.

XI. Monitoring and Reporting

1. St. Joe shall submit the monitoring related to the mitigation banks, as specified in Appendices A and B.
2. St. Joe shall establish and maintain a GIS based ledger and map for each basin and sub-basin, depicting the amount, type and percentage of wetland impact and mitigation implemented in the Agreement Area. An updated ledger balance sheet demonstrating compliance with the Agreement shall be

submitted with each individual request for project approval. The ledger will include the following:

- a. Total high quality and altered wetlands in Agreement Area.
- b. Total project size - uplands and wetlands.
- c. Project impacts - high quality and altered amount and percent of total.
- d. Mitigation required and location.
- e. Cumulative project impacts (acreage total and percentage).
- f. Total wetlands by quality remaining in the Agreement Area.

St. Joe shall submit an annual report by February 15 for the preceeding calendar year identifying: 1) The location and acreage of any mitigation activity undertaken;

- 2) conservation easements executed;
- 3) conservation units or mitigation banks conveyed to other owners;
- 4) activities undertaken within Conservation Units; and
- 5) other activities that may impact this Agreement.

XII. Net Ecosystem Benefits

The parties acknowledge that the Agreement will result in NEBs and implement progressive policies for ecosystem management and team permitting because:

1. Implementation of this Agreement satisfies applicable standards and criteria, and includes commitments to various operational, mitigation and conservation conditions that exceed current regulatory requirements;
2. Implementation of this Agreement will result in a significant reduction in overall risks to the environment compared to activities conducted in absence

of the Agreement through the NEBs listed below;

3. Implementation of this Agreement will result in conservation at a regional landscape-scale, that includes the best possible diversity and extent of habitats, selected prior to development occurring;
4. That the regional conservation plan established by this Agreement increases the ability of adjacent - existing and proposed - public conservation lands and waters to sustain long term ecological values, enhances regional wildlife dispersal and survival; protects regional water resources; and creates significant opportunities for public nature based recreation.

The specific NEBs provided by this Agreement are as follows:

1. Ten Conservation Units will be established as depicted on Exhibit 2, in addition to mitigation required for wetland impacts. These units link wildlife corridors and protected upland/wetland habitats to create a two-pronged "Bay-to-Bay" wildlife corridor which will help to preserve the ecological integrity of two of Northwest Florida's most rapidly developing watersheds.
2. The wetland impact criteria included in the agreement is expected to result in a larger percentage of preserved wetlands than would otherwise be expected as a result of the usual permitting process.
3. Two landscape-scale mitigation banks will be established and implemented, resulting in immediate ecosystem benefits from expedited restoration.
4. Through this Agreement, both uplands and wetlands shall be enhanced or restored in the mitigation banks and Conservation Units and protected in perpetuity. Significant uplands, such as xeric sandhills, scrubby flatwoods and mesic flatwoods were included in Conservation

- Units to increase habitat diversity, wildlife conservation and corridor values adjacent to high priority wetlands. 3,011 acres of uplands will be protected within the Conservation Units. 2,033 acres of uplands will be protected within the mitigation banks.
5. By protecting and restoring uplands within the Conservation Units and mitigation banks, the St. Joe Company is providing habitat for the Flatwoods Salamander, a Federally listed threatened species.
 6. Throughout the Agreement Area, wetland jurisdictional determinations will be conducted utilizing the USACE wetland jurisdictional line, rather than one federal and one State, resulting in more regulatory jurisdiction for the State.
 7. Development immediately next to high quality wetlands will have a buffer of uplands and/or altered wetlands, which is not required under existing rules, with an average width of 50 feet and a minimum width of 30 feet.
 8. No fill for septic tanks or drain fields will occur in wetlands.
 9. Breakfast Point mitigation bank will enhance the protection of water quality for St. Andrew Bay by restoring the natural system and providing a perpetual buffer between development and the Bay.
 10. Devil's Swamp mitigation bank will enhance the protection of water quality for Choctawhatchee Bay by restoring the natural system and providing a perpetual buffer between development and the Bay.
 11. Storm water management systems will incorporate water quantity and quality components which meet or exceed the rule criteria in Rule 62-330, F.A.C, which will provide greater protection for water quality and provide protection from off-site flooding.

XTII. Amendments

This Agreement may be modified at any time by written amendment approved by both parties, which shall be submitted, reviewed and processed in the same manner as this Agreement or as otherwise provided for by law. Amendments must be consistent with the provisions of sections 403.075 and 403.0752, F.S.

XIV. Term of Agreement

This agreement shall be perpetual, unless modified according to Section XIII or terminated according to Section XV.

XV. Termination

1. DEP may terminate this Agreement by giving thirty days prior written notice to St. Joe or request renegotiation of this Agreement if DEP demonstrates that:
 - a. There has been a material change in conditions from the original Agreement such that the intended net ecosystem benefits are not being, or may not reasonably be expected to be, achieved through continuation of the Agreement.
 - b. St. Joe is in material breach of the terms of the agreement. Nothing in this paragraph shall preclude the Department from taking appropriate enforcement action in lieu of, or in combination with, termination for violations of this Agreement or any individual project approval issued hereunder.
2. St. Joe may terminate this Agreement by giving thirty days prior written notice to the DEP as provided in Section XVI, provided that:
 - a. The mitigation commitments in the approved mitigation bank plans, or mitigation commitments identified in the individual project

approvals, are fulfilled or agreements are entered into to ensure fulfillment.

- b. The conservation easements required by the Agreement and individual project approvals up to the time of termination have been properly executed, delivered and recorded.
3. Upon termination of the Agreement, previously issued individual project approval letters shall remain in effect for the duration of such approval. Such individual projects shall continue to be subject to the General and Specific Conditions included in the individual project approval letter, and the terms of this Agreement.
4. Every five year, FDEP shall hold a public information-gathering forum to receive public comment on whether there is cause for FDEP to terminate this Agreement. At least 30 days prior notice of such forum shall be published in a newspaper of general circulation in both Bay and Walton Counties. Actual notice shall also be provided to the NMFS, USACE, USFWS, NFWFMD, FWC, EPA, Bay County Commission, and Walton County Commission.

XVI. Notices

Notices under this Agreement shall be sent by certified mail, return receipt requested or email to the parties. Effective Date

The effective date of this Agreement shall be the date on which the last party executed the Agreement.

IN WITNESS THEREOF, the parties, by and through the undersigned duly authorized representatives, have executed this Agreement on the dates set forth

below.

THE ST. JOE COMPANY

STATE OF FLORIDA DEPARTMENT
ENVIRONMENTAL PROTECTION

Date

DRAFT

EXHIBIT 2

ECOSYSTEM MANAGEMENT AGREEMENT

**STORMWATER SYSTEM
DESIGN AND REVIEW
CRITERIA MANUAL**

February 2004

TABLE OF CONTENTS

PART I -- POLICY AND PROCEDURES

1.0	Introduction.....	1-1
1.1	Applicability	1
1.2	Review Process	1
1.3	Forms	2

PART II -- GENERAL CRITERIA

2.0	General Design and Performance Criteria for all Surface Water Management Systems	2-1
2.1	Systems Requiring Engineered Stormwater Management Systems	1
2.2	Criteria for Evaluation	1
2.3	Professional Certification.....	2
2.4	Maintenance Access.....	2
2.5	Legal Authorization	3
2.6	Public Safety	3
2.7	Conveyance and Flood Storage	4
2.8	Tailwater for Water Quality	5
	Figure 2.7-1 2-Year 24-Hour maximum Rainfall, inches	6
2.9	Applicant Responsibility.....	7
2.10	Operation and Maintenance	7
2.11	Retrofits of Existing Surface Water Management Systems	9

PART III -- STORMWATER QUANTITY/FLOOD CONTROL

3.0	General Flood Control Requirements.....	3-1
3.1	Engineered Stormwater Management Systems That Must Meet Water Quantity Criteria	1
3.2	Standards that Apply and Relationship to Part IV	1
3.3	Peak Discharge Attenuation.....	1
	Figure 3.2-1 Conceptual design of a multi-stage outlet structure	2
	Figure 3.3.5-1	5
	Figure 3.3.5-2	5
3.4	Storage and Conveyance.....	6
3.5	Stabilization of Side Slopes	7
3.6	Low Flow and Base Flow Maintenance.....	7

PART IV -- STORMWATER QUALITY

4.0	Purpose and Background.....	4-1
4.1	Thresholds for Designing in Conformance with Stormwater Quality Criteria... ..	1
4.2	Criterion	1
4.3	Integration with State Resource Implementation Rule	1
4.4	State Water Quality Standards.....	2
4.5	Criteria for Evaluation	3
4.6	Erosion and Sediment Control Criteria for Surface Water Management Systems	4

4.7 Oil and Grease Control	4
4.8 On-Line and Off-line Stormwater Systems	4
Figure 4.7-1 Oil skimmer detail for a typical outfall structure (N.T.S.)	5
Figure 4.8-1 On-line treatment system	6
Figure 4.8-2 Off-line treatment system.....	8
Figure 4.8-3 Diversion box (N.T.S.).....	9

PART V -- BEST MANAGEMENT PRACTICES

5.0 Design Criteria and Guidelines for Retention Systems	5-1
5.1 Description	1
Figure 5.1-1 Retention (N.T.S.).....	2
5.2 Treatment Volume	3
5.3 Recovery Time	3
5.4 Basin Stabilization	4
5.5 Retention Basin Construction	4
5.6 References	5
6.0 Underdrain Design and Performance Criteria	6-1
6.1 Description	1
6.2 Treatment Volume	1
Figure 6.1-1 Cross-section of underdrain system (N.T.S.)	2
Figure 6.1-2 Top view of underdrain system (N.T.S.).....	3
6.3 Recovery Time	4
6.4 Safety Factor	4
6.5 Underdrain Media	4
6.6 Filter Fabric	4
6.7 Inspection and Cleanout Ports	4
6.8 Basin Stabilization	5
6.9 References	5
7.0 Exfiltration Trench Design and Performance Criteria	7-1
7.1 Description	1
Figure 7.1-1 Cross-section of typical underground exfiltration trench (N.T.S.).....	2
7.2 Treatment Volume	3
7.3 Recovery Time	3
7.4 Safety Factor	4
7.5 Minimum Dimensions	4
7.6 Filter Fabric	4
7.7 Inspection and Cleanout Structures	4
7.8 Ground Water Table	5
7.9 Construction	5
7.10 References	5
8.0 Wet Detention Design and Performance Criteria	8-1
8.1 Description	1
8.2 Treatment Volume	1
8.3 Recovery Time	1
Figure 8.1-1 Wet detention (N.T.S.).....	2
8.4 Outlet Structure	3
8.5 Permanent Pool	3
8.6 Littoral Zone	3
Figure 8.4-1 Typical wet detention outfall structure (N.T.S.)	4

Figure 8.4-2 Typical wet detention outfall structure with "V"-notch weir (N.T.S.)...	5
Figure 8.4-3 Typical wet detention outfall structure with and without baseflow conditions (N.T.S.)	6
8.7 Littoral Zone Alternatives.....	7
8.8 Pond Depth	8
8.9 Pond Configuration.....	8
8.10 Ground Water Table	8
Figure 8.9-1 Examples of good and poor wet detention pond configurations (N.T.S.)	9
8.11 Pre-treatment	10
8.12 Pond Side Slopes	10
8.13 Direct Discharges to Class I, Class II, OFWs, or Shellfishing Waters	11
8.14 References	11
9.0 Design Criteria and Guidelines for Swale Systems.....	9-1
9.1 Description	1
Figure 9.1-1 Cross-section of swale system (N.T.S.).....	2
9.2 Treatment Volume	3
9.3 Recovery Time	3
9.4 Dimensional Requirements	3
9.5 Stabilization	3
10.0 Design Criteria and Guidelines for Wetlands Stormwater Management Systems.....	10-1
10.1 Description	1
10.2 Types of Wetlands that may be Utilized for Stormwater Treatment	1
10.3 Treatment Volume	1
10.4 Recovery Time	2
10.5 Inlet Structures	2
10.6 Wetland Function	2
10.7 Residence Time	2
10.8 Monitoring	2
10.9 Dredge and Fill	3
11.0 Karst Sensitive Area Criteria	11-1
11.1 Background of the Sensitive Karst Area Design Criteria	1
11.2 Hydrogeology of the Sensitive Karst Areas.....	1
11.3 Design Criteria for Sensitive Karst Areas.....	6
11.4 References	9

PART VI – APPENDICES

APPENDIX A.....	A-1
CRITERIA/PERFORMANCE CRITERIA	A-1
APPENDIX B	B-1
LEGAL DESCRIPTION OF KARST AREA	B-1

PART I -- POLICY AND PROCEDURES

1.0 Introduction

The purpose of the Manual is to provide design criteria and a review process for the stormwater management systems within the Agreement Area. The design criteria are based the FDEP ERP rules developed for the Northwest District.

1.1 Applicability

The design criteria and review process presented in the Manual is applicable to all new stormwater systems within the Agreement area, with the following exceptions:

- Activities below the thresholds given in Section 2.1.1 of the Manual.
- Activities that are qualified exemptions under chapter 62-25.030, FAC, except for 62-25.030(1) (c).
- Activities that qualify for a noticed general permit under chapter 62-341, F.A.C.

1.2 Review Process

As outlined in the EMA, the applicant will prepare an environmental and stormwater design for the project area in accordance with the design criteria contained in the EMA and the Manual. A pre-application meeting will be held to review the intent of the design. During the pre-application meeting, the stormwater design strategy will be presented and reviewed. At a minimum, the following stormwater information will be presented:

- A map of the site showing pre-development conditions including topographic contours, soils, natural watercourses, man-made stormwater features, areas of off-site flow entering the site, and generalized surface water flow patterns across the site.
- A map of the site showing the proposed site plan along with a conceptual design for the stormwater system serving the site including routing of off-site flows. The conceptual design will address water quality and quantity (if required) design techniques.
- If a site plan is not available for the pre-application meeting, a design strategy for the water quality, quantity, and off-site flow requirements will be presented.

The stormwater design will be prepared in conjunction with the environmental design, and will be presented for review during the individual project approval process.

If the activity falls below the thresholds given in Section 2.1.1 or the activity qualifies for an exemption under Chapter 62-25.030, F.A.C., evidence supporting such will be provided at the pre-application meeting. If the activity qualifies for a noticed general permit under Chapter 62-341, FAC, the permit will be provided prior to approval of the Individual Project as outlined in the EMA. All other activities that would require a standard or individual permit will be reviewed for compliance with this Manual during the Individual Project Approval process outlined in the EMA. A finding of compliance of the activity with the Manual and the EMA constitutes approval of the activity. A separate stormwater permit is not required. All designs for activities including those below the thresholds given in Section 2.1.1 of the Manual, qualified exemptions under Chapter 62-341, FAC, and those qualified for a noticed general permit under Chapter 62-341, FAC shall conform with the environmental requirements in the EMA.

1.3 Forms

Application will be made using Form, # **17-1.215(2)**, Notice of Intent to Use General Permit for New Stormwater Discharge Facility Construction.

PART II -- GENERAL CRITERIA

2.0 General Design and Performance Criteria for all Surface Water Management Systems

2.1 Systems Requiring Engineered Stormwater Management Systems

2.1.1 All activities within the Agreement Area that would require a permit under chapter 62-25, F.A.C., but do not qualify for a noticed general permit under chapter 62-341, F.A.C., shall include an Engineered Stormwater Management system designed, constructed, operated, and maintained in accordance with this **Manual**, if they exceed any of the following criteria:

- (a) Systems involving the construction or alteration of more than 4,000 square feet of impervious or semi-impervious surface area subject to vehicular traffic. This area includes roads, parking lots, driveways, and loading zones;
- (b) Systems involving the construction or alteration of more than 5,000 square feet of building area or other impervious area not subject to vehicular traffic; or
- (c) Systems involving the construction or alteration of more than 1 acre of recreational area. Recreational areas include but are not limited to golf courses, tennis courts, putting greens, driving ranges, or ball fields.

2.1.2 All activities that require an Engineered Stormwater Management system under **section 2.1.1 of the Manual** shall be designed, constructed, operated, and maintained in conformance with the Stormwater Quality provisions of **Part IV of the Manual**.

2.1.3 In addition to complying with the criteria in **Part IV of the Manual**, systems that exceed any of the following thresholds must additionally be designed, constructed, operated, and maintained to comply with the Stormwater Quantity/Flood Control criteria of **Part III of the Manual**:

- (a) Systems that serve projects of 40 or more acres of total land area;
- (b) Systems that provide for the placement of 12 or more acres of impervious surface, which constitutes more than 40 percent of the total land area;
- (c) Systems that are capable of impounding a volume of water of 40 or more acre-feet.

2.1.4 Activities that require an Engineered Stormwater Management System under this Handbook shall additionally meet all the other applicable design and performance criteria requirements of **Part II of the Manual**.

2.2 Criteria for Evaluation

2.2.1 Reasonable Assurance

In order to obtain an environmental resource permit for a system that requires an engineered stormwater management system under **section 2.1 of the Applicant's Handbook Volume II**, an applicant must give reasonable assurance that the stormwater management system will meet the criteria in this **Manual**. This includes a determination that the activity:

- (a) Will not cause adverse water quantity impacts to receiving waters and adjacent lands;
- (b) Will not cause adverse flooding to on-site or off-site property;

- (c) Will not cause adverse impacts to existing surface water storage and conveyance capabilities;
- (d) Will not adversely impact the value of functions provided to fish and wildlife and listed species by wetlands and other surface waters;
- (e) Will not result in discharges from the system to surface and ground water of the state that cause or contribute to violations of state water quality standards as set forth in chapters 62-4, 62-302 and 62-520, F.A.C., including any antidegradation provisions of paragraphs 62-4.242(1)(a) and (b), subsections 62-4.242(2) and (3), and section 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in subsections 62-4.242(2) and (3), F.A.C.;
- (f) Will not cause adverse secondary impacts to the water resources;
- (g) Will not adversely impact the maintenance of surface or ground water levels or surface water flows established pursuant to Section 373.042, F.S.;
- (h) Will be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed;
- (i) Will be conducted by an entity with the financial, legal, and administrative capability of ensuring that the activity will be undertaken in accordance with the terms and conditions of the permit, if issued; and
- (j) Will comply with any applicable special basin or geographic area criteria rules within the EMA area. This includes, but is not limited, to the following:
 - a. For those stormwater systems discharging to the Lake Powell Basin, the water quality design and performance criteria shall meet OFW standards.

2.3 Professional Certification

All construction plans and supporting calculations submitted for surface water management systems that require the services of a registered professional (i.e., engineer, geologist, or landscape architect) under Chapters 471, 481, or 492, F.S., must be signed, sealed, and dated by the appropriate registered professional.

2.4 Maintenance Access

Regular maintenance is crucial to the long-term effectiveness of stormwater management systems. Such systems must be designed to permit personnel and equipment access and to accommodate regular maintenance activities. For example, high maintenance features such as inlets, outlets, and pumps should be easily accessible to maintenance equipment and personnel.

Legal authorization, such as an easement, deed restrictions, or other instrument must be provided establishing a right-of-way or access for maintenance of the stormwater management system unless the operation and maintenance entity wholly owns or retains ownership of the property. The following are requirements for specific types of maintenance access easements:

- (a) Easements must cover at least the primary and high maintenance components of the system (i.e., inlets, outlets, littoral zones, filters, pumps, etc.).

- (b) Easements for waterbodies, open conveyance systems, stormwater basins and storage areas must meet the following requirements:
 - 1. Include the area of the water surface measured at the control elevation; and
 - 2. Be a minimum of 20 feet from the edge of water at the control elevation or top of bank and include side slopes no steeper than 4H:1V.
- (c) Easements adjacent to water control structures must be a minimum of 20 feet wide.
- (d) Easements for piped stormwater conveyance must be a minimum of the width of the pipe plus 4 times the depth of the pipe invert.
- (e) Access easements must be 20 feet wide from a public road or public right-of-way to the stormwater management system.
- (f) As an alternative, the applicant may propose other authorization for maintenance access provided the applicant affirmatively demonstrates that equipment can enter and perform the necessary maintenance on the system.

2.5 Legal Authorization

Applicants who propose to utilize offsite areas not under their control must obtain sufficient legal authorization prior to permit issuance to use the area. For example, an applicant who proposes to locate the outfall pipe from the stormwater basin to the receiving water on an adjacent property owner's land must obtain a drainage easement or other appropriate legal authorization from the adjacent owner. A copy of the legal authorization should be submitted with the application.

2.6 Public Safety

2.6.1 Normally dry basins designed to impound more than two feet of water or permanently wet basins must contain side slopes that are no steeper than 4:1 (horizontal to vertical) out to a depth of two feet below the control elevation. As an alternative, the basins can be fenced or otherwise restricted from public access if the slopes must be deeper due to space or other constraints.

2.6.2 Detention and retention basins must be designed with side slopes of 4:1 (horizontal to vertical) to a depth at least two feet below the control elevation. Side slopes must be stabilized with vegetation to prevent erosion and provide pollutant removal.

2.6.3 Basin Side Slope Stabilization

All stormwater basin side slopes shall be stabilized by either vegetation or other material to minimize erosion of the basin.

2.6.4 Control Structures

Control structures that are designed to contain more than two feet of water within the structure under the design storm and have openings of greater than one-foot minimum dimension must be restricted from public access.

2.7 Conveyance and Flood Storage

2.7.1 Projects that alter existing conveyance systems (e.g., rerouting an existing ditch) must not adversely affect existing conveyance capabilities. It is presumed a system will meet this criterion if one of the following is met:

- (a) The existing hydraulic capacity is maintained in the new system. This can be accomplished by maintaining existing headwater and tailwater conditions.
- (b) The applicant demonstrates that changes in flood elevation and velocities will not adversely impact upstream or downstream off-site property. For example, this criterion may be satisfied by demonstrating that there is no increase in damages to existing off-site property (e.g., roads, buildings) resulting from changes in the existing flood elevations. Also, the applicant should demonstrate that proposed velocities are non-erosive or that erosion control measures (e.g., riprap, concrete lined channels, etc.) are sufficient to safely convey the flow.
- (c) The criteria in **section 3.4 of the** Manual are met.
- (d) As an alternative, the applicant may propose to utilize an applicable criteria established by a local government, state agency, or stormwater utility with jurisdiction over the project. However, Department staff must approve the use of these criteria.

2.7.2 There must be no net decrease in storage volume below the 10-year flood elevation within the project area that may result in increased flood hazards.

2.7.3 All storage volumes in detention or retention systems shall be calculated so as not to include any volumes below the average seasonal high-water table for the project area.

2.8 Tailwater for Water Quality

“Tailwater” refers to the water elevation (or pressure) at the final discharge part of the stormwater management system. Tailwater is an important component of the design and operation of nearly all stormwater management systems and can affect any of the following management objectives of the system:

- (a) Peak discharge from the stormwater management system;
- (b) Peak stage in the stormwater management system;
- (c) Level of flood protection in the project;
- (d) Recovery of peak attenuation and stormwater treatment volumes; and
- (e) Control elevations, normal water elevation regulation schedules, and ground water management.

2.8.1 Tailwater Design and Performance Criteria

Stormwater management systems (except retention and exfiltration systems) must provide gravity or pumped discharge that effectively operates (i.e., meets applicable rule criteria) under one of the following tailwater conditions:

- (a) Maximum stage in the receiving water resulting from the two-year, 24-hour storm. This storm depth is shown on the isopluvial map in **Figure 2.7-1**. Generally, applicants utilizing this option would model the receiving waters utilizing standard hydrologic and hydraulic methods for the two-year, 24-hour storm to determine peak stages at various points of interest. Lower stages may be utilized if the applicant demonstrates that flow from the project will reach the receiving water prior to the time of maximum stage in the receiving water.
- (b) Mean annual high tide for tidal areas. This elevation is the average of all the high tides for each year. This elevation may be determined from tide charts or other similar information.
- (c) Mean annual seasonal high water elevation. This elevation may be determined by water lines on vegetation or structures, historical data, adventitious roots or other hydrological or biological indicators, design of man-made systems, or estimated by a registered professional using standard hydrological methods based on the site and receiving water characteristics.
- (d) The applicant may propose applicable criteria established by a local government, state agency, or stormwater utility with jurisdiction over the project. However, the Department must approve the use of alternative criteria. In this case, the applicant is encouraged to consult with Department staff prior to submitting an application.

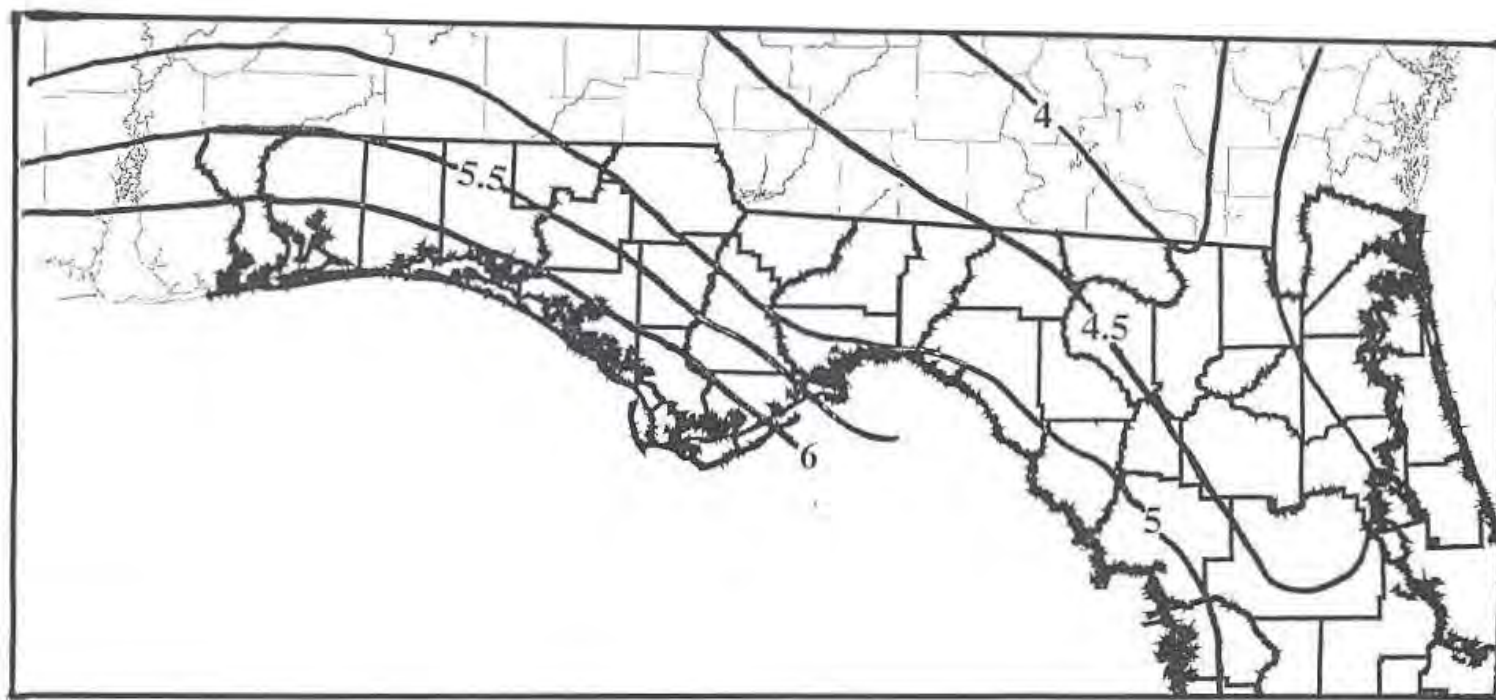


Figure 2.7-1 2 year - 24-Hour Maximum Rainfall, inches (Source: FDEP modified Technical Paper No. 40 Rainfall Frequency Atlas of the United States)

2.9 Applicant Responsibility

- 2.9.1** The applicant must provide for an operation and maintenance entity as required in **section 2.10 of the Manual**.
- 2.9.2** The applicant is responsible for transferring the permit from the construction phase to the operation and maintenance phase.
- 2.9.3** The applicant is responsible for notifying the Department of any transfer of ownership, including applying to the Department for applicable transfer of ownership within 30 days of such transfer.

2.10 Operation and Maintenance

All systems requiring an engineered stormwater management system under the **Manual** must be transferred to an operation and maintenance phase as follows.

2.10.1 Operation Phase

All authorization to construct, alter and maintain a surface water management system also constitutes a permit to operate the system. An applicant must submit the information described in this section to specify the entity that will operate and maintain the system with the construction, alteration or maintenance permit application. A permit authorizing construction, alteration, or maintenance will be converted to the operation phase once the Department determines the system or independent portion of a system has been constructed in compliance with the permit, and an appropriate entity has accepted responsibility for operation and maintenance of the system or independent portion of a system. The Department also will transfer the operation permit to an operation and maintenance entity upon request once all conditions for converting the construction, alteration, or maintenance permit have been met.

- 2.10.2** The following entities are acceptable for ensuring that a surface water management system will be operated and routine custodial maintenance will be performed in compliance with the **Manual**.

- (a) local governmental units including counties and municipalities, and Municipal Service Taxing Units,
- (b) active water control districts created pursuant to chapter 298, F.S., drainage districts created by special act, special districts defined in chapter 189, Community Development District created pursuant to chapter 190, F.S., Special Assessment Districts created pursuant to chapter 170, F.S., or water management districts created pursuant to chapter 373, F.S.,
- (c) state or federal agencies,
- (d) duly constituted communication, water, sewer, stormwater, electrical or other public utilities,
- (e) profit or non-profit corporations as indicated below, or
- (f) property owners or developers provided:
 - 1. the property owner or developer provides written proof, either by letter or resolution, that a governmental entity or an acceptable entity set forth in **paragraphs 6.2.1(a) through (e) above** will accept the operation and maintenance of the stormwater management system when construction of the system is completed;

2. the property owner or developer provides proof of bonding or other assurance of a similar nature in an amount sufficient to cover the costs of the operation and maintenance of the system for a period of 10 years;
3. The property owner or developer wholly owns the property, and intends to retain this ownership; or
4. The property owner or developer will retain ownership of the property and will lease or rent it to third parties.

If the property owner or developer is to serve as the operation and maintenance entity, the property owner or developer must provide a copy of legal documentation demonstrating that the property owner or developer will have the right to enter upon the property and maintain the system. Bonding or other financial assurances provided to other governmental entities is acceptable under paragraph 2.10.2(f)2 of the Manual, provided such bonding or other financial assurance covers the costs of operating and maintaining the system for a period of ten years in addition to the cost of any other activity the bond or other financial assurance secures.

If the proposed maintenance entity falls within paragraph 2.10.2(a), (b), (c), or (d) above, a letter of intent from such entity must be submitted to the Department as part of the permit application, indicating the entity's intention to accept responsibility for operation and maintenance of the permitted system when construction of the system is complete. The letter of intent shall also specify any portions of the system that the governmental entity will operate and maintain.

The documentary assurances required under paragraph 2.10.2(f) above or section 2.10.3 below must be submitted to the Department as a part of the permit application and approved by the staff before a recommendation for approval of the permit will be made.

2.10.3 Profit or non-profit corporations such as homeowners associations, property owners associations, condominium owners associations or master associations are acceptable operation and maintenance entities only if the corporation has the financial, legal, and administrative capability to provide for the long term operation and routine custodial maintenance of the surface water management system.

- (a) If a homeowner, property owner, condominium or master association is proposed, the applicant must submit draft Articles of Incorporation, Declaration, Restrictive Covenants, Deed Restrictions or other organizational or operation documents, or draft amendments thereto, that affirmatively assign responsibility for the operation or routine custodial maintenance of the surface water management system. These documents must be submitted to the Department as part of the permit application.
- (b) The association must have sufficient powers reflected in its organizational or operational documents to:
 1. operate and perform routine custodial maintenance of the surface water management system as exempted or permitted by the Department,
 2. establish rules and regulations,
 3. assess members for the cost of operating and maintaining the system, and enforce the collection of such assessments,
 4. contract for services to provide for operation and routine custodial maintenance (if the association contemplates employing a maintenance company), and

5. exist in perpetuity; the articles of incorporation must provide that if the association is dissolved, the system shall be transferred to and maintained by an entity described in **paragraphs 6.2.1(a) through (e) of the Manual** prior to the association's dissolution.

- 2.10.4** If an operation and maintenance entity is proposed for a project which will be constructed in phases, and subsequent phases will utilize the same surface water management system as the initial phase or phases, the entity must have the ability to accept responsibility for the operation and routine custodial maintenance of the surface water management system for future phases of the project.

If the development scheme contemplates independent operation and maintenance entities for different phases, and the system is integrated throughout the project, the entities, either separately or collectively, must have the responsibility and authority to operate and perform routine custodial maintenance of the system for the entire project area. That authority must include cross easements for surface water management and the ability to enter and maintain the various works, should any sub-entity fail to maintain a portion of the system within the project area.

- 2.10.5** When the applicant intends to convey the property to multiple third parties, the applicant will be an approved operation and maintenance entity from the time construction begins until the system is dedicated to and accepted by an established legal entity as described in **paragraphs 2.10.2(a) through (e) of the Manual**, provided that the applicant provides adequate proof that such an entity (as described in **subsection 2.10.2 of the Manual**) will exist when construction of the system is complete, and of the future acceptance of the system by such entity.
- 2.10.6** The operation phase of a noticed general permit shall automatically commence when construction is completed in conformance with all the terms, conditions, and limitations of the applicable noticed general permit; a formal request to transfer a noticed general permit to the operation phase is not required.

2.11 Retrofits of Existing Surface Water Management Systems

- 2.11.1** Stormwater retrofit projects are those that are intended only to reduce stormwater pollutant loadings from existing systems and are not intended to serve new developments. Such systems can be exempted from complying with some or all of the water quality and water quantity design and performance requirements in **Parts II, III, and IV of the Manual** if the applicant has conducted an alternatives analysis that documents why such design and performance requirements cannot be met. In such cases, the applicant shall seek to achieve the highest level of stormwater treatment in the most cost effective manner, which may include the use of sophisticated treatment technologies such as alum injection or stormwater reuse. Any alum injection system must provide for disposal of alum sludge in a manner that does not dispose of such sludge in waters of the state, complies with applicable industrial waste rules, and does not result in violations of state water quality standards.

PART III -- STORMWATER QUANTITY/FLOOD CONTROL

3.0 General Flood Control Requirements

3.1 Engineered Stormwater Management Systems That Must Meet Water Quantity Criteria

Systems that trip any of the following thresholds must be designed, constructed, operated, and maintained in accordance with this Part:

- (a) Systems that serve projects of 40 or more acres of total land area;
- (b) Systems that provide for the placement of 12 or more acres of impervious surface, which constitutes more than 40 percent of the total land area; or
- (c) Systems that are capable of impounding a volume of water of 40 or more acre-feet.

Surface water management systems that do not exceed the above thresholds are not required to meet the stormwater quantity and flood control criteria of this Part.

3.2 Standards that Apply and Relationship to Part IV

In addition to the criteria in this Part, all activities that require an engineered stormwater management system (in accordance with **section 2.1.1 of the Manual**) must also comply with the Water Quality criteria in **Part IV of the Manual**.

As an example, a system that has 6 acres of impervious surface that comprises 26 percent of the total land area of 100 acres would have to meet the Stormwater Quantity/Flood Control criteria of this Part, because such a system trips the 40-acre total land area threshold. The applicant for such a system therefore must design the surface water management system to meet the flood control peak discharge criteria of **section 3.3 of the Manual** in addition to the **streambank protection discharge criteria as required in section 4.5.2 of the Manual**. This can be accomplished by designing a multi-staged outlet structure to attenuate both the flood control and 2-year, 24-hour storm events. See **Figure 3.2-1** for a conceptual design of a multi-staged outlet structure. Examples of multi-staged outlet structures include two staged weirs, risers with multiple orifice controls, and combinations of weir and orifice controls.

3.3 Peak Discharge Attenuation

Criterion: The post-development peak rate of discharge must not exceed the pre-development peak rate of discharge.

- (a) If the project is located totally within a stream or open-lake watershed, detention systems must be installed such that the peak rate of post-development runoff will not exceed the peak-rate of pre-development runoff for storm events up through and including either:
 - 1. A design storm with a 10-year, 24-hour rainfall depth with SCS (NRCS) Type II Florida Modified distribution falling on average antecedent moisture conditions for projects serving exclusively agricultural, forest, conservation, or recreational land uses; or

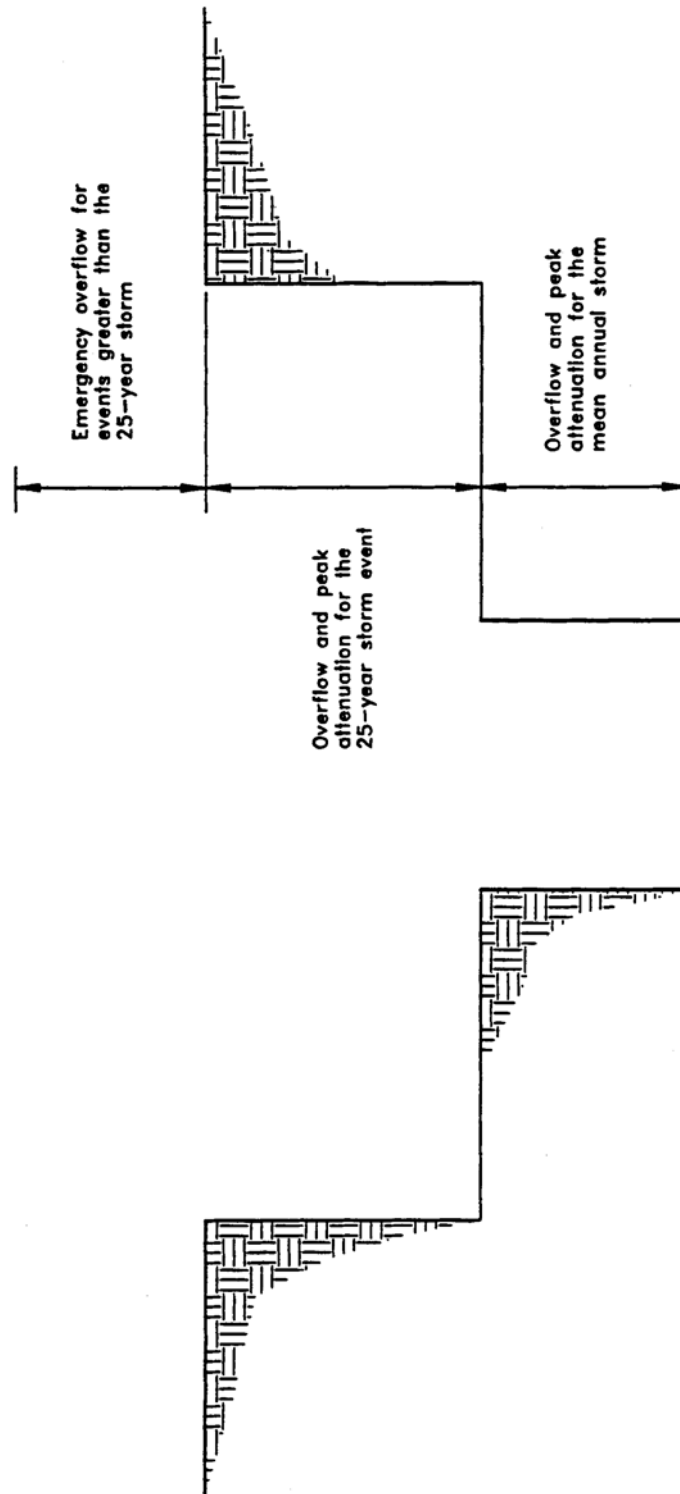


Figure 3.2-1 Conceptual design of a multi-stage outlet structure

2. A design storm with a 25-year, 24-hour rainfall depth for projects serving any land uses other than agricultural, silvicultural, conservation, or recreational uses.
- (b) If the project area falls within an internally drained or closed-lake watershed or any part of the project area is in a stream-to-sink watershed, the retention volume shall be the total post-development runoff less the pre-development runoff resulting from a 25-year, 24-hour storm.

Storage volumes designed into retention or detention systems to meet the requirements of (a) and (b), above must be available as follows:

1. One-half of the total volume within seven days following the end of the design storm event, and
2. The total volume within 30 days following the end of the design storm event.

3.3.1 Alternative Peak Discharge Criteria

As an alternative to the peak discharge criteria in **section 3.2 of Manual**, applicants may propose to utilize applicable storm event, duration, or criteria specified by a local government, state agency (including FDOT), or stormwater utility with jurisdiction over the project. However, the Department must approve the use of the alternative criteria. Applicants proposing to use alternative criteria are encouraged to have a pre-application conference with Department staff.

3.3.2 Methodologies

A peak discharge analysis typically consists of generating predevelopment and post development runoff hydrographs, routing the post development hydrograph through a detention basin, and sizing an overflow structure to control post development discharges at or below predevelopment rates.

Peak discharge computations should consider the duration, frequency, and intensity of rainfall, the antecedent moisture conditions, upper soil zone and surface storage, time of concentration, tailwater conditions, changes in land use or land cover, and any other changes in topographic and hydrologic characteristics. Large systems should be divided into subbasins according to artificial or natural drainage divides to allow for more accurate hydrologic simulations. Examples of accepted methodologies for computation of runoff are as follows:

- (a) Soil Conservation Service Method (see U.S. Department of Agriculture, Soil Conservation Service "National Engineering Handbook, Section 4, Hydrology," TR-55 ("Urban Hydrology for Small Watershed") or TR-20 users manuals).
- (b) Santa Barbara Urban Hydrograph Method.
- (c) U.S. Army Corps of Engineers HEC-1 Computer Programs.
- (d) Other hydrograph methods approved by the Department.

3.3.3 Aggregate Discharge

Depending on the location and design of large systems where multiple off-site discharges are designed to occur, the Department may allow the total post-development peak discharge not to exceed the pre-development peak discharge for the combined discharges rather than for each individual discharge. Such a consideration shall be made only if the combined discharges meet all other requirements of the **Manual**, and discharge to the same receiving water body.

3.3.4 Rainfall Intensity and Volume

In determining peak discharge rates, intensity of rainfall values shall be obtained through a statistical analysis of historical long-term rainfall data or from sources or methods generally accepted as good engineering practice.

(a) Examples of acceptable sources include:

1. USDA Soil Conservation Service, "Rainfall Frequency Atlas of Alabama, Florida, Georgia, and South Carolina for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years" January 1978; Gainesville, Florida.
2. U.S. Weather Bureau Technical Paper No. 49.
3. U.S. Weather Bureau Technical Paper No. 40.
4. U.S. Department of Interior, Bureau of Reclamation, "Design of Small Dams", 2nd Edition.
5. F.D.O.T. Drainage Handbook, Hydrology, Latest Edition

(b) For a drainage basin greater than 10 square miles, the areal rainfall can be calculated from point rainfall using a method that has been well documented. The converting factor as described in U.S. Weather Bureau Technical Paper No. 49 may be used.

3.3.5 Tailwater for Quantity

Receiving water stage can affect the amount of flow, which will discharge from the project to the receiving water. This stage may be such that tailwater exists in portions of the project system, reducing the effective flow or storage area. Typical examples of this are illustrated in **Figures 3.3.5-1** (gravity) and **3.3.5-2** (pumped).

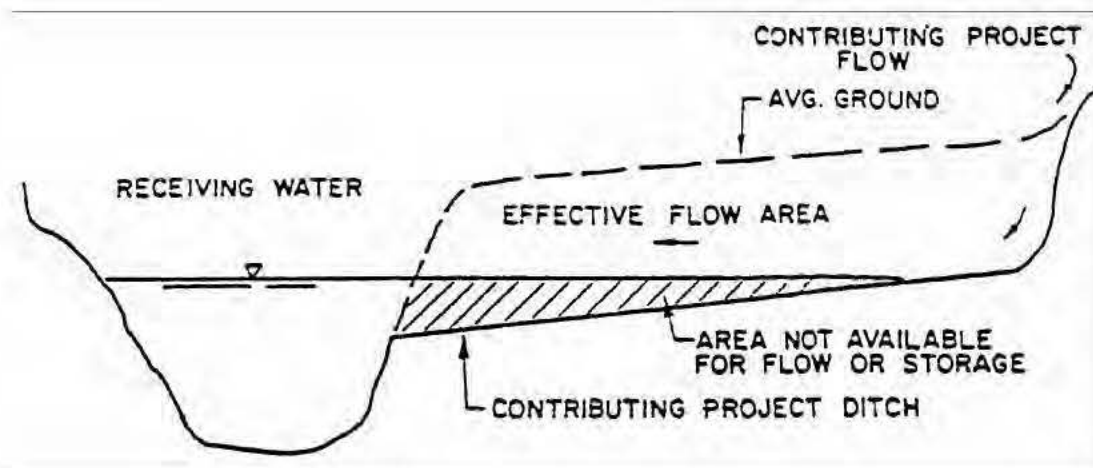


Figure 3.3.5-1

The stage in the receiving water should be considered to be the maximum stage, which would exist in the receiving water from a storm equal to the project design storm. Lower stages may be used if the applicant can show that the flow from his project will reach the receiving water prior to the time of maximum stage in the receiving water.

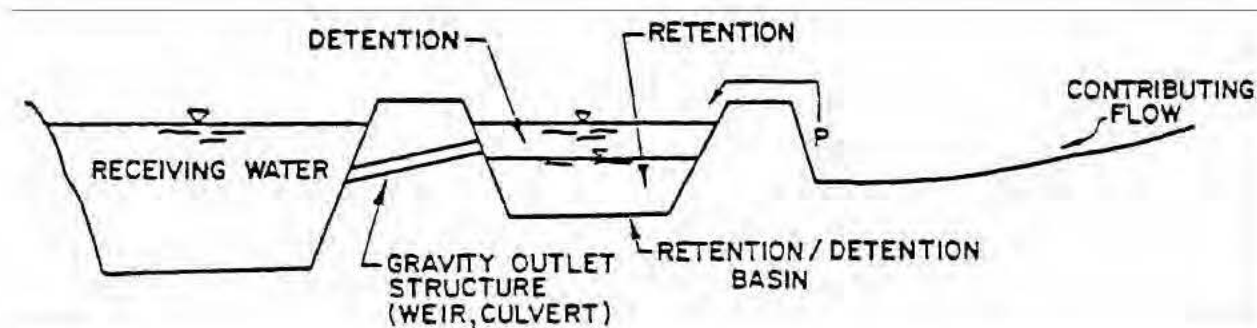


Figure 3.3.5-2

3.3.6 Design Techniques

Various design techniques are available to the engineer to estimate approximate pre-development peak discharge rates for the system through a reduction in excess runoff. Acceptable design techniques include detention basins, the use of grassed waterways, and any other storage capability that the particular system may have.

3.3.7 Upper Soil Zone Storage and Surface Storage

In most instances, the upper soil zone storage and surface storage capacities will have an effect on the pre-development and post-development peak discharges and should be considered in these computations. Any generally accepted and well-documented method may be used to develop the upper soil zone storage and surface storage values.

- (a) The soil zone storage at the beginning of a storm should be estimated by using reasonable and appropriate parameters to reflect drainage practices, average wet season water table elevation, the antecedent moisture condition (AMC II) and any underlying soil characteristics which would limit or prevent percolation of storm water into the entire soil column. In no case should the soil storage used in the computation exceed the difference between the maximum soil water capacity and the field capacity (i.e., gravitational water) for the soil columns above any impervious layer or seasonal ground water table.
- (b) Surface storage, including that available in wetlands and low-lying areas, shall be considered as depression storage. Depression storage shall be analyzed for its effect on peak discharge and the time of concentration. Depression storage can also be considered in post-development storage routing, which would require development of stage-storage relationships; if depression storage is considered, then both pre-development and post-development storage routing must be considered.

3.4 Storage and Conveyance

3.4.1 Criterion: Floodways and floodplains, and levels of flood flows or velocities of adjacent streams, impoundments or other water courses must not be altered so as to adversely impact the off-site storage and conveyance capabilities of the water resource.

- 3.4.2**
- (a) A system may not cause a net reduction in flood storage within a 10-year floodplain except for structures elevated on pilings or traversing works. Traversing works, works or other structures shall cause no more than a one-foot increase in the 100-year flood elevation immediately upstream and no more than one tenth of a foot increase in the 100-year flood elevation 500 feet upstream. A system will not cause a net reduction in flood storage within a 10-year floodplain if compensating storage is provided outside the 10-year floodplain.
 - (b) A system may not cause a reduction in the flood conveyance capabilities provided by a floodway except for structure elevated on pilings or traversing works. Such works, or other structures shall cause no more than a one-foot increase in the 100-year flood elevation immediately upstream and no more than one tenth of a foot increase in the 100-year flood elevation 500 feet upstream.
 - (c) An applicant may only be permitted to contravene the requirements of (a) or (b) if the applicant gives reasonable assurance that, if all other persons who could impact the surface water of any impoundment, stream, or other watercourse by floodplain encroachment exceed

(a) and (b) above to the same degree as the applicant proposes, the cumulative impacts would not contravene subsection 2.2.1 of the **Manual**.

3.5 Stabilization of Side Slopes

Stabilization of side slopes is necessary in order to prevent erosion due to flow velocity and runoff from the banks. Good engineering practices shall be employed, taking into consideration soil, flow, and drainage characteristics. Again, the retardation of overland runoff and soil stabilization using naturally occurring vegetation coverage shall be considered before paving, riprap, lining, energy dissipation and other structural measures are employed.

3.6 Low Flow and Base Flow Maintenance

3.6.1 Criterion: Flows of adjacent streams, impoundments or other watercourses must not be decreased so as to cause adverse impacts.

3.6.2 Low Flow:

- (a) Only systems with both of the following conditions must meet the low flow performance criteria in (b) and (c), below.
 - 1. Systems that impound water for purposes in addition to temporary detention storage. Water impounded longer than a 14-day bleed down period is considered conservation storage for benefits other than detention storage (i.e., recreation, irrigation, etc.).
 - 2. Systems that impound a stream or other watercourse which, under pre-development conditions, discharged surface water off-site to receiving water during 5-year, 30-day drought frequency conditions.
- (b) Any system meeting the conditions of (a) above shall be designed with an outlet structure to maintain a low flow discharge of available conservation storage. When the conservation storage is at the average dry season design stage, the low flow discharge should equal the average pre-development surface water discharge, which occurred from the project site to receiving waters during the 5-year, 30-day drought.
- (c) The system shall be operated to provide a low flow discharge whenever water is impounded. However, discharge may be discontinued, if desired, during the wet season (considered as June through October) unless a water shortage condition is declared by a water management district. The actual discharge will vary according to the water stage in the impoundment. When conservation storage is at the average dry season design stage, the discharge will be the average 5-year, 30-day low flow. When storage is below the average dry season design stage, the discharge may be less than the average 5-year, 30-day low flow.

3.6.3 Base Flow

It is presumed that an adverse impact will result if the system causes the ground water table to be lowered:

- a) More than an average three feet lower, over the project area, than the average dry season low water table; or

- b) At any location, more than five feet lower than the average dry season low water table; or
- c) To a level that would decrease the flows or levels of surface water bodies below any minimum level or flow established by a water management district Governing Board pursuant to Section 373.042, F.S.

PART IV -- STORMWATER QUALITY

4.0 Purpose and Background

4.1 Thresholds for Designing in Conformance with Stormwater Quality Criteria

Surface water management systems that meet all the following are not required to meet the Stormwater Quality design criteria in this Part:

- (a) The construction or alteration involves less than 4,000 square feet of impervious or semi-impervious surface area subject to vehicular traffic. This area includes roads, parking lots, driveways, and loading zones;
- (b) The construction or alteration involves less than 5,000 square feet of building area or other impervious area not subject to vehicular traffic; and
- (c) The construction or alteration involves less than 1 acre of recreational area. Recreational areas include but are not limited to golf courses, tennis courts, putting greens, driving ranges, or ball fields.

All other activities requiring a permit under chapter 62-25, F.A.C., require an engineered stormwater management system that is designed, constructed, operated, and maintained in conformance with the criteria in this Part. In addition, those systems that exceed the thresholds in **section 2.1 of the Manual** must also be designed, constructed, operated, and maintained in accordance with **section III of the Manual**.

4.2 Criterion

Florida's stormwater quality regulations are "technology-based" not "water quality effluent-based." The design criteria in this handbook are presumed to meet the minimum levels of stormwater treatment established in chapter 62-40, F.A.C., the State Water Resource Implementation Rule.

4.3 Integration with State Resource Implementation Rule

4.3.1 General

Paragraph 62-40.432(2), F.A.C. (State Water Resource Implementation Rule), provides:

- (2) Minimum Stormwater Treatment Performance Standards.
 - (a) When a stormwater management system complies with rules establishing the design and performance criteria for such systems, there shall be a rebuttable presumption that the discharge from such systems will comply with state water quality standards. The Department and the Districts, pursuant to Section 373.418, F.S., shall, when adopting rules pertaining to stormwater management systems, specify design and performance criteria for new stormwater management systems which:
 - 1. Achieve at least 80 percent reduction of the average annual load of pollutants that would cause or contribute to violations of state water quality standards.

2. Achieve at least 95 percent reduction of the average annual load of pollutants that would cause or contribute to violations of state water quality standards in Outstanding Florida Waters.
 3. If a District or the Department adopts basin-specific design and performance criteria in order to achieve an adopted TMDL or the pollutant load reduction goals established in a watershed management plan, such design and performance criteria shall replace those specified in subparagraphs 1. and 2. above.
- (b) Erosion and sediment control plans detailing appropriate methods to retain sediment on-site shall be required for land disturbing activities.
 - (c) The pollutant loading from older stormwater management systems shall be reduced as necessary to restore or maintain the designated uses of waters.

4.3.2 Systems meeting the design and performance criteria of the **Manual** are presumed to meet the State Water Resource Implementation Rule performance standards stated above. However, as new research on the design and effectiveness of stormwater treatment systems becomes available, the design and performance criteria of this Handbook may be revised as appropriate through future rulemaking.

4.4 State Water Quality Standards

4.4.1 Surface Water Quality Standards

State surface water quality standards are set forth in chapters 62-4 and 62-302, F.A.C., including the antidegradation provisions of sections 62-4.242(1)(a) and (b), 62-4.242(2) and (3), and 62-302.300, F.A.C., and the special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in sections 62-4.242(2) and (3), F.A.C. Furthermore, the Department cannot authorize permits that modify the quantity of water-discharged offsite if such discharge will cause adverse environmental or water quality impacts.

4.4.2 Ground Water Quality Standards

State water quality standards for ground water are set forth in chapter 62-520, F.A.C. In addition to the minimum criteria, Class G-I and G-II ground water must meet primary and secondary drinking water quality standards for public water systems established pursuant to the Florida Safe Drinking Water Act, which are listed in sections 62-550.310 and .320, F.A.C.

Only the minimum criteria apply within a zone of discharge, as determined in section 62-520.400, F.A.C. A zone of discharge is defined as a volume underlying or surrounding the site and extending to the base of a specifically designated aquifer or aquifers, within which an opportunity for the treatment, mixture or dispersion of wastes into receiving ground water is afforded. Generally, stormwater systems have a zone of discharge 100 feet from the system boundary or to the project's property boundary, whichever is less.

4.4.3 How Standards are Applied

The quality of stormwater discharged to receiving waters is presumed to meet the surface water standards in chapters 62-4, and 62-302, F.A.C., and the ground water standards in chapter 62-550, F.A.C., if the system is permitted, constructed, operated and maintained in accordance with the **Manual**. However, this determination is rebuttable.

4.5 Criteria for Evaluation

4.5.1 Reasonable Assurance

In addition to complying with the criteria in **section 2.2 of the Manual**, in order to obtain an environmental resource permit for a system that requires an engineered stormwater management system under **section 2.1 of the Manual**, an applicant must give reasonable assurance that the stormwater management system will:

- (a) Not adversely affect drainage and flood protection on adjacent or nearby properties not owned or controlled by the applicant in accordance with **Section 2.6**;
- (b) Be capable of being effectively operated and maintained;
- (c) Meet any applicable Sensitive Karst Area Basin requirements in **Section 11.0** of this Handbook; and
- (e) For systems serving a use that produces or stores hazardous or toxic substances, be designed to have no stormwater discharge that contains such substances.

4.5.2 Peak Discharge Criteria to Protect Streambanks

4.5.2.1 Overview

Urbanization increases total runoff volume, peak discharge rates, and the magnitude and frequency of flood events. With an increase in the number of flood events a stream is subjected to, the potential for accelerated erosion of both the stream banks and channel bottom is enhanced. Proper design of detention systems to limit post development peak discharge rates to predevelopment rates can minimize some of the stormwater effects of urbanization.

4.5.2.2 Two-Year, 24-Hour Storm Requirements

Proper selection of the design storm for peak discharge control is crucial to determining the effectiveness of the detention basin. Historically, stormwater programs only regulated the peak discharge from large storm events (i.e., 25-year, 24-hour storm) Unfortunately that approach suffers from the following drawbacks:

- (a) If a detention pond is only designed to reduce the peak of the 25-year storm, the discharge rates from lesser events such as the 2, 5, and 10-year flood events may not be controlled. The ineffectiveness of controlling small flood events may appear to be unimportant with respect to flood damages. However, these more frequent events do cause localized flood damage and are of prime importance as a cause of channel and streambank erosion.
- (b) Cumulative water quantity impacts may occur from several projects below the chapter 62.343, F.A.C., thresholds located within the same watershed.

To address these concerns, peak discharge rate must be controlled for the 2-year, 24-hour storm event and potentially for a larger storm event. The 2-year, 24-hour was selected as the design event for this rule because the shape and form of natural channels is controlled by approximately the 2-year return frequency storm. The rainfall depth for the 2-year, 24-hour storm for the Florida panhandle is shown

in **Figure 2.7.1-1**. The rainfall depth at a particular location may be established by interpolating between the nearest isopluvial lines.

4.5.2.3 Peak Discharge Attenuation Criteria to Protect Streambanks

The post development peak discharge rate must not exceed predevelopment rates for the 2-year, 24-hour storm for systems serving new construction area greater than 50 percent impervious (excluding water bodies).

This condition must be met before a project is required to comply with the peak discharge criterion. Projects that modify existing systems without adding new impervious surfaces are exempt from this criterion. However, if a project modifies an existing system by adding new impervious surfaces, the peak discharge criteria requirements must be met only for the newly added impervious surfaces. Pervious concrete and turf blocks are not considered impervious surface for this purpose. However, compacted soils and limerock are considered impervious for this purpose.

4.6 Erosion and Sediment Control Criteria for Surface Water Management Systems

Land clearing activities, including the construction of stormwater management systems, shall be designed, constructed, and maintained at all times so that erosion and sedimentation from the system, including the areas served by the system, do not cause violations of applicable state water quality standards in receiving waters. Further, because sedimentation of off site lands can lead to public safety concerns, erosion and sediment controls shall be designed and implemented to retain sediment on-site as required by subsection 62-40.432(2), F.A.C. In particular, the erosion and sediment control requirements described in **Part IV of the Applicant's Handbook Volume I**, shall be followed during construction of the system.

4.7 Oil and Grease Control

Systems that receive stormwater from areas with a greater than 50 percent impervious area (excluding water bodies) or which are a potential source of oil and grease (e.g., parking lots and gasoline stations) must include a baffle, skimmer, grease trap or other mechanism suitable for preventing oil and grease from leaving the stormwater system in concentrations that would cause a violation of water quality standards. A typical illustration of a skimmer on an outlet structure is shown in **Figure 4.7-1**.

4.8 On-Line and Off-line Stormwater Systems

Each stormwater treatment Best Management Practice (BMP) specifies a required volume of stormwater runoff to be captured and treated (i.e., treatment volume) prior to release to surface or ground water. There are two basic types of configurations for capturing the treatment volume: on-line and off-line systems. On-line systems (**Figure 4.8-1**) consist of a storage area which provides storage of the required treatment volume for smaller storm events and, if required, temporary detention storage for peak discharge control during larger storm events. Runoff

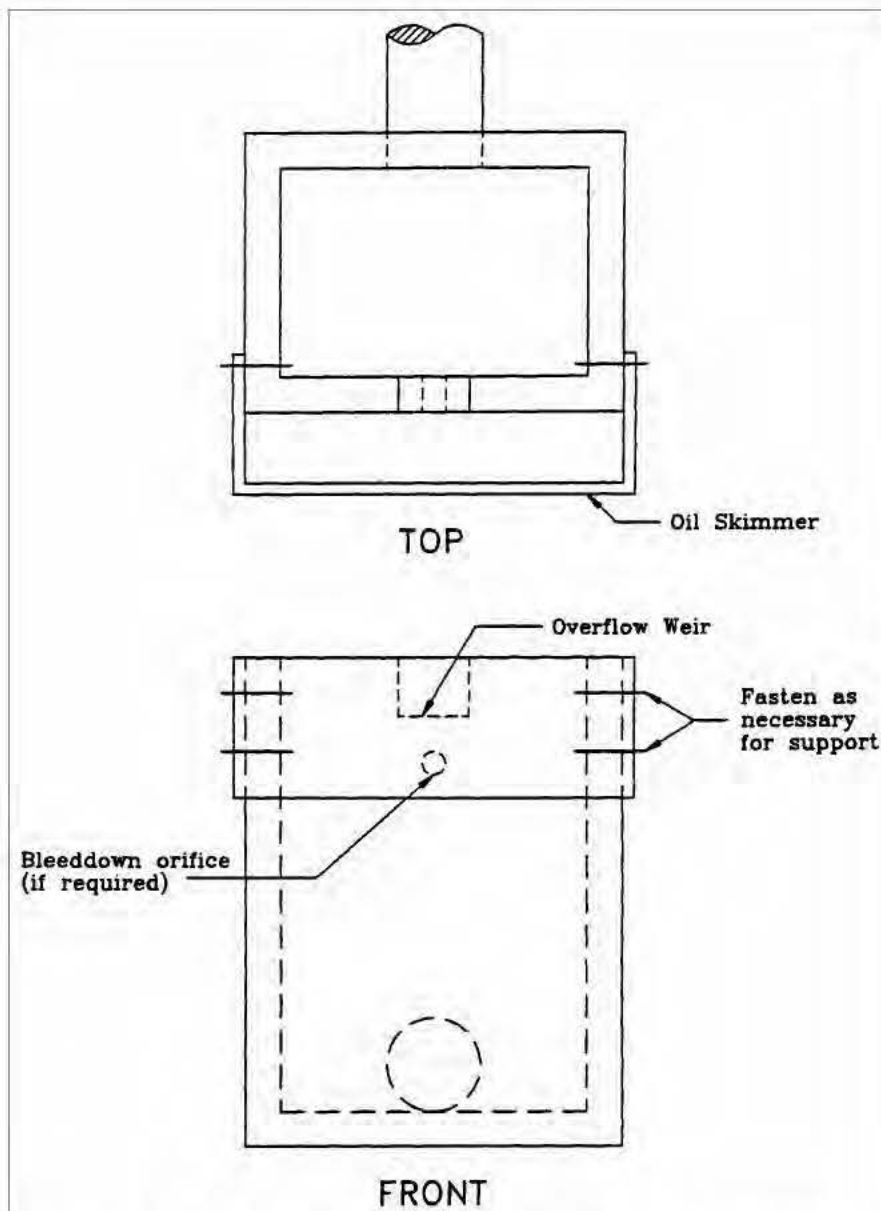


Figure 4.7-1 Oil skimmer detail for a typical outfall structure (N.T.S.)

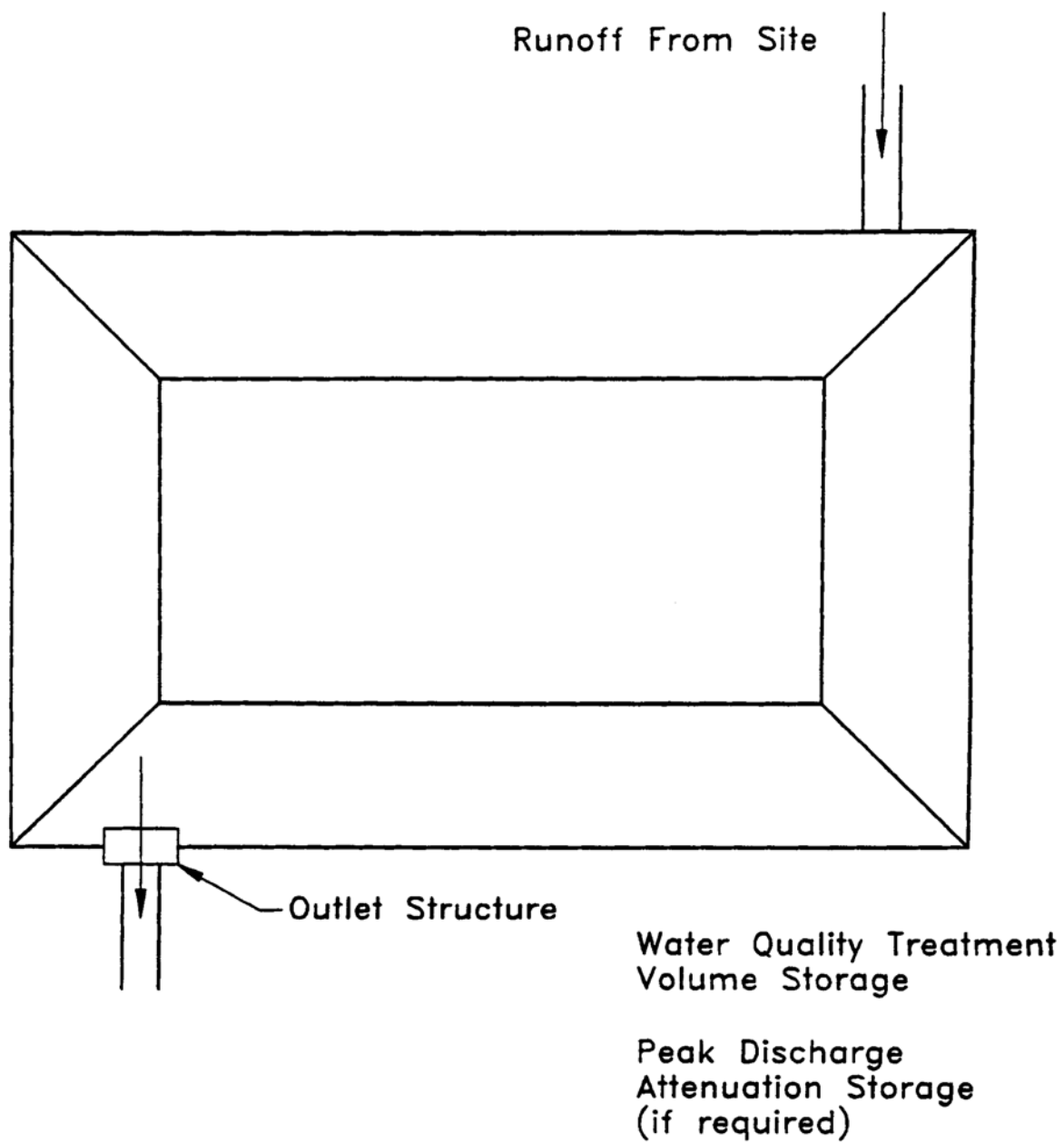


Figure 4.8-1 On-line treatment system

volumes in excess of the treatment volume mix with the treatment volume in the basin and transport a portion of the pollutant mass load over the basin control structure.

Off-line treatment systems (**Figure 4.8-2**) divert the treatment volume into a BMP that is designed for storage and treatment of the applicable treatment volume. Runoff volumes in excess of the treatment volume by-pass the off-line BMP and are discharged to the receiving water or routed to a detention basin if peak discharge attenuation is required. A diversion box (**Figure 4.8-3**) typically is used to divert the treatment volume to the off-line BMP and route subsequent flows away from it. .

Off-line systems are generally more effective at removing pollutants than on-line systems because accumulated pollutants cannot be "flushed out" during storm events that produce runoff volumes exceeding the treatment storage volume. Consequently, on-line systems must treat a greater volume of runoff than off-line systems to reduce the likelihood of flushing accumulated pollutants out of the system and achieve the minimum stormwater treatment levels required by State Water Resource Implementation Rule (chapter 62-40, F.A.C.). Treatment volumes for each of the stormwater treatment practices described in this handbook are discussed in **Sections 5 through 11 of the Manual**.

The treatment storage provided in an off-line system can be considered in the stage/storage calculations for peak discharge attenuation. Off-line systems should be designed to bypass essentially all additional stormwater runoff volumes greater than the treatment volume to a discharge point or other detention storage area. Of course, there will be some incremental additional storage in the off-line system associated with the hydraulic grade line at the weir structure in the typical diversion structure. This will depend on the size of the weir, but the weir should be sized to pass the design flow with minimal headwater.

Proposed off-line systems that will also serve to provide significant detention storage above the off-line treatment volume storage will be considered to function as on-line systems. These systems should either be designed to meet on-line treatment volume requirements or the designer should discuss the merits of the particular system (in terms of potential of flushing accumulated pollutants) with Department staff in a pre-application conference.

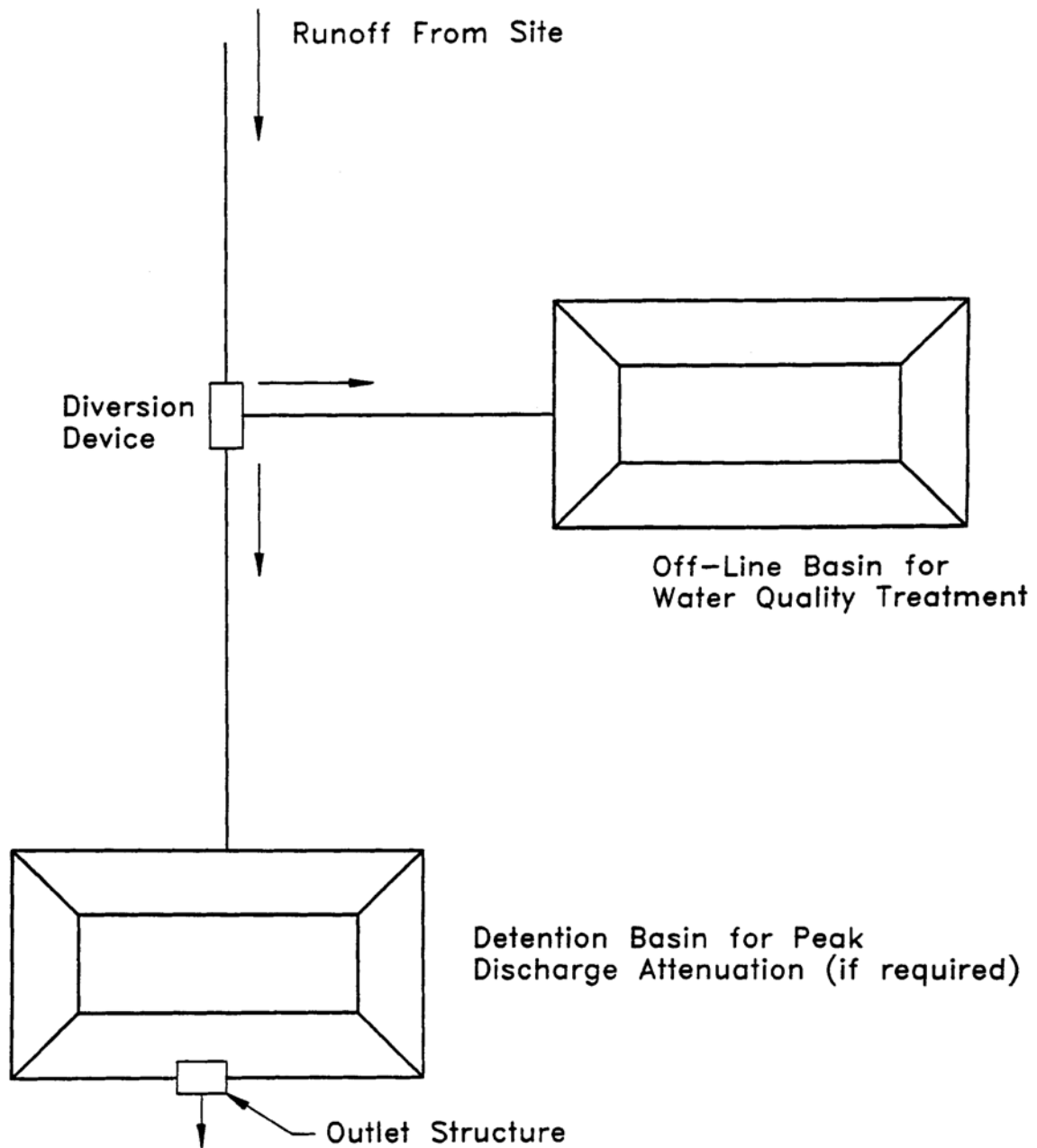


Figure 4.8-2 Off-line treatment system

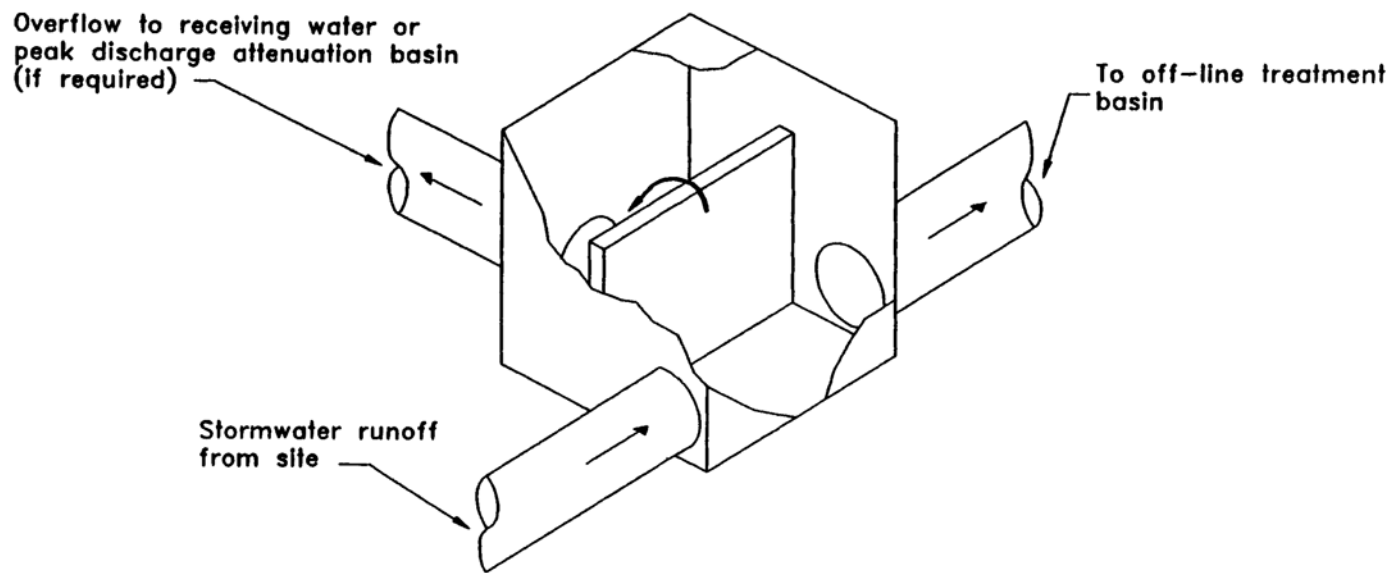


Figure 4.8-3 Diversion box (N.T.S.)

PART V -- BEST MANAGEMENT PRACTICES

5.0 Design Criteria and Guidelines for Retention Systems

5.1 Description

The term “retention system” is defined as a storage area designed to store a defined quantity of runoff, allowing it to percolate through permeable soils into the shallow ground water aquifer. Stormwater retention works best using a variety of retention systems throughout the project site. Examples of retention systems include:

- Man-made or natural depressional areas where the floor is graded as flat as possible and turf is established to promote infiltration and stabilize the basin slopes (see **Figure 5.1-1**);
- Shallow landscaped areas designed to store stormwater;
- Vegetated swales with swale blocks or raised inlets; and
- Pervious concrete with continuous curb.

Soil permeability and water table conditions must be such that the retention system can percolate the desired runoff volume within a specified time following a storm event. After drawdown has been completed, the basin does not hold any water, thus the system is normally “dry.” Unlike detention basins, the treatment volume for retention systems is not discharged to surface waters.

Retention systems provide excellent removal of stormwater pollutants. Substantial amounts of suspended solids, oxygen demanding materials, heavy metals, bacteria, some varieties of pesticides and nutrients such as phosphorus are removed as runoff percolates through the vegetation and soil profile.

Retention systems should not be located in close proximity to drinking water supply wells. Chapter 62-22, F.A.C., requires stormwater treatment facilities to be at least 100 feet from any public supply well. **Section 11 of the Manual**, provides additional design features for systems constructed in Sensitive Karst Areas where the drinking water aquifer is close to the land surface.

Besides pollution control, retention systems can be utilized to promote the recharge of ground water to prevent saltwater intrusion in coastal areas or to maintain groundwater levels in aquifer recharge areas. Retention systems can also be used to meet the runoff volume criteria for projects that discharge to land-locked lakes (see **section 3.3(b) of the Manual**).

There are several design and performance criteria specific to retention systems that are described below.

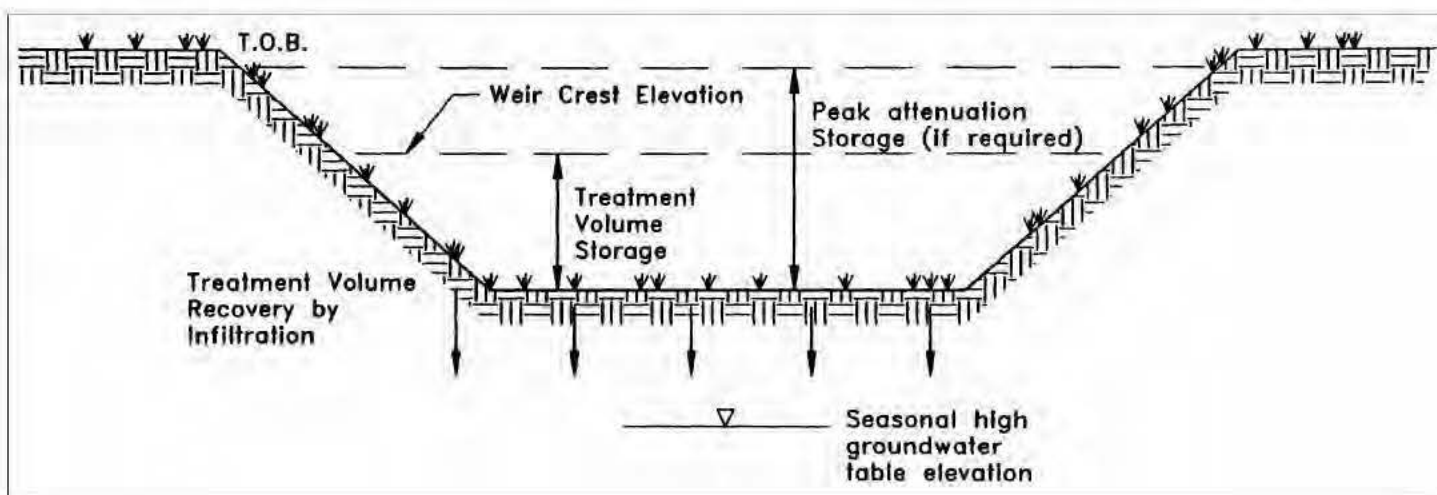


Figure 5.1-1 Retention (N.T.S.)

5.2 Treatment Volume

The first flush of runoff should be routed to the retention basin and percolated into the ground. For systems which discharge to Class III receiving water bodies, the rule specifies one of the following:

- (a) Off-line retention of the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater.
- (b) On-line retention of an additional one half inch of runoff from the drainage area over that volume specified for off-line treatment.
- (c) On-line retention that provides for percolation of the runoff from the three-year, one-hour storm.
- (d) On-line retention of the runoff from one inch of rainfall or 1.25 inches of runoff from the impervious area, whichever is greater, for systems which serve an area with less than 40 percent impervious surface and that contain only U.S. Department of Agriculture Natural Resources Conservation Service (NRCS, SCS) hydrologic group "A" soils.

For direct discharges to Class I, Class II, OFWs, or Class III waters that are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, the applicant should provide retention for one of the following:

- (a) At least an additional fifty percent of the applicable treatment volume specified for off-line retention in (a), above. Off-line retention must be provided for at least the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated.
- (b) On-line retention of an additional fifty percent of the treatment volume specified in (b), above.
- (c) On-line retention of the runoff from the three-year, one-hour storm.
- (d) On-line retention that provides at least an additional 50 percent of the runoff volume specified in (d), above, for systems which serve an area with less than 40 percent impervious surface and that contain only U.S. Department of Agriculture Natural Resources Conservation Service (NRCS, or SCS) hydrologic group "A" soils.

5.3 Recovery Time

The retention system must provide the capacity for the appropriate treatment volume of stormwater specified in **Section 5.2 of the Manual** within 72 hours following a storm event assuming average antecedent moisture conditions. In retention systems, the stormwater is drawn down by natural soil infiltration and dissipation into the ground water table, evaporation, or evapotranspiration, as opposed to underdrain systems which rely on artificial methods like drainage pipes.

Antecedent moisture condition (AMC) refers to the amount of moisture and storage in the soil profile prior to a storm event. Antecedent soil moisture is an indicator of wetness and availability of soil to infiltrate water. The AMC can vary from dry to saturated depending on the amount of rainfall received prior to a given point in time. Therefore, "average AMC" means the soil is neither dry or saturated, but at an average moisture condition at the beginning of a storm event when calculating recovery time for retention systems.

The antecedent condition has a significant effect on runoff rate, runoff volume, infiltration rate, and infiltration volume. The infiltration volume is also known as the upper soil zone storage. Both the infiltration rate and upper soil zone storage are used to calculate the recovery time of retention systems and should be estimated using any generally accepted and well documented method with appropriate parameters to reflect drainage practices, seasonal high water table elevation, the AMC, and any underlying soil characteristics which would limit or prevent percolation of storm water into the soil column.

5.4 Basin Stabilization

The retention basin should be stabilized with pervious material or permanent vegetative cover. To provide proper treatment of the runoff in very permeable soils, permanent vegetative cover must be utilized when U.S. Department of Agriculture Natural Resources Conservation Service (NRCS, SCS) hydrologic group "A" soils underlie the retention basin, except for pervious pavement systems.

5.5 Retention Basin Construction

5.5.1 Overview

Retention basin construction procedures and the overall sequence of site construction are two key factors that can control the effectiveness of retention basins. Sub-standard construction methods or construction sequence can render the basin inoperable prior to completion of site development.

Since stormwater management systems typically are required to be constructed during the initial phases of site development, retention basins are often exposed to poor quality surface runoff. Stormwater runoff during construction contains considerable amounts of suspended solids, organics, clays, silts, trash and other undesirable materials. For example, the subgrade stabilization material utilized during construction of roadways and pavement areas typically consist of clayey sand or soil cement. If a storm occurs when these materials are exposed (prior to placement of the roadway wearing surface), considerable amounts of these materials end up in the retention basin. Another source of fine material generated during construction is disturbed surface soil that can release large quantities of organics and other fine particles. Fine particles of clay, silt, and organics at the bottom of a retention basin create a poor infiltrating surface (Andreyev and Wiseman 1989).

5.5.2 Construction Requirements

The following construction procedures are recommended to avoid degradation of retention basin infiltration capacity due to construction practices (Andreyev and Wiseman 1989):

- (a) Initially construct the retention basin to rough grade by under-excavating the basin bottom and sides by approximately 12 inches.
- (b) After the drainage area contributing to the basin has been fully stabilized, the interior side slopes and basin bottom should be excavated to final design specifications. The excess soil and undesirable material should be carefully excavated and removed from the pond so that all accumulated silts, clays, organics, and other fine sediment material has been removed from the pond area. The excavated material should be disposed of beyond the limits of the drainage area of the basin.
- (c) Once the basin has been excavated to final grade, the entire basin bottom should be deep raked and loosened for optimal infiltration.
- (d) Finally, the basin should be stabilized according the **Section 5.4 of the Manual**.

5.6 References

Andreyev, N.E., and L.P. Wiseman. 1989. *Stormwater Retention Pond Infiltration Analysis in Unconfined Aquifers*. Prepared for Southwest Florida Water Management District, Brooksville, Florida.

6.0 Underdrain Design and Performance Criteria

6.1 Description

Stormwater underdrain systems consist of a dry basin underlain with perforated drainage pipe which collects and conveys stormwater following percolation from the basin through suitable soil. Underdrain systems are generally used where high water table conditions dictate that recovery of the stormwater treatment volume cannot be achieved by natural percolation (i.e., retention systems) and suitable outfall conditions exist to convey flows from the underdrain system to receiving waters. Schematics of a typical underdrain system are shown in **Figures 6.1-1 and 6.1-2**.

Underdrain systems are intended to control both the water table elevation over the entire area of the treatment basin and provide for the drawdown of the treatment volume. Underdrains are utilized where the soil permeability is adequate to recover the treatment volume since the on-site soils overlay the perforated drainage pipes.

Underdrain systems provide excellent removal of stormwater pollutants. Substantial amounts of suspended solids, oxygen demanding materials, heavy metals, bacteria, some varieties of pesticides and nutrients such as phosphorus are removed as runoff percolates through the vegetation and soil profile.

There are several design and performance criteria which must be met in order for an underdrain system to meet the rule requirements. The underdrain rule criteria are described below.

6.2 Treatment Volume

The first flush of runoff should be detained in a dry detention basin and percolated through the soil. For discharges to Class III receiving water bodies, the rule specifies either of the following treatment volumes:

- (a) Off-line retention of the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, or
- (b) On-line retention of an additional one half inch of runoff from the drainage area over that volume specified for off-line treatment.

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting the applicant should provide retention for either of the following:

- (a) At least an additional fifty percent of the applicable treatment volume specified for off-line retention in (a), above. Off-line retention must be provided for at least the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated; or

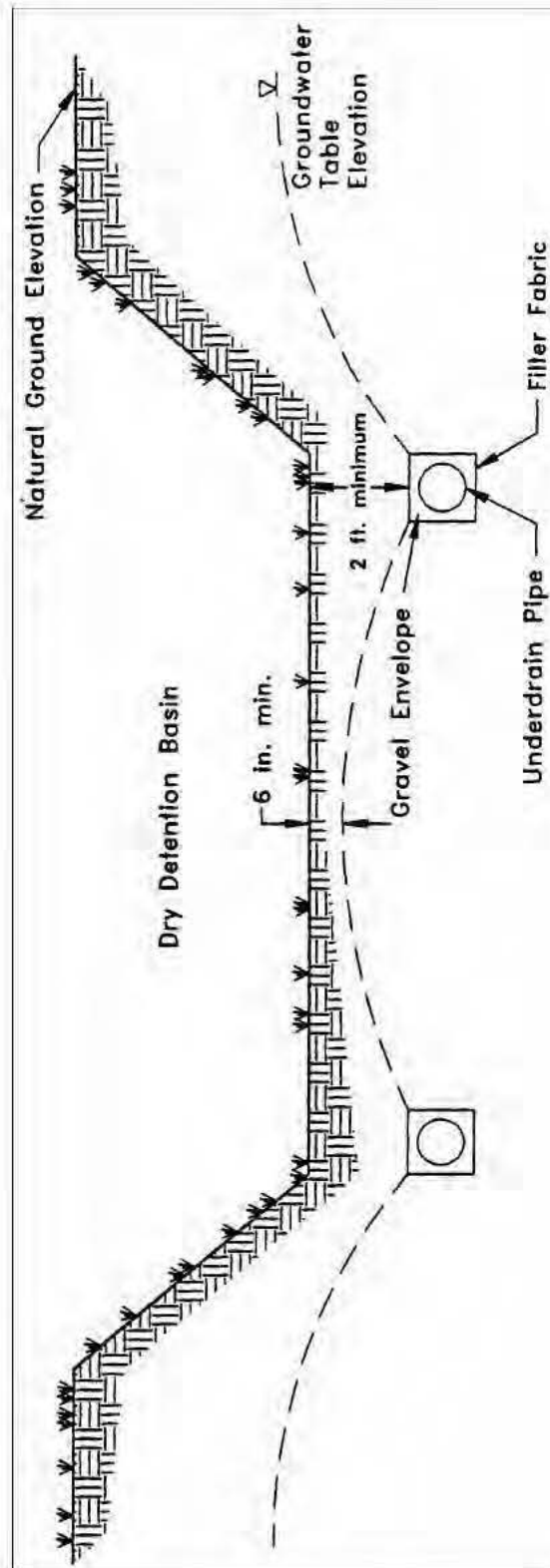


Figure 6.1-1 Cross-section of underdrain system (N.T.S.)

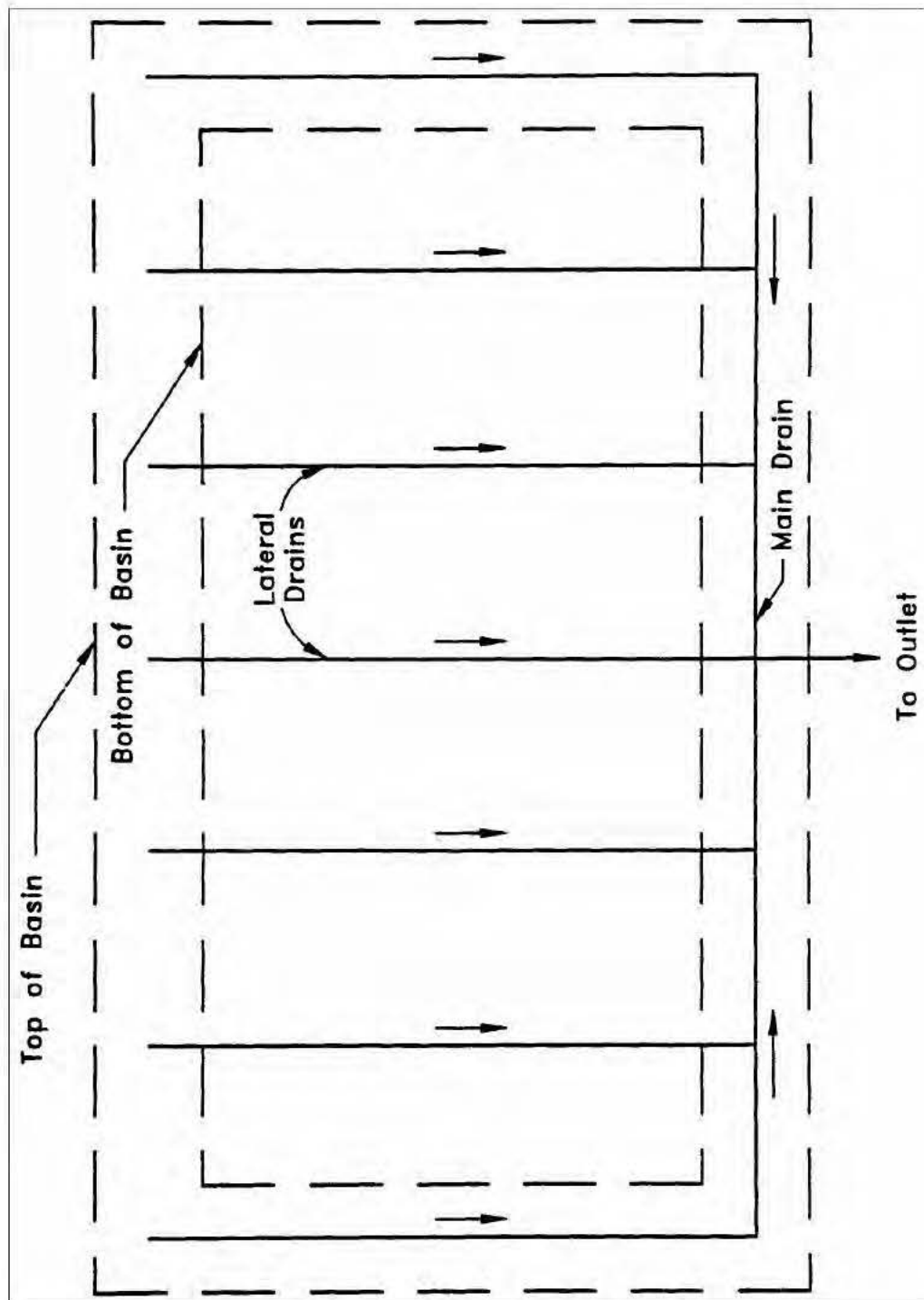


Figure 6.1-2 Top view of underdrain system (N.T.S.)

- (b) On-line retention of the runoff from the three-year, one-hour storm or an additional fifty percent of the treatment volume specified in (b), above, whichever is greater.

6.3 Recovery Time

The system should be designed to provide for the drawdown of the appropriate treatment volume specified in **Section 6.2 of the Manual** within 72 hours following a storm event. The treatment volume is recovered by percolation through the soil with subsequent transport through the underdrain pipes. The system should only contain standing water within 72 hours of a storm event.

The pipe system configuration (e.g., pipe size, depth, pipe spacing, and pipe inflow capacity) of the underdrain system must be designed to achieve the recovery time requirement. Underdesign of the system will result in reduced hydraulic capacity. This, in turn, will result in a reduction in storage between subsequent rainfall events and an associated decrease in the annual average volume of stormwater treated resulting in a reduction of pollutant removal (Livingston et al. 1988). Such circumstances also reduce the aesthetic value of the system and may promote mosquito production.

6.4 Safety Factor

The underdrain system must be designed with a safety factor of at least two unless the applicant affirmatively demonstrates based on plans, test results, calculations or other information that a lower safety factor is appropriate for the specific site conditions. Examples of how to apply this factor include but are not limited to the following:

- (a) Reducing the design percolation rate by half; and
- (b) Designing for the required drawdown within 36 hours instead of 72 hours.

6.5 Underdrain Media

To provide proper treatment of the runoff, at least two feet of indigenous soil must be between the bottom of the basin storing the treatment volume and the outside of the underdrain pipes (or gravel envelope as applicable).

6.6 Filter Fabric

Underdrain systems should utilize filter fabric or other means to prevent the soil from moving into and clogging perforated pipe.

6.7 Inspection and Cleanout Ports

To facilitate maintenance of the underdrain system, capped and sealed inspection and cleanout ports which extend to the surface of the ground should be provided, at a minimum, at the following locations for each drainage pipe:

- (a) The terminus; and

- (b) At every 400 feet or every bend of 45 or more degrees, whichever is shorter.

6.8 Basin Stabilization

The underdrain basin should be stabilized with permanent vegetative cover and should contain standing water only immediately following a rainfall event.

6.9 References

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management*. Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

7.0 Exfiltration Trench Design and Performance Criteria

7.1 Description

Exfiltration trench is a subsurface system consisting of a conduit such as perforated pipe surrounded by natural or artificial aggregate which temporarily stores and infiltrates stormwater runoff (**Figure 7.1-1**). Stormwater passes through the perforated pipe and infiltrates through the trench walls and bottom into the shallow groundwater aquifer. The perforated pipe increases the storage available in the trench and helps promote infiltration by making delivery of the runoff more effective and evenly distributed over the length of the system (Livingston et al. 1988). Generally, exfiltration trench systems are utilized where space is limited and/or land costs are high (i.e., downtown urban areas).

Soil permeability and water table conditions must be such that the trench system can percolate the required stormwater runoff treatment volume within a specified time following a storm event. The trench system is returned to a normally “dry” condition when drawdown of the treatment volume is completed. Like retention basins, the treatment volume in exfiltration trench systems is not discharged to surface waters. Thus, exfiltration is considered a type of retention system.

Like other types of retention systems, exfiltration trench systems provide excellent removal of stormwater pollutants. Substantial amounts of suspended solids, oxygen demanding materials, heavy metals, bacteria, some varieties of pesticides and nutrients such as phosphorus are removed as runoff percolates through the soil profile. Exfiltration trench systems should not be located in close proximity to drinking water supply wells. Chapter 62-22, F.A.C., requires stormwater treatment systems to be at least 100 feet from any public supply well. **Section 11 of Volume II of the Manual**, provides additional design features for systems constructed in Sensitive Karst Areas where the drinking water aquifer is close to the land surface.

Besides pollution control, exfiltration trench systems can be utilized to promote the recharge of ground water and to prevent saltwater intrusion in coastal areas, or to maintain groundwater levels in aquifer recharge areas. Exfiltration trench systems can also be used to meet the runoff volume criteria for projects which discharge to land-locked lakes (see **section 3.3(b) of the Manual**).

The operational life of an exfiltration trench is believed to be short (possibly 5 to 10 years) for most exfiltration systems. Sediment accumulation and clogging by fines can reduce the life of an exfiltration trench (Wanielista et al. 1991). Total replacement of the trench may be the only possible means of restoring the treatment capacity and recovery of the system. Periodic replacement of the trench should be considered routine operational maintenance when selecting this management practice.

There are several design and performance criteria which must be met in order for an exfiltration trench system to meet the rule requirements. A description of each criterion is presented below.

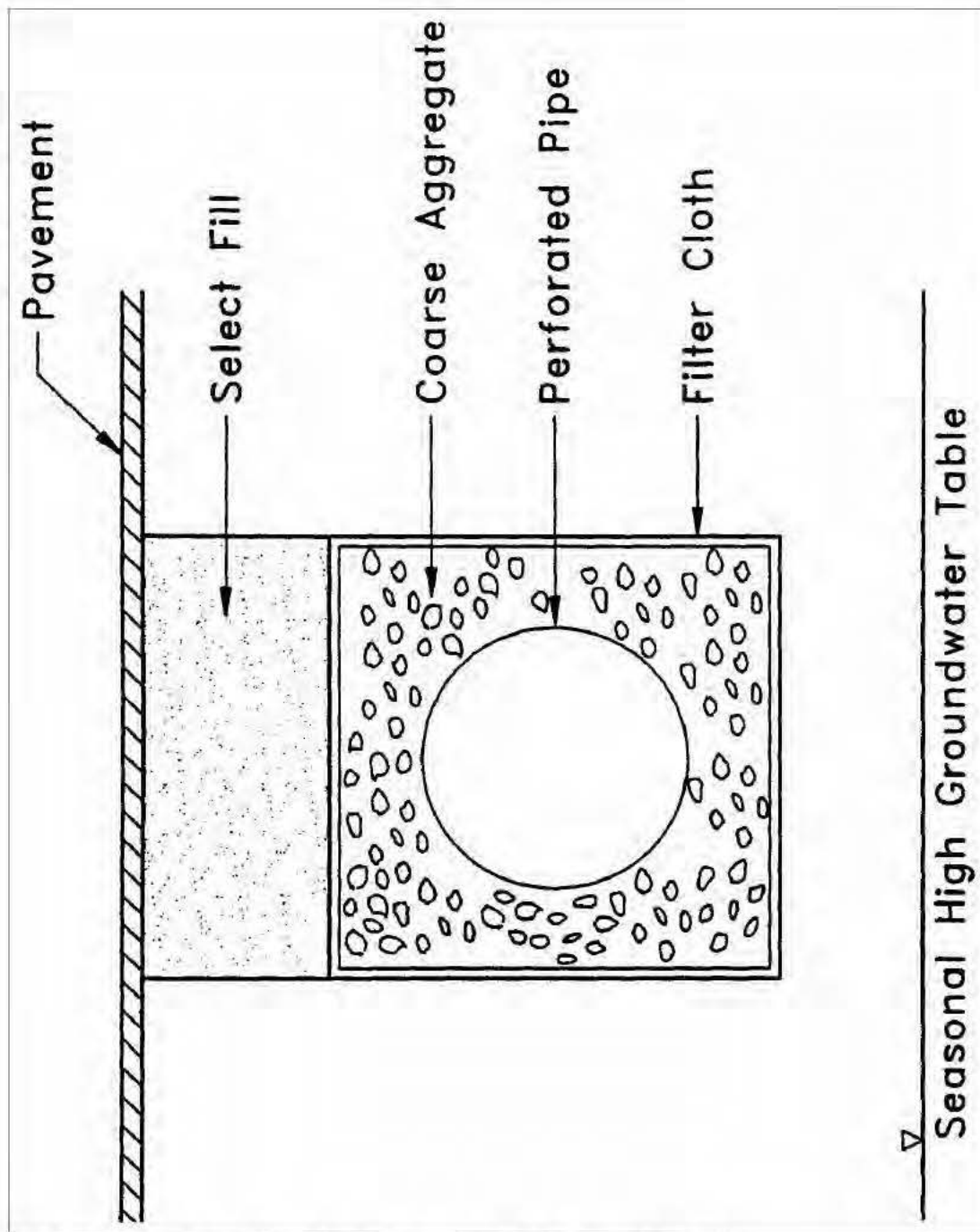


Figure 7.1-1 Cross-section of typical underground exfiltration trench (N.T.S.)

7.2 Treatment Volume

The first flush of runoff should be collected in the exfiltration trench and infiltrated into the surrounding soil. For systems which discharge to Class III receiving water bodies, the rule specifies either of the following:

- (a) Off-line storage of the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater; or
- (b) On-line storage of an additional one half inch of runoff from the drainage area over that volume specified for off-line treatment.

For direct discharges to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting the applicant should provide storage for either of the following:

- (a) At least an additional fifty percent of the applicable treatment volume specified for off-line storage in (a), above. Off-line storage must be provided for at least the first one-half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater, of the total amount of runoff required to be treated; or
- (b) On-line storage of the runoff from the three-year, one-hour storm or an additional fifty percent of the treatment volume specified in (b), above, whichever is greater.

Exfiltration trench systems must be designed to have the capacity to retain the required treatment volume without considering discharges to ground or surface waters.

7.3 Recovery Time

The system should be designed to provide for the appropriate treatment volume of stormwater runoff specified in **Section 7.2 of the Manual** within 72 hours following a storm event assuming average antecedent moisture conditions. The stormwater is drawn down by infiltration into the soil.

Antecedent moisture condition (AMC) refers to the amount of moisture and storage in the soil profile prior to a storm event. Antecedent soil moisture is an indicator of wetness and availability of soil to infiltrate water. The AMC can vary from dry to saturated depending on the amount of rainfall received prior to a given point in time. Therefore, “average AMC” means the soil is neither dry or saturated, but at average moisture condition at the beginning of a storm event when calculating recovery time for exfiltration systems.

The antecedent condition has a significant effect on runoff rate, runoff volume, infiltration rate, and infiltration volume. The infiltration volume is also known as the upper soil zone storage. Both the infiltration rate and upper soil zone storage are used to calculate the recovery time of retention systems and should be estimated using any generally accepted and well documented method with appropriate parameters to reflect drainage practices, seasonal high water table elevation, the AMC,

and any underlying soil characteristics which would limit or prevent percolation of storm water into the soil column.

7.4 Safety Factor

The exfiltration trench system must be designed with a safety factor of at least two unless the applicant affirmatively demonstrates based on plans, test results, calculations or other information that a lower safety factor is appropriate for the specific site conditions. For example, two possible ways to apply this factor are:

- (a) Reducing the design percolation rate by half; and
- (b) Designing for the required drawdown within 36 hours instead of 72 hours.

7.5 Minimum Dimensions

The perforated pipe should be designed with a 12 inch minimum pipe diameter and a three 3 foot minimum trench width. The perforated pipe should be located within the trench section to minimize the accumulation of sediment in the aggregate void storage and maximize the preservation of this storage for stormwater treatment. To meet this goal, it is recommended that the perforated pipe be located at or within 6 inches of the trench bottom. The maximum trench width will be limited by the rate at which stormwater can effectively fill the void storage within the trench.

7.6 Filter Fabric

Exfiltration trench systems should be designed so that aggregate in the trench is enclosed in filter fabric. This serves to prevent migration of fine materials from the surrounding soil that could result in clogging of the trench. Wanielista et al. (1991) reports that woven fabric (Mirafi 700XG) performed better in mixed sand and silty soil than non-woven fabric (Mirafi 140N). On the other hand, the 140N had higher exfiltration rates in sandy soils than the woven fabric.

Filter fabric may also be utilized directly surrounding the perforated pipe. In this instance, sedimentation of particulates will occur in the perforated pipe. Consequently, the pipe is more prone to clogging and reductions in capacity will occur more often than usual. Livingston et al. (1988) points out that while this may seem unacceptable, the pipe may be cleaned relatively easy using high pressure hoses, vacuum systems, etc. On the other hand, designs without the fabric directly surrounding the perforated pipe requires complete replacement when clogging occurs.

7.7 Inspection and Cleanout Structures

Inspection and cleanout structures that extend to the surface of the ground should be provided, at a minimum, at the inlet and terminus of each exfiltration pipe. Inlet structures should include sediment sumps. These inspection and cleanout structures provide four primary functions:

- (a) Observation of how quickly the trench recovers following a storm;

- (b) Observation of how quickly the trench fills with sediment;
- (c) Maintenance access to the perforated pipe; and
- (d) Sediment control (sumps).

Standard precast concrete inlets and manholes are widely used to furnish the inspection and cleanout access.

7.8 Ground Water Table

The exfiltration trench system should be designed so that the invert elevation of the trench is at least two feet above the seasonal high ground water table elevation unless the applicant affirmatively demonstrates based on plans, test results, calculations or other information that an alternative design is appropriate for the specific site conditions.

7.9 Construction

During construction, every effort should be made to limit the parent soil and debris from entering the trench. Wanielista (1991) reports complete failure (no exfiltration) when a 1 inch to 2 inch thickness of parent soil and stormwater solids were added to an exfiltration trench. Applicants and system designers should consult chapters 3 and 6 of *The Florida Land Development Manual* (Livingston et al. 1988) for information on erosion and sediment control. Any method used to reduce the amount of fines entering the exfiltration trench during construction will extend the life of the system (Wanielista et al. 1991). The use of an aggregate with minimal fines is also recommended (Wanielista et al. 1991).

7.10 References

Branscome, J., and R.S. Tomasello. 1987. *Field Testing of Exfiltration Systems*. South Florida Water Management District Technical Publication 87-5. West Palm Beach, Florida.

Livingston, E.H., E. McCarron, J. Cox, and P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management*. Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

South Florida Water Management District. 1987. *Management and Storage of Surface Waters Permit Information Manual, Volume IV*. West Palm Beach, Florida.

Wanielista, M.P., M.J. Gauthier, and D.L. Evans. 1991. *Design and Performance of Exfiltration Systems*. Department of Civil and Environmental Engineering, University of Central Florida, Orlando, Florida.

8.0 Wet Detention Design and Performance Criteria

8.1 Description

To meet the objectives of this Handbook, the traditional flood attenuation pond was modified to maximize water quality treatment processes. These modified detention ponds are identified by the name "wet detention systems." These systems are permanently wet ponds which are designed to slowly release collected stormwater runoff through an outlet structure. A schematic of a typical wet detention system is shown in **Figure 8.1-1**.

Wet detention systems are the recommended BMP for sites with moderate to high water table conditions. The Department strongly encourages the use of wet detention treatment systems for the following two reasons. First, wet detention systems provide significant removal of both dissolved and suspended pollutants by taking advantage of physical, chemical, and biological processes within the pond (CDM 1985). Second, the complexity of BMPs such as underdrains are not encountered in a wet detention pond control structure. Wet detention systems offer an effective alternative for the long term control of water levels in the pond, provide a predictable recovery of storage volumes within the pond, and are easily maintained by the maintenance entity.

In addition to providing good removal of pollutants from runoff, wet detention systems also provide other benefits such as flood detention, passive recreation activities related adjacent to ponds, storage of runoff for irrigation, and pleasing aesthetics. As stormwater treatment systems, these ponds should not be designed to promote in-water recreation (i.e., swimming, fishing, and boating).

There are several components in a wet detention system which must be properly designed to achieve the level of stormwater treatment required by the **Manual**. A description of each design feature and its importance to the treatment process is presented below. The design and performance criteria for wet detention systems are discussed below.

8.2 Treatment Volume

For wet detention systems, the design treatment volume is the greater of the following:

- (a) One inch of runoff over the drainage area; or
- (b) 2.5 inches times the impervious area (excluding water bodies).

Additional treatment volume may be required for systems that discharge directly to Class I, Class II, Outstanding Florida Waters, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting (see **Section 8.13 of the Manual**).

8.3 Recovery Time

The outfall structure should be designed to drawdown one-half the required treatment volume between 48 and 60 hours.

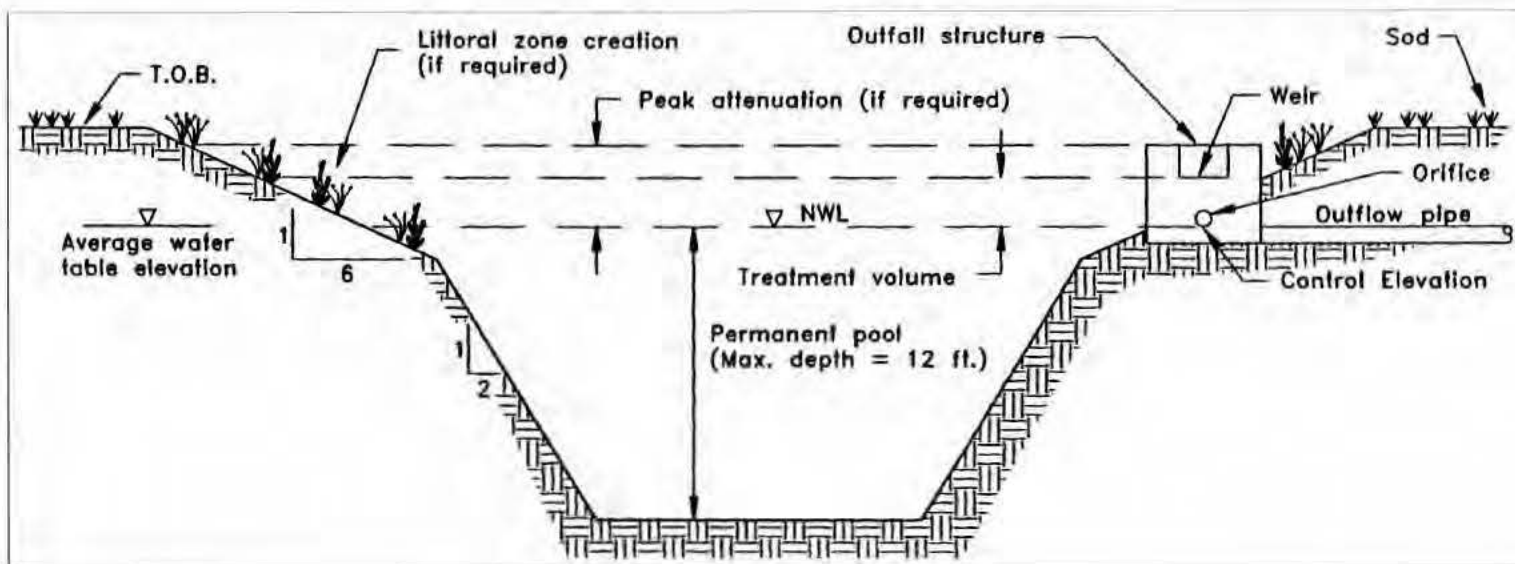


Figure 8.1-1 Wet detention (N.T.S.)

8.4 Outlet Structure

The outlet structure generally includes a drawdown device (such as an orifice, "V" or square notch weir) set to establish a normal water control elevation and slowly release the treatment volume (see **Figures 8.4-1 and 8.4-2** for schematics). The design of the outfall structure must also accommodate the passage of ground water baseflows and flows from upstream stormwater management systems (see **Figure 8.4-3**).

The control elevation should be set at or above the design tailwater elevation so the pond can effectively recover the treatment storage. Also, drawdown devices smaller than 3 inches minimum width or less than 20 degrees for "V" notches shall include a device to eliminate clogging. Examples of such devices include baffles, grates, screens, and pipe elbows.

8.5 Permanent Pool

A significant component and design criterion for the wet detention system is the storage capacity of the permanent pool (i.e., section of the pond which holds water at all times). The permanent pool should be sized to provide at least a 14-day residence time based upon annual rainfall.

Important pollutant removal processes which occur within the permanent pool include: uptake of nutrients by algae, adsorption of nutrients and heavy metals onto bottom sediments, biological oxidation of organic materials, and sedimentation (CDM 1985). Uptake by algae is probably the most important process for the removal of nutrients. Sedimentation and adsorption onto bottom sediments is likely the primary means of removing heavy metals (CDM 1985).

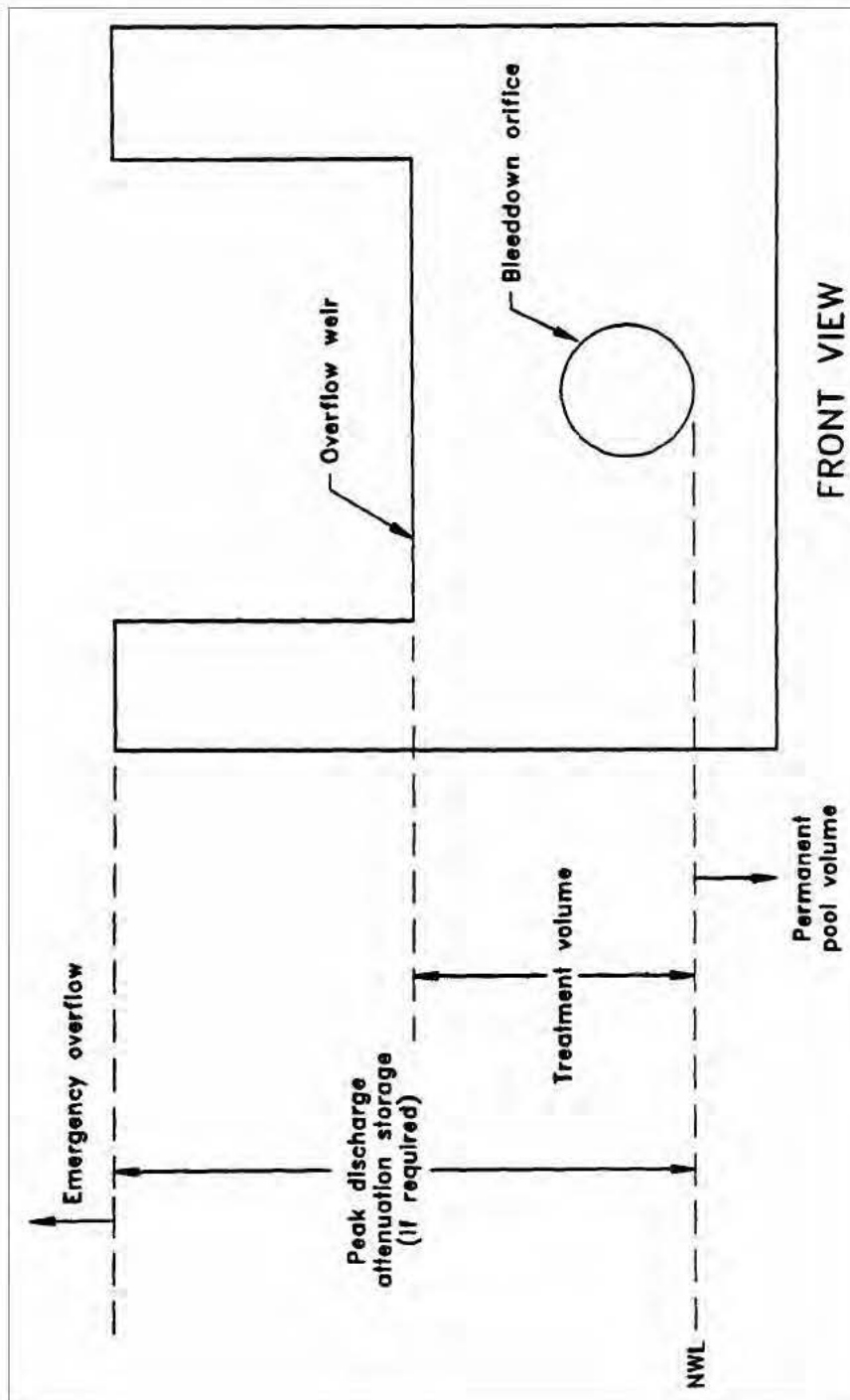
The storage capacity of the permanent pool must be large enough to detain the untreated runoff long enough for the treatment processes described above to take place. Since one of the major biological mechanisms for pollutant removal in a wet detention basin is phytoplankton growth, the average hydraulic residence time of the pond must be long enough to ensure adequate algal growth (CDM 1985). A residence time of 2 weeks is considered to be the minimum duration that ensures adequate opportunity for algal growth (CDM 1985).

Additional permanent pool volume may be required for wet detention systems which directly discharge to Class I, Class II, or Outstanding Florida Waters (see **Section 8.13 of the Manual**).

8.6 Littoral Zone

The littoral zone is that portion of a wet detention pond which is designed to contain rooted aquatic plants. The littoral area is usually provided by extending and gently sloping the sides of the pond down to a depth of 2 to 3 feet below the normal water level or control elevation. Also, the littoral

Figure 8.4-1 Typical wet detention outfall structure (N.T.S.)



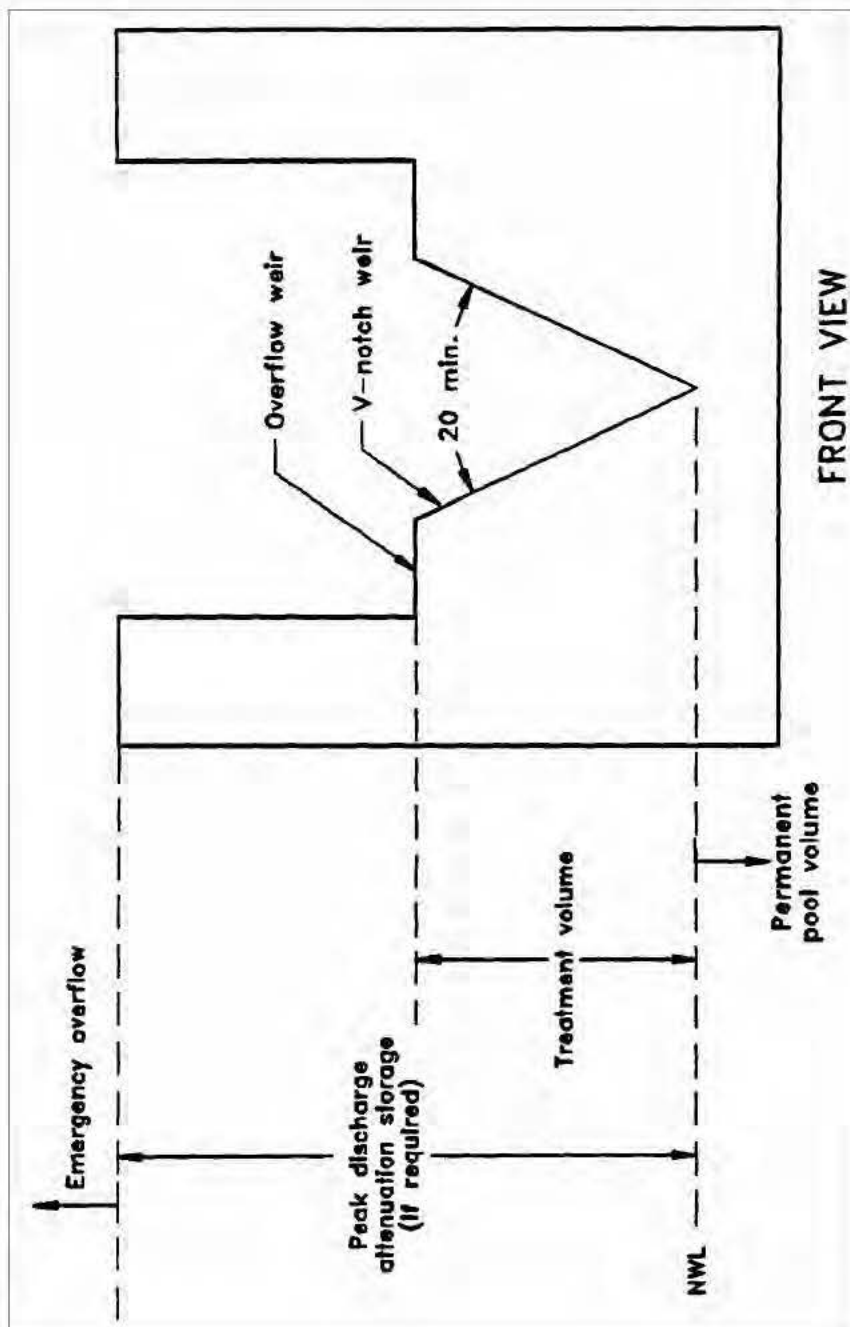


Figure 8.4-2 Typical wet detention outfall structure with "V"-notch weir (N.T.S.)

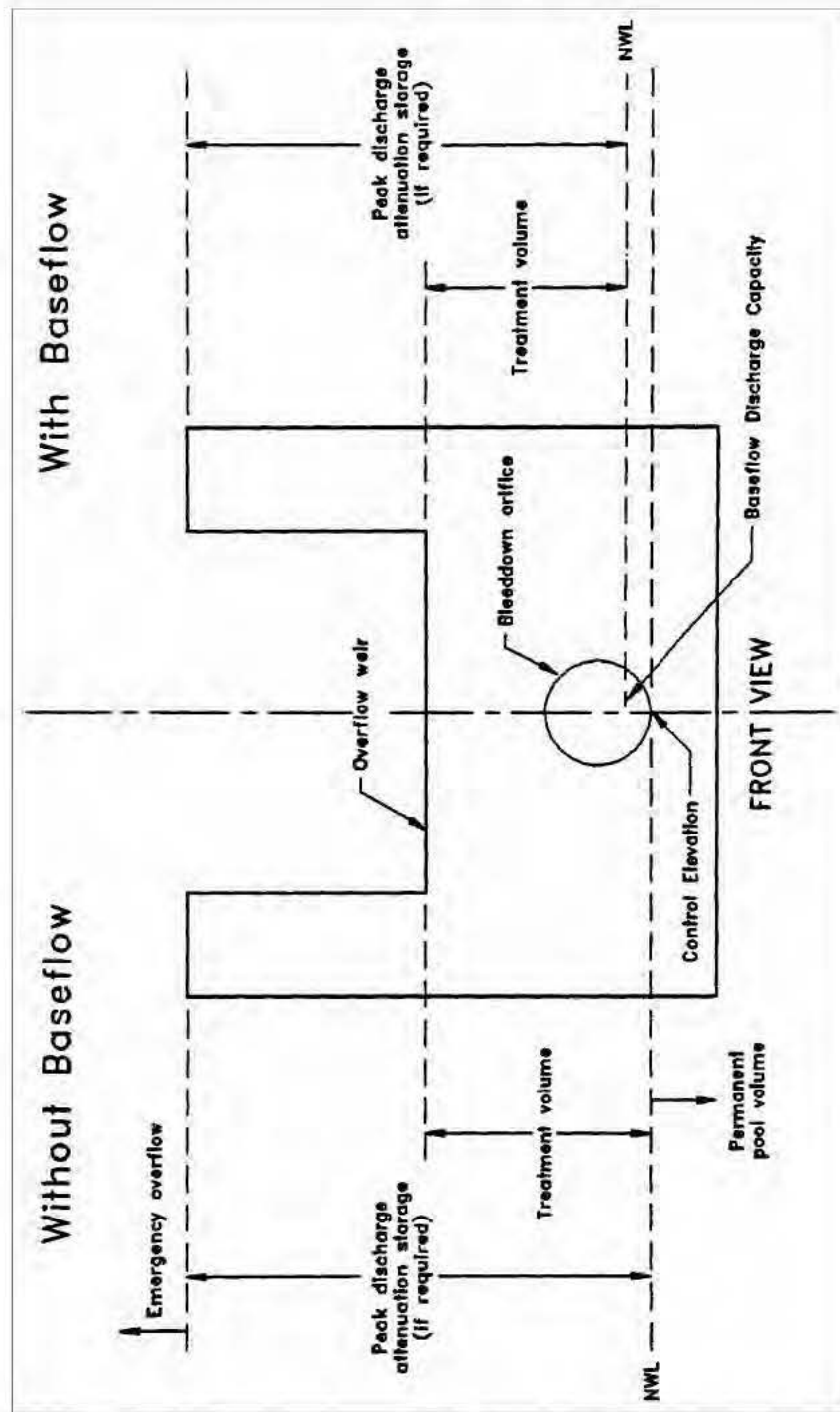


Figure 8.4-3 Typical wet detention outfall structure with and without baseflow conditions (N.T.S.)

zone can be provided in other areas of the pond that have suitable depths (i.e., a shallow shelf in the middle of the lake).

The littoral zone is established with native aquatic plants by planting and/or the placement of wetland soils containing seeds of native aquatic plants. A specific vegetation establishment plan must be prepared for the littoral zone. The plan must consider the hydroperiod of the pond and the type of plants to be established. Livingston et al. (1988) has published a list of recommended native plant species suitable for littoral zone planting. In addition, a layer of muck can be incorporated into the littoral area to promote the establishment of the wetland vegetation. When placing muck, special precautions must be taken to prevent erosion and turbidity problems in the pond and at its discharge point while vegetation is becoming established in the littoral zone.

The following is a list of the design criteria for wet detention littoral zones:

- (a) The littoral zone shall be gently sloped (6:1 Horizontal:Vertical or flatter). At least 30 percent of the wet detention pond surface area shall consist of a littoral zone. The percentage of littoral zone is based on the ratio of vegetated littoral zone to surface area of the pond at the control elevation.
- (b) The treatment volume should not cause the pond level to rise more than 18 inches above the control elevation unless the applicant affirmatively demonstrates that the littoral zone vegetation can survive at greater depths.
- (c) Within 24 months of completion of the system, 80 percent coverage of the littoral zone by suitable aquatic plants is required.
- (d) Planting of the littoral zone is recommended to meet the 80% coverage requirement. As an alternative to planting, portions of the littoral zone may be established by placement of wetland top soils (at least a four inch depth) containing a seed source of desirable native plants. When utilizing this alternative, the littoral zone must be stabilized by mulching or other means and at least the portion of the littoral zone within 25 feet of the inlet and outlet structures must be planted.

8.7 Littoral Zone Alternatives

As an option to establishing and maintaining vegetative littoral zones as described in **Section 8.6 of the Manual**, the applicant can provide either:

- (a) An additional 50% of the appropriate permanent pool volume as required in **Sections 8.5 or 8.13 of the Manual**, or
- (b) Pre-treatment of the stormwater prior to the stormwater entering the wet detention pond. The level of pre-treatment must be at least that required for retention, underdrain, exfiltration, or swale systems. See **Section 8.11 of the Manual** for additional information on pre-treatment.

Providing a larger permanent pool or pre-treatment will compensate for the pollutant removal benefits associated with a well vegetated littoral zone. However, even under the above alternatives, shallow portions of the wet detention pond may be colonized with nuisance species such as cattails that will need to be controlled. This should be considered routine operational maintenance.

8.8 Pond Depth

The rule requires a maximum pond depth of 12 feet and a mean depth (pond volume divided by the pond area at the control elevation) between 2 and 8 feet. Many of the nutrients and metals removed from the water column accumulate in the top few inches of the pond bottom sediments (Yousef et al. 1990). If a pond is deep enough, it will have a tendency to stratify, creating the potential for anaerobic conditions developing at the bottom of the pond (CDM 1985). An aerobic environment should be maintained throughout the water column in wet detention ponds in order to minimize the release of nutrients and metals from the bottom sediments (Yousef et al. 1990). The maximum depth criteria minimizes the potential for significant thermal stratification which will help maintain aerobic conditions in the water column that should maximize sediment uptake and minimize sediment release of pollutants.

On the other hand, the minimum mean depth criteria minimizes aquatic plant growth which may be excessive if the pond is too shallow.

The Department will consider pond depths in excess of 12 feet providing the applicant can provide reasonable assurance that the proposed pond depth will not cause adverse water quality conditions due to anaerobic bottom conditions.

8.9 Pond Configuration

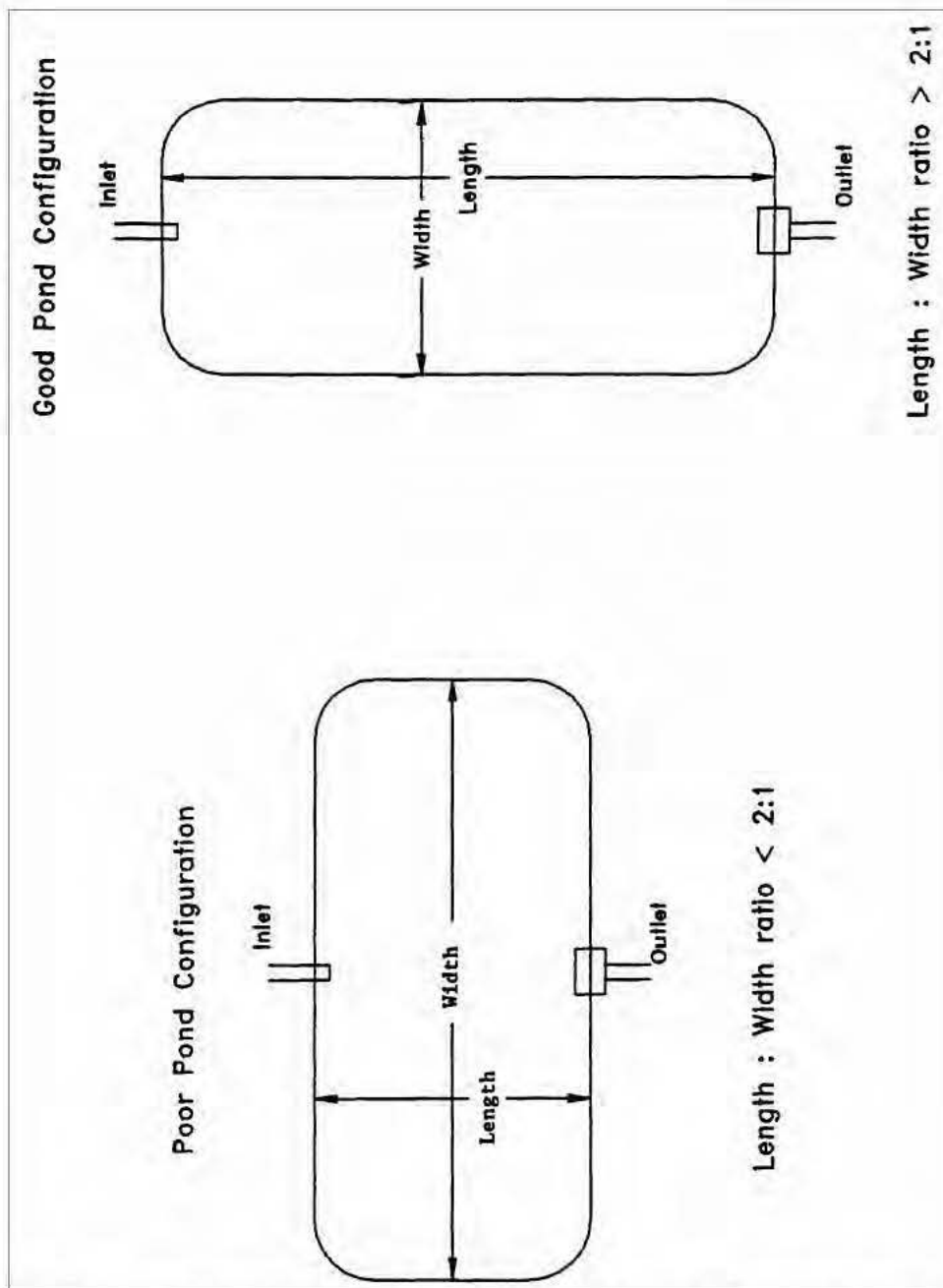
The average length to width ratio of the pond must be at least 2:1. Yousef et al. (1990) reports that it is important to maximize the flow path of water from the inlets to the outlet of the pond to promote good mixing (i.e., no dead spots). Under these design conditions, short circuiting is minimized and pollutant removal efficiency and mixing is maximized.

If short flow paths are unavoidable, the effective flow path can be increased by adding diversion barriers such as islands, peninsulas, or baffles to the pond. Inlet structures should be designed to dissipate the energy of water entering the pond. Examples of good and poor pond configurations are given in **Figure 8.9-1**.

The Department will consider pond configurations with the average length to width ratio less than 2:1 if the applicant can demonstrate reasonable assurance that the alternate design of the pond minimizes short circuiting.

8.10 Ground Water Table

To minimize ground water contributions which may lower treatment efficiencies, the control elevation should be set at or above the normal on-site ground water table elevation (Yousef et al. 1990). This elevation may be determined by calculating the average of the seasonal high and seasonal low ground water table elevations.



Ground water inflow (baseflow) must be considered when the control elevation is set below the normal ground water table elevation or the project utilizes underdrains (i.e., road underdrains) to control ground water conditions on-site. The design of the outfall structure must provide for the discharge of baseflow at the design normal water level in the pond. Baseflow rates must be included in the drawdown calculations for the outfall structure. Baseflow should also be considered

Figure 8.9-1 Examples of good and poor wet detention pond configurations (N.T.S.)

in the permanent pool residence time design. Establishment of the normal water level in the pond will also be influenced by baseflow conditions (see **Figure 8.4-3**).

8.11 Pre-treatment

“Pre-treatment” is defined as the treatment of a portion of the runoff prior to its entering the wet detention pond. Pre-treatment increases the pollutant removal efficiency of the overall stormwater system by reducing the pollutant loading to the wet detention pond. Pre-treatment may be used to enhance the appearance of the wet detention pond or meet the additional treatment criteria for discharges to receiving water which are classified as Class I, Class II, Outstanding Florida Waters (OFWs), or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting.

For developments where the appearance of the lake is important, pre-treatment can reduce the chances of algal blooms and slow the eutrophication process. Some types of pre-treatment practices include utilizing vegetative swales for conveyance instead of curb and gutter, perimeter swales or berms around the lake, oil and grease skimmers on inlet structures, retention storage in swales with raised inlets, or shallow landscaped retention areas (when soils and water table conditions will allow for adequate percolation).

For systems in which pre-treatment is utilized to meet the additional design criteria requirements for systems which direct discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, pre-treatment practices must meet the appropriate design and performance criteria for that BMP. Acceptable types of pre-treatment include the following:

- (a) Retention systems which meet the design and performance criteria in **Section 5 of the Manual**;
- (b) Underdrain systems which meet the design and performance criteria in **section 6 of the Manual**;
- (c) Exfiltration trench (see **section 7 of the Manual**); or
- (d) Swales systems which meet the design and performance criteria in **section 8 of the Manual**.

Alternative pre-treatment methods will be evaluated on a case-by-case basis by the Department. Applicants or system designers are encouraged to meet with Department staff in a pre-application conference if alternative methods are proposed.

8.12 Pond Side Slopes

The pond must be designed so that the average pond side slope measured between the control elevation and two feet below the control elevation is no steeper than 3:1 (horizontal:vertical). Because the pond sediments are an important component in the wet detention treatment processes, this criterion will ensure sufficient pond bottom/side slope area for the appropriate processes to occur.

8.13 Direct Discharges to Class I, Class II, OFWs, or Shellfishing Waters

Wet detention systems which discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, must provide either:

- (a) An additional fifty percent of both the required treatment and permanent pool volumes
- (b) Pre-treatment of the stormwater prior to the stormwater entering the wet detention pond. The level of pre-treatment must be at least that required for retention, underdrain, exfiltration, or swale systems (see **Section 8.11 of the Manual**).

8.14 References

Camp Dresser & McKee Inc (CDM). 1985. *An Assessment of Stormwater Management Programs*. Prepared for Florida Department of Environmental Regulation, Tallahassee, Florida.

Livingston, E.H., E. McCarron, J. Cox, P. Sanzone. 1988. *The Florida Land Development Manual: A Guide to Sound Land and Water Management*. Florida Department of Environmental Regulation, Nonpoint Source Management Section, Tallahassee, Florida.

Yousef, Y.A., M.P. Wanielista, L.Y. Lin, and M. Brabham. 1990. *Efficiency Optimization of Wet Detention Ponds for Urban Stormwater Management (Phase I and II)*. University of Central Florida, Orlando, Florida.

9.0 Design Criteria and Guidelines for Swale Systems

9.1 Description

Swales are a man-made or natural system shaped or graded to required dimensions and designed for the conveyance and rapid infiltration of stormwater runoff. Swales are designed to infiltrate a defined quantity of runoff through the permeable soils of the swale floor and side slopes into the shallow ground water aquifer (**Figure 9.1-1**). Turf is established to promote infiltration and stabilize the side slopes. Soil permeability and water table conditions must be such that the swale can percolate the desired runoff volume from the 3-year, 1-hour storm event. The swale holds water only during and immediately after a storm event, thus the system is normally “dry.” Unlike retention basins, swales are “open” conveyance systems. This means there are no physical barriers such as berms or check-dams to impound the runoff in the swale prior to discharge to the receiving water.

Swales provide excellent removal of stormwater pollutants. Substantial amounts of suspended solids, oxygen demanding materials, heavy metals, bacteria, some varieties of pesticides and nutrients such as phosphorus are removed as runoff percolates through the vegetation and soil profile. Swale systems should not be located in close proximity to drinking water supply wells. As required by chapter 62-22, F.A.C., stormwater treatment facilities must be at least 100 feet from any public supply well. Additional design criteria are established for swale systems constructed in Karst Sensitive Areas where the drinking water aquifer is close to the land surface (see **section 11 of the Manual**).

Besides pollution control, swale systems can be utilized to promote the recharge of groundwater to prevent saltwater intrusion in coastal areas, and to maintain ground water levels in aquifer recharge areas. Swales can be incorporated into the design of a stormwater management system to meet the runoff volume criteria for projects which discharge to land-locked lakes (see **section 3.3(b) of the Manual**).

Swales can also be utilized to provide pre-treatment of runoff prior to its release to another treatment BMP such as wet detention (see **Section 8.11 of the Manual**) or wetlands stormwater management systems (see **Section 10.4**). Pre-treatment reduces the pollutant loading to the downstream treatment system, increases the pollutant efficiency of the overall stormwater management system, and reduces maintenance. In some cases, pre-treatment may be used to meet the additional treatment criteria for discharges to sensitive receiving waters (Class I, Class II, and OFWs). For developments where the appearance of the downstream system (i.e., wet detention lake) is important, pre-treatment can reduce the probability of algal blooms occurring and slows the eutrophication process.

The design and performance criteria specific to swale systems are described below.

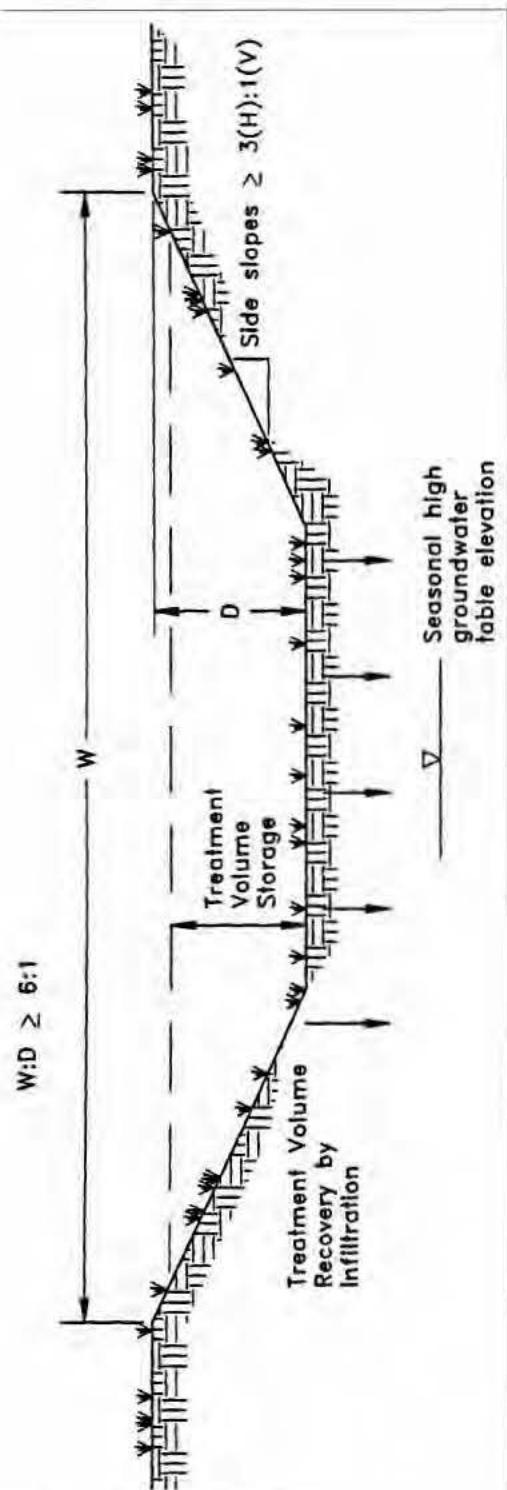


Figure 9.1-1 Cross-section of swale system (N.T.S.)

9.2 Treatment Volume

The runoff from the site should be routed to the swale system for conveyance and percolation into the ground. For systems which discharge to Class III receiving water bodies, the swales should be designed to percolate 80% of the runoff from the 3-year, 1-hour storm. The remaining 20% of the runoff from the 3-year, 1-hour storm event may be discharged offsite by the swale system.

Swale systems which directly discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, should be designed to percolate all of the runoff from the 3-year, 1-hour storm.

9.3 Recovery Time

Swale systems must provide the capacity for the specified treatment volume of stormwater and contain no contiguous areas of standing or flowing water within 72 hours following the storm event referenced in **section 9.2 of the Manual** assuming average antecedent moisture conditions. The treatment volume must be provided by percolation through the soil, evaporation, or evapotranspiration.

Antecedent moisture condition (AMC) refers to the amount of moisture and storage in the soil profile prior to a storm event. Antecedent soil moisture is an indicator of wetness and availability of soil to infiltrate water. The AMC can vary from dry to saturated depending on the amount of rainfall received prior to a given point in time. Therefore, “average AMC” means the soil is neither dry or saturated, but at an average moisture condition at the beginning of a storm event when calculating recovery time for swale systems.

The antecedent condition has a significant effect on runoff rate, runoff volume, infiltration rate, and infiltration volume. The infiltration volume is also known as the upper soil zone storage. Both the infiltration rate and upper soil zone storage are used to calculate the recovery time of retention systems and should be estimated using any generally accepted and well documented method with appropriate parameters to reflect drainage practices, seasonal high water table elevation, the AMC, and any underlying soil characteristics which would limit or prevent percolation of storm water into the soil column.

9.4 Dimensional Requirements

Swales must have a top width to depth ratio of the cross-section equal to or greater than 6:1 or side slopes equal to or greater than 3:1 (horizontal to vertical).

9.5 Stabilization

Swales should be stabilized with vegetative cover suitable for soil stabilization, stormwater treatment, and nutrient uptake. Also, the swale should be designed to take into account the soil erodibility, soil percolation, slope, slope length, and drainage area so as to prevent erosion and reduce pollutant concentrations.

10.0 Design Criteria and Guidelines for Wetlands Stormwater Management Systems

10.1 Description

Wetlands are an essential part of nature's stormwater management system. Important wetland functions include the conveyance and storage of stormwater. These function to dampen flooding impacts; reduce flood flows and velocity of stormwater which in turn reduces erosion, increases sedimentation, and helps the assimilation of pollutants typically carried in stormwater. Accordingly, there is interest in the incorporation of natural wetlands into stormwater management systems, especially wetlands which have been previously drained. This concept provides an opportunity to use wetlands to meet the requirements of the stormwater rule. In addition, by using wetlands for stormwater management, drained wetlands can be revitalized and landowners and developers have greater incentive to preserve or restore wetlands (Livingston 1989).

For wetlands stormwater management systems the District must attempt to ensure that a proposed wetlands stormwater management system is compatible with the existing ecological characteristics of the wetlands proposed to be utilized for stormwater treatment. The District must also ensure that water quality standards will not be violated by discharges from wetlands stormwater management system. To achieve these goals, specific performance criteria are set forth in the stormwater rule and are described below for systems which incorporate wetlands for stormwater treatment.

10.2 Types of Wetlands that may be Utilized for Stormwater Treatment

The only wetlands which may be considered for use to provide stormwater treatment are those which:

- (a) Are isolated wetlands; and
- (b) Would be isolated wetlands, but for a hydrologic connection to other wetlands or surface waters via another watercourse that was excavated through uplands.

10.3 Treatment Volume

The system should be part of a comprehensive stormwater management system that utilizes wetlands in combination with other best management practices to provide treatment of the runoff from the project. For systems discharging to Class III waters, the rule specifies treatment of the runoff from the greater of the following:

- (a) First one inch of runoff, or
- (b) 2.5 inches times the impervious area.

Those systems which directly discharge to Class I, Class II, OFWs, or Class III waters which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting, shall provide an additional fifty percent of the applicable treatment volume specified above.

If the wetland alone cannot provide the treatment volume, then other best management practices should be incorporated upstream and outside of the wetland to store the proper level of runoff. Utilization of other BMPs must not adversely affect the ability of the wetlands stormwater management system from meeting the requirements of this section.

10.4 Recovery Time

The system should be designed to bleed down one-half the applicable treatment volume specified above between 60 and 72 hours following a storm event.

10.5 Inlet Structures

Inlet structures should be designed to dissipate the energy of runoff entering the wetland and minimize the channelized flow of stormwater. Methods include, but are not limited to, sprinklers, pipe energy dissipators, overland flow or spreader swales.

10.6 Wetland Function

Pre-treatment can reduce the impact of untreated stormwater upon the wetland. In addition, pre-treatment can be utilized to attenuate stormwater volumes and peak discharge rates so that the wetland's hydroperiod is not adversely altered (Livingston 1989). Swale conveyances and lakes adjacent to the wetland are typical pre-treatment practices.

10.7 Residence Time

The design features of the system should maximize residence time of the stormwater within the wetland to enhance the opportunity for the stormwater to come into contact with the wetland sediment, vegetation, and micro-organisms (Livingston 1989). This can be accomplished by several means. The inlets and outlets should be located to maximize the flow path through the wetland. Energy dissipators and spreader swales can promote overland flow and reduce the possibility of channelized flow occurring. In some instances, berms in wetlands can act as baffles to increase the flow path of surface flow through the wetland.

10.8 Monitoring

In order to establish a reliable, scientifically valid data base upon which to evaluate the performance criteria and the performance of the wetlands stormwater management system, a monitoring program may be required. Monitoring programs shall provide the Department with comparable data for different types of wetlands and drainage designs. Data to be collected may include but not be limited to:

- (a) Sedimentation rate;
- (b) Sediment trace metal concentrations;
- (c) Sediment nitrogen and phosphorus concentrations;

- (d) Changes in the frequency, abundance and distribution of vegetation; and
- (e) Inflow and outflow water quality for nutrients, metals, turbidity, oils and greases, bacteria and other parameters related to the specific site conditions.

Inflow and outflow water quality parameters will be monitored on such storm event occurrences as established by the District based on a site specific basis. The District shall eliminate the requirement to continue the monitoring program upon its determination that no further data is necessary to evaluate the performance criteria or ensure compliance with the performance criteria and applicable water quality standards.

10.9 Dredge and Fill

Dredge or fill in wetlands or other surface waters to construct or alter a stormwater treatment system is an allowable impact providing the impact meets the criteria in Section VII of the EMA.

11.0 Karst Sensitive Area Criteria

Section 2.2 of the **Manual** provides that a condition for issuance of a permit includes compliance with any applicable special basin or geographic area criteria rules. The only areas within the geographical extent of the Northwest Florida Water Management District (NFWFMD) for which additional geographic area criteria have been developed are two Sensitive Karst Areas (SKAs). These areas cover seven counties the central and eastern regions of the geographical extent of the NFWFMD (See **Figure 11.0-1**). These areas were identified using the same methodology, and the design criteria for both of these SKAs are the same.

11.1 Background of the Sensitive Karst Area Design Criteria

The following additional surface water management criteria are used in reviewing applications for permits in the SKAs.

The Floridan aquifer system is the drinking water source for most of the population in the geographical extent of the NFWFMD. In parts of **some** of the counties within the NFWFMD, the limestones that make up or comprise this aquifer system are at or very near the land surface. Potential contamination of the Floridan aquifer from surface pollutant sources in these areas is greater than within the rest of the geographical extent of the NFWFMD due to the hydrogeology and geology of these “sensitive karst areas.” “Karst” is a geologic term used to describe areas where sinkhole formation is common and landscapes are formed by the dissolution of limestone/dolomite.

11.2 Hydrogeology of the Sensitive Karst Areas

Throughout the majority of the geographical extent of the NFWFMD the highly porous limestone that comprises the Floridan aquifer system is generally overlain by tens to hundreds of feet of sands, clays, and other material. Where present, this material may act as a buffer, protecting the Floridan aquifer from surface pollutants. Surface water seeps through this material slowly, which allows for filtration, adsorption, and biological neutralization of contaminants.

However, in SKAs, the limestone that comprises the Floridan aquifer system exists at, or near the land surface (**Figure 11.2-1**), and sand overburden, confining clays, or other confining cover material is discontinuous or absent. As a result, there is rapid movement of surface water into the aquifer. The SKAs are areas of high recharge to the Floridan aquifer system. According to the Florida Geological Survey, the Floridan aquifer ground water levels vary from land surface to approximately 60 feet below land surface in the SKAs.

One factor which makes the SKAs particularly prone to stormwater contamination is the formation of solution pipe sinkholes. Solution pipe sinkholes are common in these areas and form due to the collapse of surficial material into vertical cavities that have been dissolved in the upper portion of the limestone (**Figure 11.2-2**). They are also formed by the movement of surface material into the underlying porous limestone of the SKAs. In most cases, the solution pipes are capped by a natural plug of sands and clays (**Figures 11.2-1 and 11.2-2**). If the cap is washed out, the resulting solution pipe sinkhole (**Figure 11.2-3**) can act as a direct avenue for the movement of inadequately treated stormwater into the Floridan aquifer.

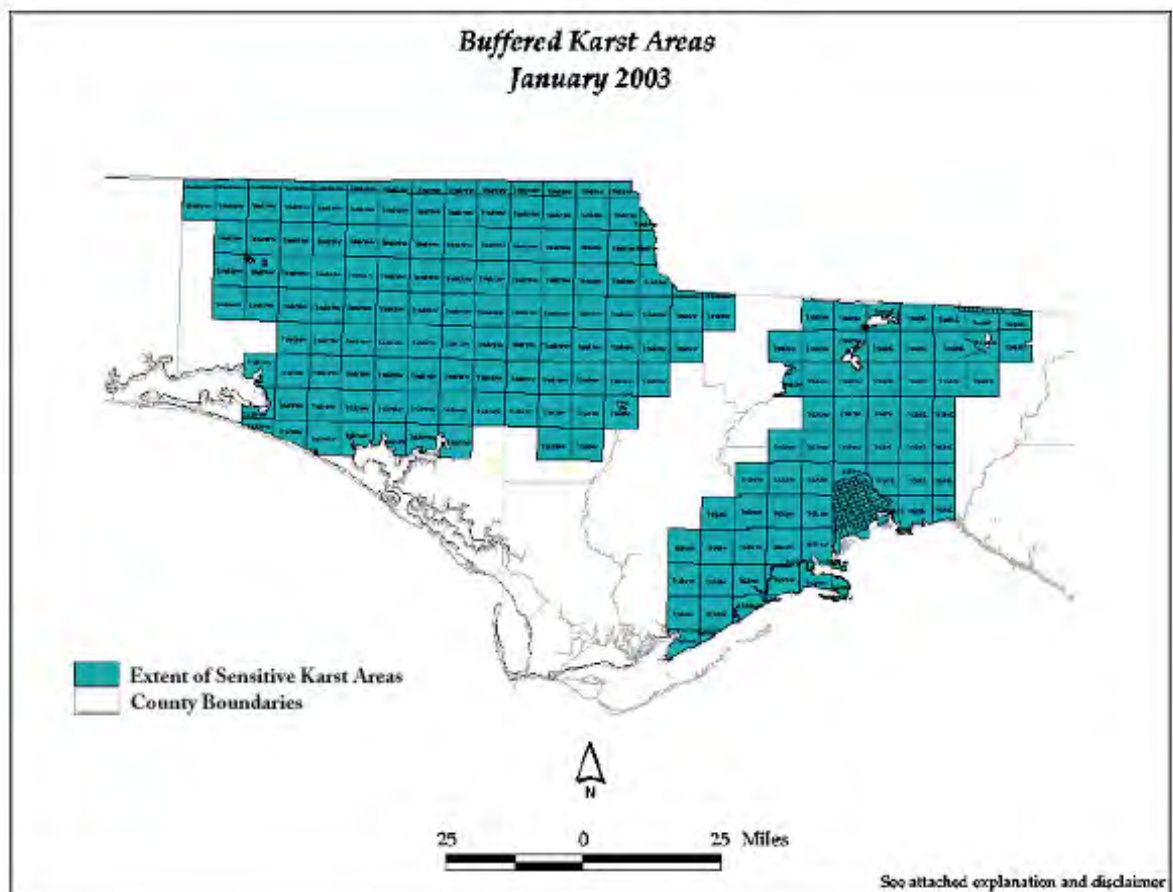


Figure 11.0-1. Karst areas in the Northwest ERP

DISCLAIMER

This geologic data was developed by the Florida Department of Environmental Protection (FDEP) - Florida Geological Survey (FGS) to carry out agency responsibilities related to management, protection, and development of Florida's natural resources. Although efforts have been made to make the information accurate and useful, the FDEP/FGS assumes no responsibility for errors in the information and does not guarantee that the data are free from errors or inaccuracies. Similarly FDEP/FGS assumes no responsibility for the consequences of inappropriate uses or interpretations of the data. As such, these data are distributed on "as is" basis and the user assumes all risk as to their quality, the results obtained from their use, and the performance of the data. FDEP/FGS bears no responsibility to inform users of any changes made to this data. Anyone using this data is advised that precision implied by the data may far exceed actual precision. Comments on this data are invited and FDEP/FGS would appreciate that documented errors be brought to staff attention. The development of these data sets represents a major investment of staff time and effort. As a professional responsibility, we expect that the FDEP/FGS will receive proper credit when you utilize these data sets. Further, since part of this data was developed and collected with U.S. Government or State of Florida funding, no proprietary rights may be attached to it in whole or in part, nor may it be sold to the U.S. Government or the Florida State Government as part of any procurement of products or services.

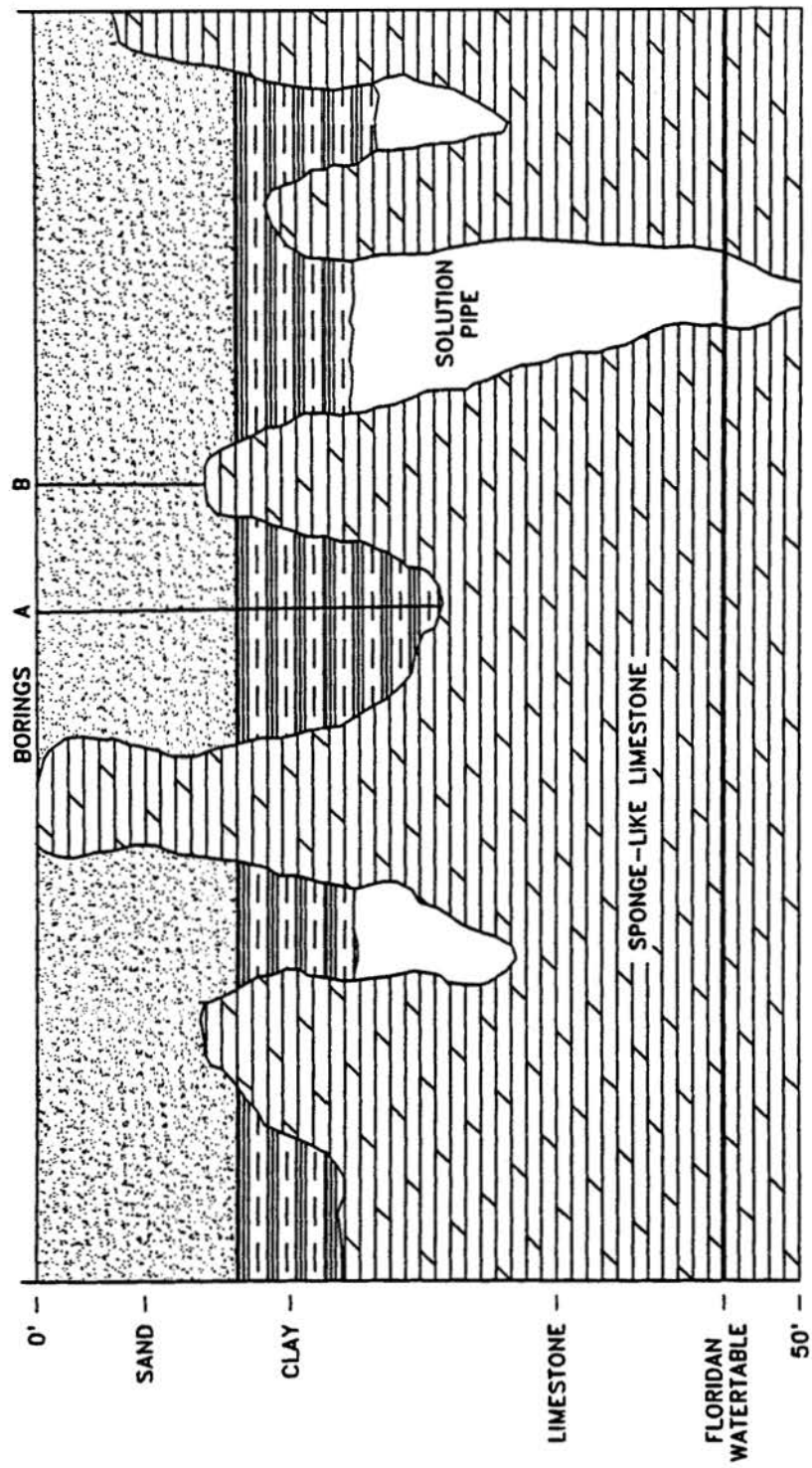


Figure 11.2-1 Generalized geologic section in karst sensitive area

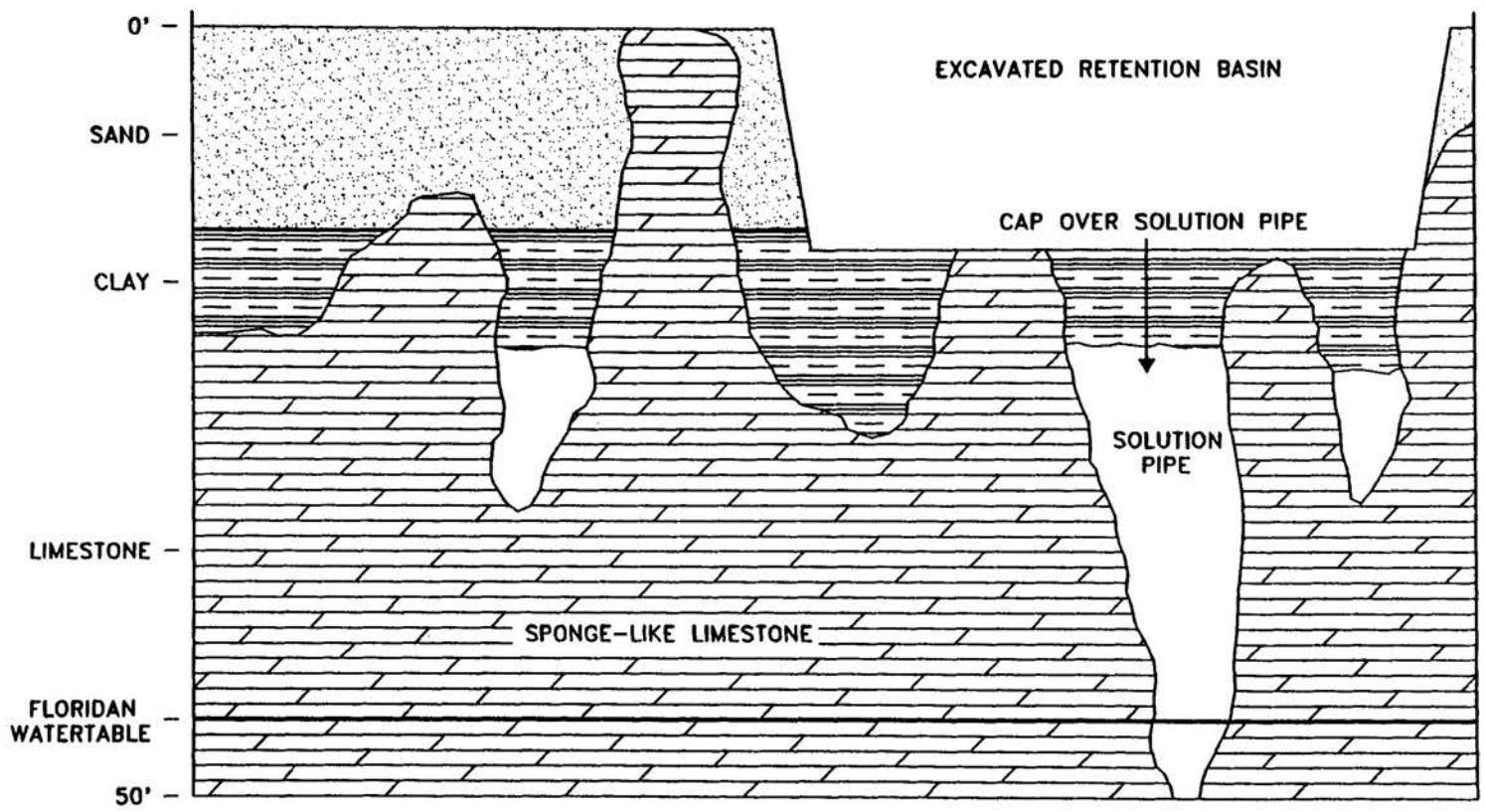


Figure 11.2-2 Generalized geologic section in karst sensitive area with excavated retention basin

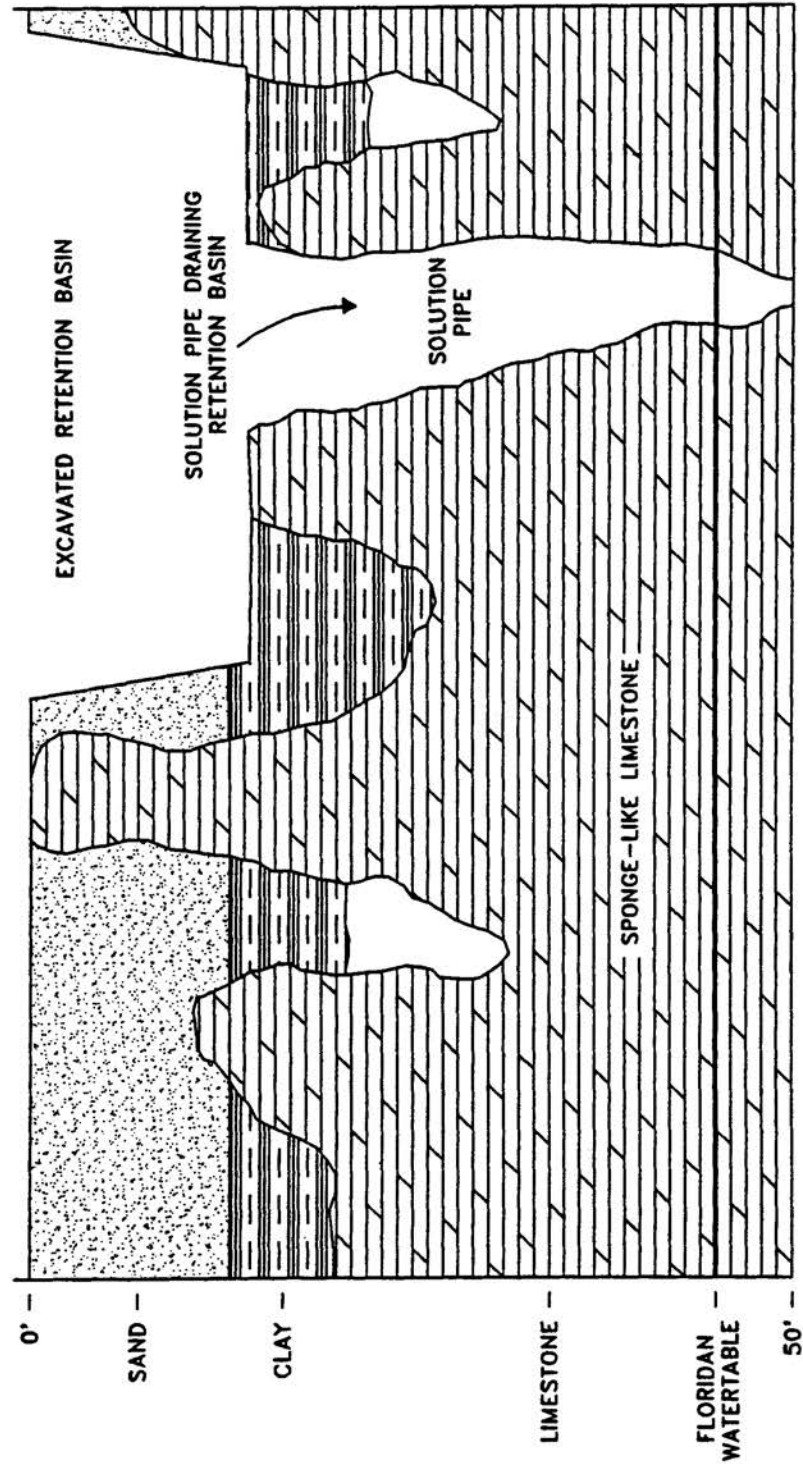


Figure 11.2-3. Generalized geologic section in karst sensitive area with excavated retention basin

Solution pipe sinkholes may open in the bottom of stormwater retention basins. The capping plug or sediment fill may be reduced by excavation of the basin. Stormwater in the basin may increase the hydraulic head on the remaining material in the pipe throat. Both of these factors can wash material down the solution pipe. Solution pipes act as natural drainage wells and can drain stormwater basins.

The irregular weathering of the limestone surface in the SKAs contributes to uncertainty and errors in predicting the depth from land surface to limestone. For example, in **Figure 11.2-2**, boring A would show limestone much deeper than it would actually be encountered during excavation, shown at boring B. This potential for error must be considered for site investigations when evaluating site borings, and load-specific geological analyses must be included to base site designs.

The SKAs have been delineated within the geographical extent of NFWFMD as follows:

- (a) First, a map depicting the elevation of the Floridan aquifer system in the Florida panhandle relative to sea level (Pratt and others, 1996) was subtracted from a land surface elevation model (FGS, 2003). The output reflects overburden thickness. A map was then produced to represent all areas that had overburden thickness values of less than or equal to 100 feet. This value represents a conservative estimate of sediment thickness (assuming clean quartz sand) needed to minimize significant adverse impact to the Floridan aquifer system due to natural or human-induced phenomena. Additional research would be required to refine this thickness value to account for sediments of variable permeability (e.g., silt and clay). The resulting map was merged with a map indicating areas affected by karst topography in Northwest Florida (Scott, 1991). Groundwater in Florida is generally considered vulnerable to surface sources of contamination in areas dominated by karst topography.
- (b) The “Top of Floridan aquifer system map” (Pratt and others, 1996) is based on lithologic and hydrologic data from a variety of public-agency sources, such as the Florida Geological Survey, the U.S. Geological Survey and the NFWFMD (Jeff Wagner, personal communication, 2003). Based on an estimated average spacing of wells used to generate the top of Floridan aquifer system map (Pratt, 1996) in karst topography areas, a conservative five-mile buffer is included in the Sensitive Karst Area Map to accommodate the estimated level of uncertainty in the source map.

11.3 Design Criteria for Sensitive Karst Areas

11.3.1 Stormwater management systems should be designed to avoid direct discharge of untreated stormwater into sinkholes and into the Floridan aquifer. Such systems shall be designed and constructed in a manner that avoids breaching an aquitard and such that construction excavation will not allow direct commingling of lesser quality water between surface and groundwater systems. The system design also should prevent the triggering of solution pipe sinkholes in the SKAs.

11.3.2 Systems that are designed as follows shall be presumed to comply with **Sections 11.3.1(a) and (b) of the Manual**:

- (a) A minimum of **three feet of unconsolidated soil material** between the surface of the limestone bedrock and the bottom and sides of the stormwater basin. Excavation and backfill of suitable material may be made to meet this criteria. This provides reasonable assurance of adequate treatment of stormwater before it enters the Floridan aquifer.

- (b) Stormwater storage areas should be as shallow as possible with a horizontal bottom (no deep spots). In general, the size of a stormwater storage basin can be minimized by providing retention throughout the project site by using shallow landscaped areas and swales.
- (c) Maximum basin depth of 10 feet. (Items (b) and (c) reduce the potential for solution pipe sinkhole formation caused by a large hydraulic head.).
- (d) Fully vegetated basin side slopes and bottom. Vegetation plays a critical role in the removal of contaminants from stormwater and stabilization of side slopes. In the SKAs, droughty, highly alkaline soils are common and prevent successful establishment of commonly used grasses such as bahia. Typically poor survival of vegetation in stormwater basins in the SKAs has demonstrated the need for mat-forming vegetation which can tolerate these conditions.

Two species of grasses are best suited for use in retention basins in the SKAs. These grasses are:

St. Augustine: This grass can tolerate high alkalinity and brief inundation. However, irrigation is required to foster a healthy cover during dry periods.

Bermuda: This grass can grow in alkaline conditions, is drought resistant, and can stand brief inundation. It is also a low maintenance species which provides excellent cover and soil stabilization. Bermuda grass grows in a thick mat, eventually covering all exposed soil. It recovers quickly after even extended drought. Mowing is rarely required because bermuda creeps laterally rather than growing vertically. Seed is available commercially and is inexpensive.

11.3.3 Applicants who choose not to design their system in conformance with **Section 11.3.2 of the Manual** shall furnish the Department with reasonable assurance that the alternate design and construction of the stormwater management system on the site complies with **Section 11.3.1 of the Manual**. Such reasonable assurance shall include:

- (a) An analysis including existing soil, geologic, and lithographic data of the site or immediately surrounding lands that demonstrates the presence of an aquitard that will not be breached by the proposed design and construction;
- (b) The presence of more than three feet of unconsolidated soil material between the surface of the limestone bedrock and the bottom and sides of the stormwater basin that will not be breached by the proposed design and construction; and
- (c) Ground penetrating radar (GPR) analyses to detect pre-existing buried cavities on the site.

A Professional Geologist registered in Florida in accordance with Section 492, F.S., shall be required to certify that the submitted information, the site characteristics, and the project design provide reasonable assurance of compliance with **Section 11.3.1 of the Manual**. The analyses shall not

include new core borings on the site, which if drilled, may create or promote the formation of direct conduits to the Floridan aquifer.

11.3.4 In addition to sites that are not identified on **Figure 11.0-1**, the Department may require compliance with the criteria in **Section 11.3.2 of the Manual** when available data and information indicate that a substantial likelihood exists that a proposed stormwater management system on a site has the potential to be located in a karst feature and has the potential to adversely affect the Floridan aquifer.

11.3.5 The criteria in **Sections 11.3.2 and 11.3.3 of the Manual** represent the minimum design requirements for systems in the SKA. Depending on the potential for contamination to the Floridan aquifer, more stringent criteria may apply. Industrial and some commercial sites will normally require more stringent design features. Some of the more stringent site specific design requirements which may be necessary include:

- (a) More than 3 feet of material between the limestone bedrock surface and the bottoms and sides of retention basins;
- (b) Basin liners (Clay or geotextile);
- (c) Sediment trapping structures at stormwater inlets;
- (d) Off-line treatment
- (e) Special stormwater system design
- (f) Ground water monitoring
- (g) Paint/solvent and water separators

If the design of the proposed stormwater management systems does not include the minimum design criteria discussed in this section, an analysis must be submitted to the Department that provides reasonable assurance that the ground water quality standards as set forth in chapters 62-4, 62-302, and 62-520, 62-522, and 62-550, F.A.C., are met.

11.4 References

Florida Geological Survey/Florida Department of Environmental Protection, 2003, Digital Elevation Model (DEM) of Northwest Florida (unpublished data).

Livingston, E.H. 1989. The Use of Wetlands for Urban Stormwater Management. In *Design of Urban Runoff Quality Controls*, ed. L.A. Roesner, B. Urbonas, and M.B. Sonnen, pages 467-490. American Society of Civil Engineers. New York.

Pratt, T.R., Richards, C.J., Milla, K.A., Wagner, J.R., Johnson, J.L., and Curry, R.J., 1996, Hydrogeology of the Northwest Florida Water Management District, Northwest Florida Water Management District Water Resources Special Report 96-4, 98 p.

Scott, T.M., 1991, A geological overview of Florida, in: Florida's ground water quality monitoring program – Hydrogeological framework, Scott, T.M., Lloyd. J.M., and Maddox, G., (eds.), Florida Geological Survey Special Publication No.32, pp. 97.

PART VI – APPENDICES

APPENDIX A CRITERIA/PERFORMANCE CRITERIA

The following is intended to provide the applicant/consultant an abbreviated compilation of the performance criteria outlined within the rule and Handbook. Refer to the Applicant's Handbook section noted.

- I. Engineered stormwater management systems required to meet the criteria in **Manual**(Section 2.1.1)
 - A. Requirements for professional certification (Section 2.2), legal authorization (Section 2.4), Public Safety (Section 2.5), and Operation and Maintenance (Section 2.9)
 - B. Conveyance and Storage—systems that alter existing conveyances must not adversely affect existing conveyance capabilities (Section 2.6)
 - C. All systems must meet tailwater criteria for water quality in receiving waters at discharge point of stormwater management system (Section 2.7)
- II. Engineered stormwater management systems that must meet stormwater quantity/flood control (Section 3.1)
 - A. Peak Discharge Attenuation: Post-development peak rate of discharge must not exceed pre-development peak rate of discharge (Section 3.3).
 - 1. For systems falling totally within a stream or open-lake watershed (Section 3.3(a)).
 - 2. For systems within an internally drained or closed-lake watershed, or within any part of a stream-to-sink watershed (Section 3.3(b)).
 - B. Storage and Conveyance (Section 3.4)
 - 1. A system may not cause a net reduction in flood storage within a 10 year floodplain (Section 3.4.2(a));
 - 2. A system may not cause a reduction of flood conveyance capabilities within a floodway (Section 3.4.2(b));
 - 3. For exceptions refer to 3.4.2(a), 3.4.2(b) and 3.4.2(c).
 - C. Low Flow and Base Flow Maintenance (Section 3.6)
 - 1. Systems that impound water for purposes in addition to temporary detention storage or systems that discharged water off-site during a 5-year, 30-day drought frequency shall be designed with outlet structure to maintain a low flow discharge of available conservation storage (Section 3.6.2(b)) and be operated to provide a low flow discharge whenever water is impounded (Section 3.6.2 (c)).

2. System will not cause the ground water table to decline more than an average of three feet over the project area than the average dry season low water table (Section 3.6.3(a)) or more than five feet than the average dry season low water table at any location (Section 3.6.3(b);
3. Systems will not cause ground water table to be lowered to a level that would decrease flows or levels below any minimum level of flow established by a water management district.

III. Engineered stormwater management systems that must meet stormwater quality (Section 4.1)

- A. No water quality degradation below standards in Chapters 62-4, 62-302, 62-520, or 62-55-, F.A.C. (Section 4.4).
- B. Peak Discharge Criteria to Protect Streambanks
 1. Peak discharge rates must be controlled for the 2-year, 24-hour storm event, and potentially for a larger storm event (Section 4.5.2.2)
 2. Post development peak discharge rate must not exceed pre-development rates for the 2-year, 24-hour storm for systems serving new construction area greater than 50 percent impervious (Section 4.5.2.3)

APPENDIX B
LEGAL DESCRIPTION OF SENSITIVE KARST AREA

All lands contained in the following Section:

Township 6 North, Range 21 West

All Sections

Township 5 North, Range 21 West

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Township 6 North, Range 20 West

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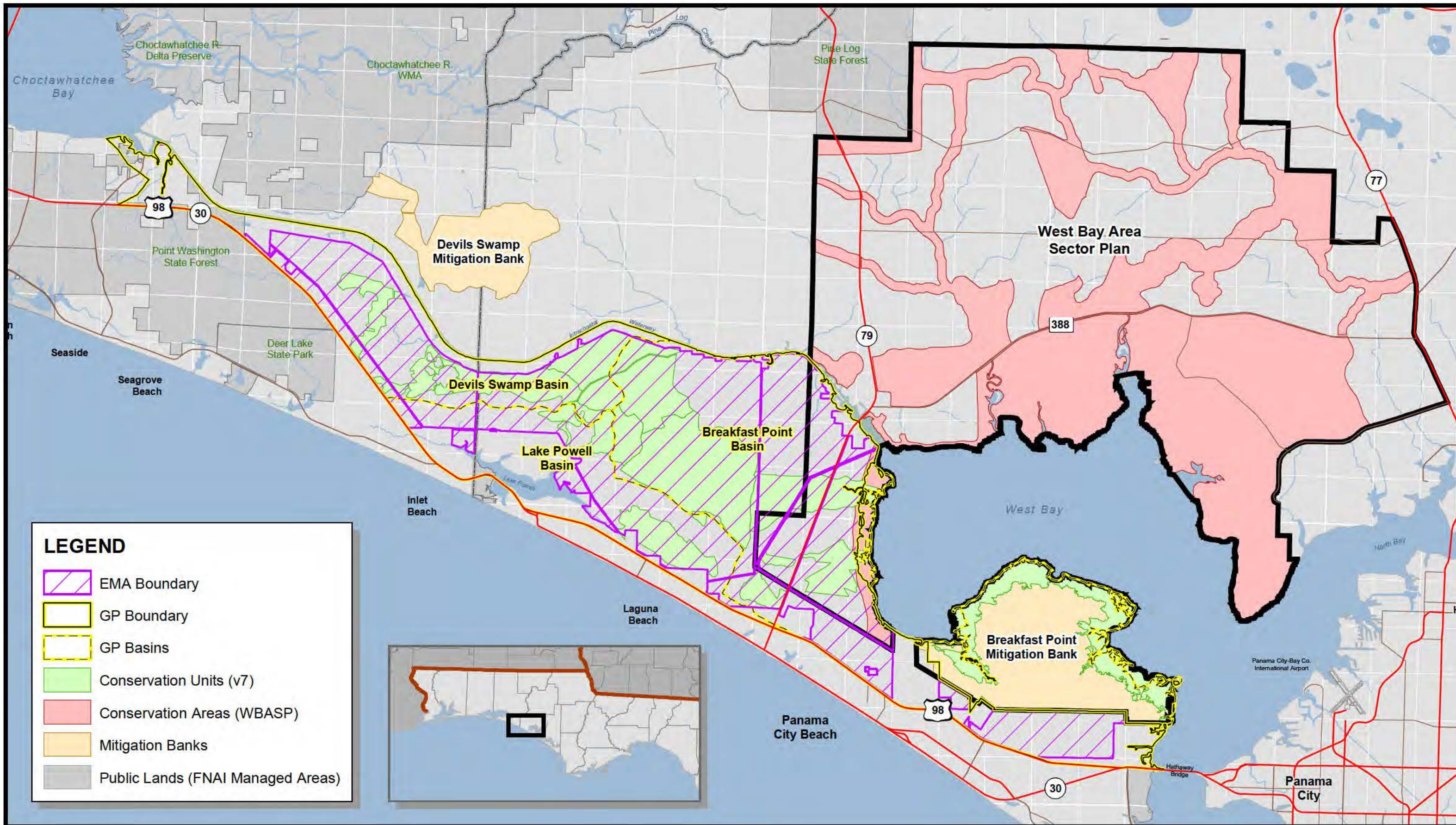


EXHIBIT 03

MITIGATION STRATEGY





SAJ 86 - Sub Watersheds (HUC 12)

March, 2019

0 2.5 5 Miles



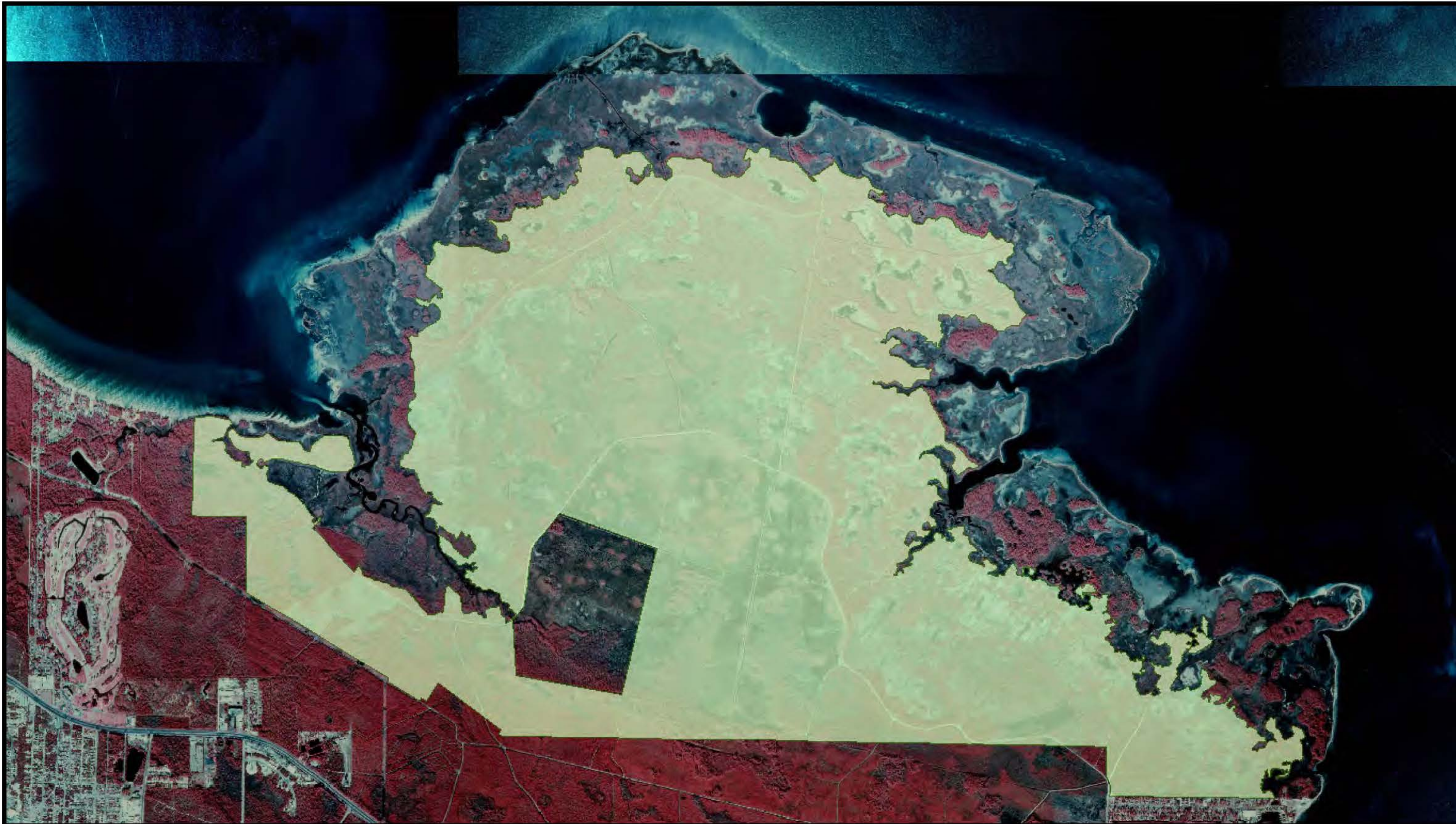


EXHIBIT 05

BREAKFAST POINT MITIGATION BANK
4,636 ACRES

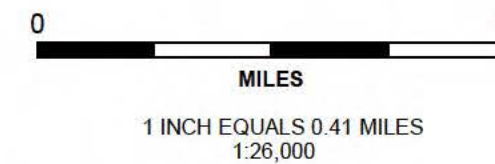
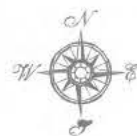
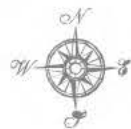




EXHIBIT 06

DEVILS SWAMP MITIGATION BANK
3,049 ACRES



0 0.25 0.5 0.75
MILES
1 INCH EQUALS 0.33 MILES
1:21,000

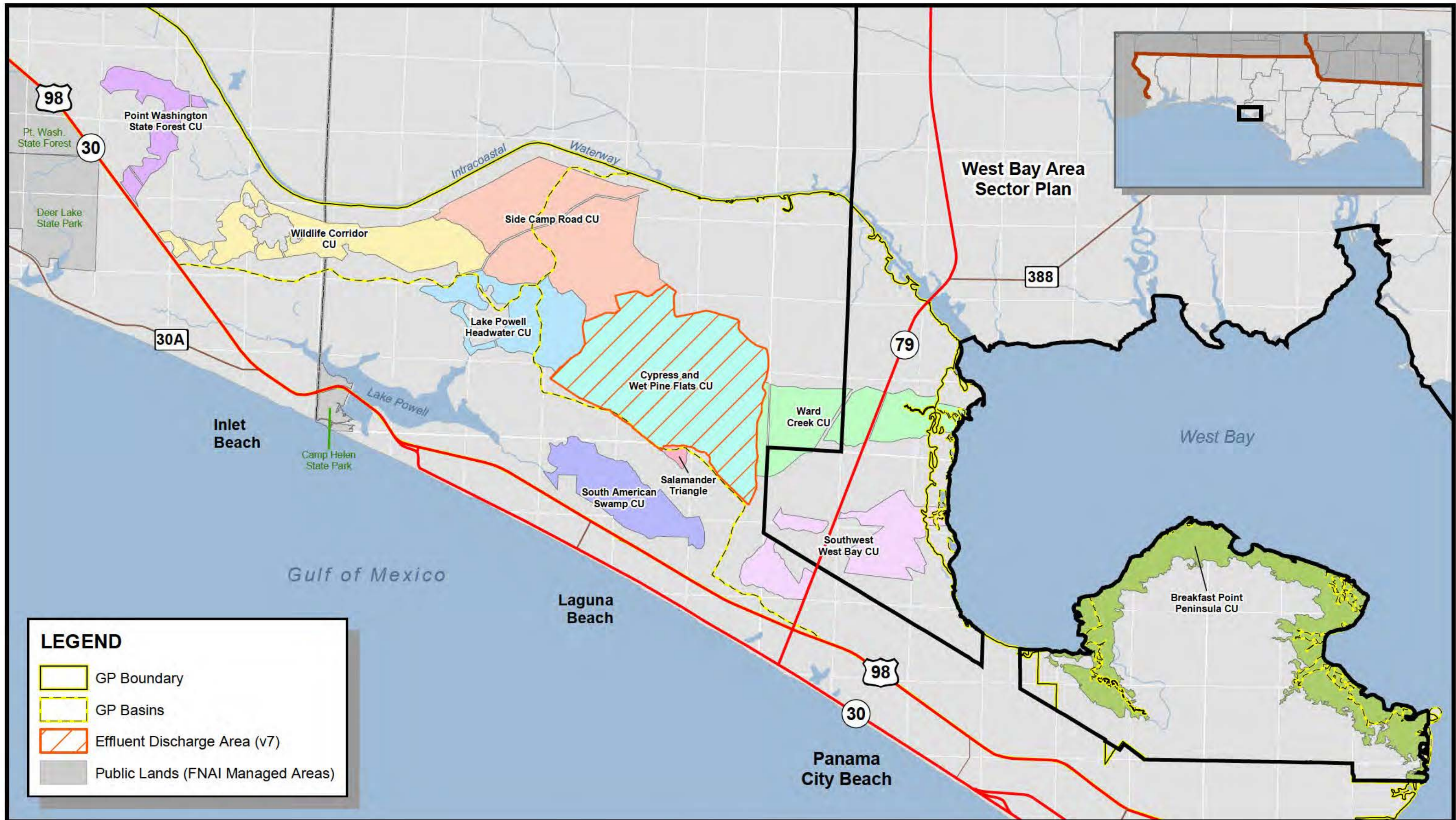


EXHIBIT 07

CONSERVATION UNITS

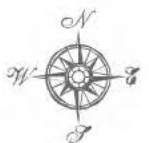


EXHIBIT 08
Conservation Unit 1
Point Washington State Forest
466 Acres

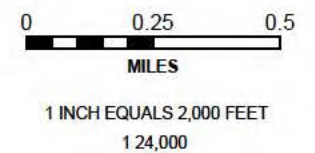
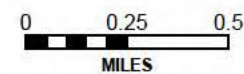




EXHIBIT 09
**Conservation Unit 2
Wildlife Corridor**
1,247 Acres



1 NCH EQUALS 2,500 FEET
1 30,000



EXHIBIT 10
Conservation Unit 3
Side Camp Road
2,330 Acres

0 0.25 0.5
MILES

1 NCH EQUALS 2,500 FEET
130,000



Lake Powell

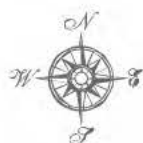
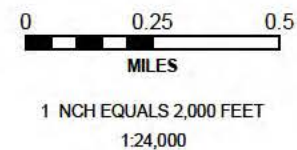


EXHIBIT 11
Conservation Unit 4
Lake Powell Headwater
912 Acres



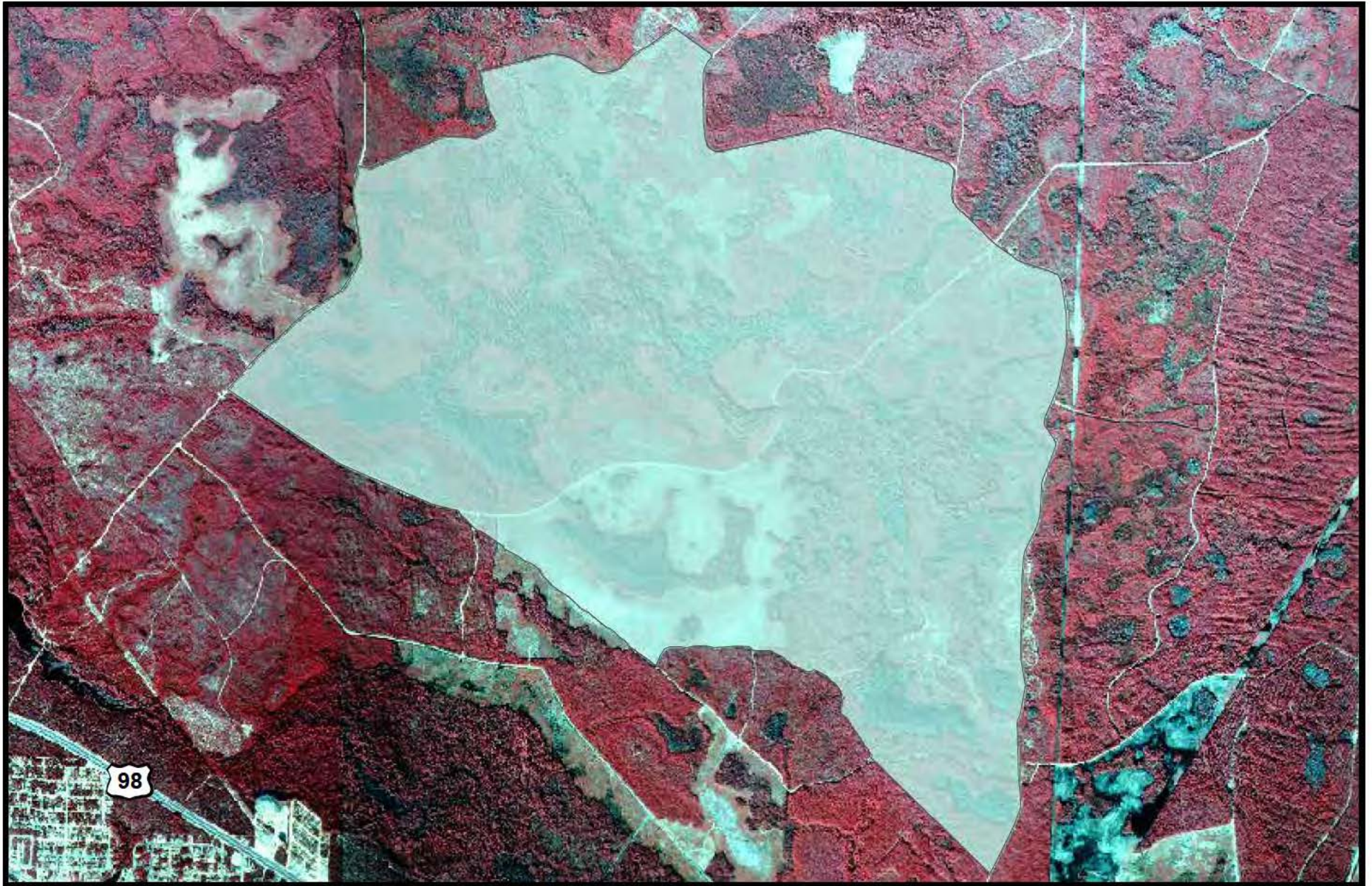


EXHIBIT 12

**Conservation Unit 5
Cypress and Wet Pine Flats
2,910 Acres**



0 0.25 0.5
MILES

1 NCH EQUALS 2,500 FEET
130,000

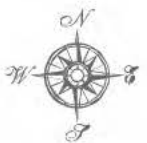


EXHIBIT 13
Conservation Unit 6
Ward Creek
1,239 Acres

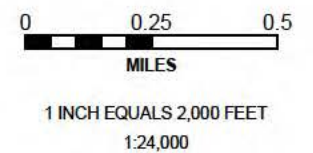
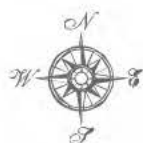




EXHIBIT 14

**Conservation Unit 7
South American Swamp
803 Acres**



0 0.25 0.5
MILES
1 INCH EQUALS 2,000 FEET
1:24,000

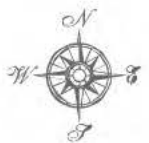


EXHIBIT 15
Conservation Unit 8
Southwest West Bay
962 Acres

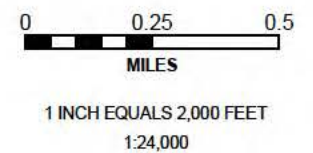




EXHIBIT 16
Conservation Unit 9
Salamander Triangle
42 Acres

0 0.25 0.5
MILES
1 INCH EQUALS 2,000 FEET
1:24,000

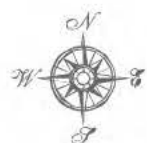
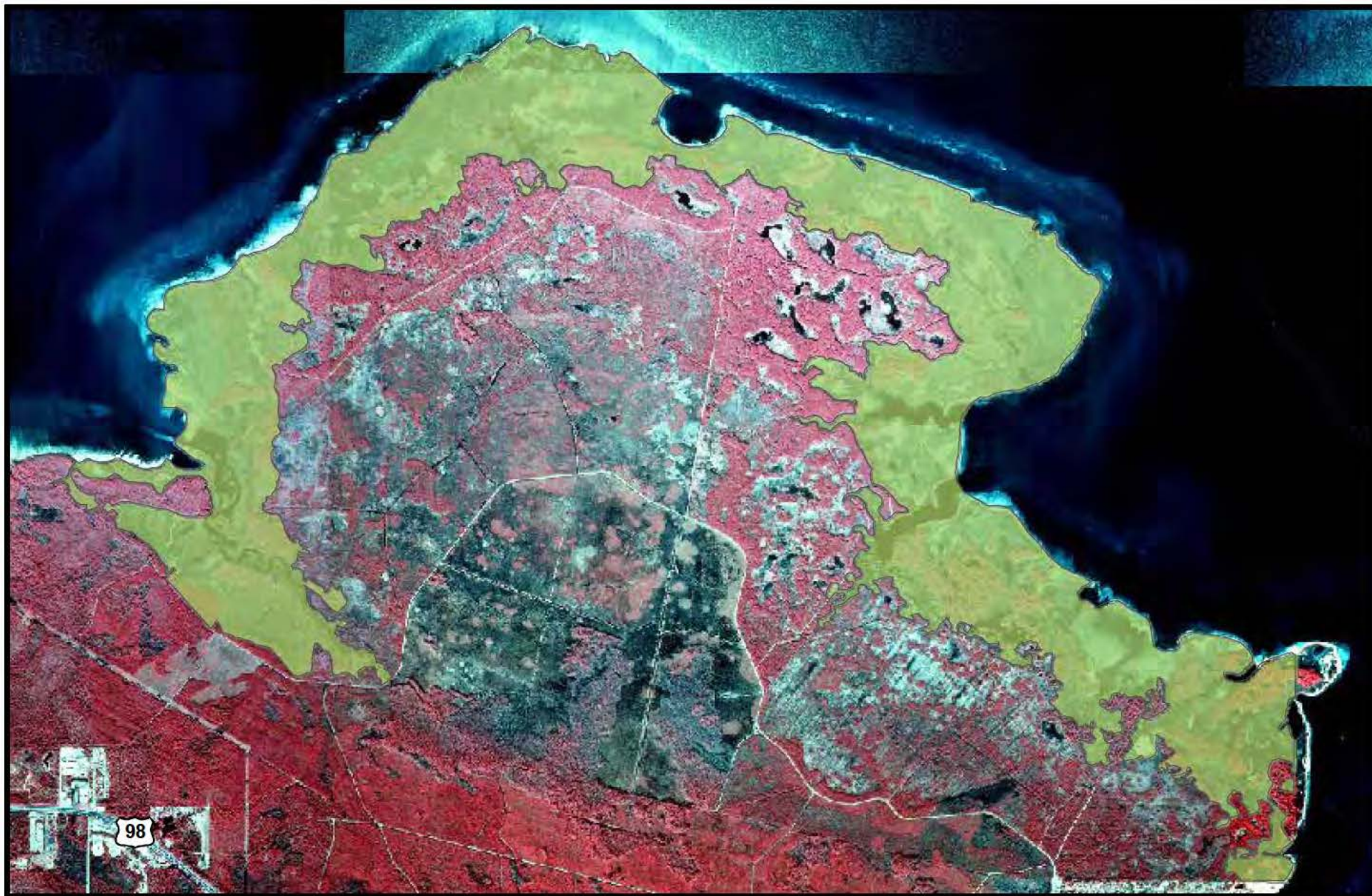
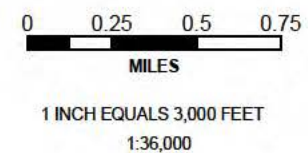


EXHIBIT 17
Conservation Unit 10
Breakfast Point Peninsula
2,289 Acres



***Principles for Forest and Wildlife Management of
Conservation Units within the
West Bay Ecosystem Management Agreement
RGP - SAJ 86***



2014 Revision by:

Thomas Estes, Principal
Icarus Ecological Services, Inc.



and

James Moyers,
Wildlife Biologist
The St. Joe Company



Purpose

To provide an outline for forest and wildlife management within the Conservation Units (CUs) of the West Bay Ecosystem Management Agreement (EMA) , Regional General Permit and Ecosystem Management Agreement (RGP/EMA) areas. This document provides the framework that will guide the development of future land management plans for CUs.

Methodology

Using the *Revised Land and Resource Management Plan for National Forests in Florida* and the *Cecil Field Timber Management Plan* as a framework, the guidelines will prescribe forest and wildlife management strategies that enhance conservation, habitat restoration, and ecological functions within the CUs.

History

The primary land management goal for most of the RGP/EMA area historically has been the production of forest products. Intensive silvicultural management of slash pine (*Pinus elliottii*) and sand pine (*P. clausa*) plantations has occurred on the CUs for the past 30 to 40 years. Silvicultural practices implemented on the area include clear-cutting, roller chopping, site-preparation burning, bedding, planting, and fertilization. Most stands within the RGP/EMA area have been through one or more rotations of planted pine. While forest management practices have degraded the natural habitats of many uplands and wetlands, some wetlands within the CUs have experienced little or no silvicultural impacts.

Prescribed Management

The primary forest management objective for this area is to prescribe management activities that will restore and enhance the vegetative communities and function of historic ecosystems. Restoration forestry practices will replace historical intensive silvicultural practices within the CUs. Harvest operations, controlled burning and other restoration prescriptions will be used to convert the existing even-aged pine monoculture to a mosaic of even and uneven-aged management regimes. Proposed objectives, suggested management prescriptions and benefits are summarized below.

I. Forest Management

A. Objective

To implement harvest, planting, and management operations that restore and maintain the vegetative species composition, stem density, basal area, understory, hydrology, wildlife species diversity, and ecological functions of historically naturally occurring ecosystems.

B. Prescription

All forest management operations will adhere to the latest edition of Silviculture Best Management Practices (BMPs) outlined by the Florida Forest Service (FFS), harvests will be conducted by Florida Master Loggers (FML), and forest management will adhere to guidelines set forth by the Sustainable Forest Initiative Program (SFI). Five forest community types impacted by silviculture occur within RGP-EMA conservation areas: xeric planted uplands, mesic planted uplands, hydric planted flatwoods, upland hardwoods, and wetland hardwoods. Goals and

prescriptions of each community are described below.

1. Xeric Planted Uplands Goal

Open canopy with appropriate canopy species, longleaf pine, herbaceous ground cover, low density mid-story. The long-term goal is restoration of uneven-aged longleaf pine forests.

- a) Contains FDOT FLUCCS habitat types Upland Coniferous Forest (4100), Coniferous Plantations (4410), and Forest Regeneration Areas (4430).
- b) Conforms to FNAI community types Sandhill, Scrub, and Scrubby Pine Flatwoods (FNAI 2010).
- c) Remove existing stands of sand pine and off site slash pine plantations through clear-cutting following SFI standards. Stands will be candidates for conversion to longleaf once they become merchantable. Existing individual longleaf trees will be left where they are found.
- d) Prepare and maintain sites by control burning, mechanical and or chemical means to accomplish successful longleaf stand establishment and restoration or enhancement of herbaceous ground cover.
- e) Plant longleaf seedlings to ensure capture of site (competition) and provide sufficient needle drop for future control burns.
- f) Periodic burning to promote ecological functions.
- g) Once stands are established, uneven aged management will occur. Thinning operations will typically occur every 10-15 years on a continual basis with the introduction of patch clear-cutting during these operations to facilitate uneven aged management (natural regeneration).
- h) Bedding will not be used.

2. Mesic Planted Uplands Goal

Uneven age, open canopy, longleaf pine or a mix of slash and longleaf pine, more diverse herbaceous groundcover than current condition, low density mid-story. The long-term goal is restoration of uneven-aged longleaf pine and or mixed longleaf/slash pine forests.

- a) Contains FLDOT FLUCCS habitat types Pine Flatwoods (4110), Coniferous Plantations (4410), and Forest Regeneration Areas (4430).
- b) Conforms to FNAI community type Mesic Pine Flatwoods (FNAI 2010).
- c) Existing slash pine plantations will be managed to a 30 year rotation. Stands will be clear-cut following SFI standards. Existing individual longleaf trees will not be harvested.
- d) Prepare and maintain sites by control burning, mechanical (no bedding) and or chemical means to accomplish successful reestablishment of slash and longleaf pine. Planting densities will ensure adequate stocking for tree selection processes and long-term tree density goals.
- e) Once stands are established, pine canopies will be managed to promote

- herbaceous ground cover through thinning operations.
- f) Periodic burning to promote ecological functions.
- g) Bedding will not be used.

3. Hydric Planted Flatwoods Goal

Open canopy with appropriate canopy species, low density slash pine, more diverse ground cover, low density mid-story.

- a) Contains FLDOT FLUCCS habitat types Hydric Pine Flatwoods, (6250), Freshwater Marsh (6410), and Wet Prairies (6430).
- b) Conforms to FNAI community types Hydric Pine Flatwoods, Seepage Slopes, and Wet Prairies (FNAI 2010).
- c) Clear-cut existing slash pine plantations and convert to savannahs.
- d) Any existing longleaf pine individuals will not be harvested.
- e) Periodic burning will promote restored ecological function.
- f) Periodic harvesting of natural regeneration will be utilized, when economically feasible, to promote uneven-aged stand composition and maintain ecosystem integrity.
- g) Bedding will not be used.

4. Upland Hardwood Goal

Retain current core conditions and enhance wetland/upland ecotones.

- a) Contains FLDOT FLUCCS habitat types: Upland Hardwood Forests (4200), Zeric Oak (4210), Hardwood-Conifer Mixed (4340), and Upland Scrub- Pine and Hardwoods (4360).
- b) Conforms to FNAI community types Scrub, Scrubby Flatwoods, and Sandhill (FNAI 2010).
- c) Control burns conducted in adjoining areas will be allowed to burn into these stands. Suitable mechanical methods may be used when necessary to promote initial ecotone restoration and maintain restored desirable conditions.
- d) Limited use of herbicides targeting undesirable shrub species is permissible.
 - i. Herbicides will be prohibited in wetlands identified as potentially supporting federal/state-listed fauna. FNAI GIS point data will be employed to determine restricted areas.
- e) Bedding will not be used.

5. Wetland Hardwood Goal

Retain current conditions except allow for more clearly defined edges.

- a) Contains FLDOT FLUCCS habitat types Wetland Hardwood Forests (6110), Gum Swamps (6130), Mixed Wetland Hardwoods (6170), and Cypress (6210).
- b) Conforms to FNAI community types Mesic Pine Flatwoods, Basin Swamps, Blackwater Stream, and Seepage Stream (FNAI 2010).
- c) Control burns conducted in adjoining areas will be allowed to burn into these stands. Implement mechanical control measures to promote initial ecotone restoration and maintain if necessary.
- d) Limited use of herbicides targeting undesirable shrub species is permissible.
 - i. Herbicides will be prohibited in wetlands identified as potentially supporting federal/state-listed fauna. FNAI GIS point data will be employed to determine restricted areas.
- e) Salvage harvests are only permissible following severe storm events, disease/insect events, or wildfires.
- f) Bedding will not be used.
 - i. Thinning operations are not economically feasible until stands reach merchantable age. Therefore, harvest prescriptions will not be implemented until stands attain minimum volume specifications.
 - ii. Harvest activities in all wet pine flatwoods and other jurisdictional wetlands will adhere to FFS BMPs.
 - iii. Silvicultural activities deemed detrimental to ecosystem function (herbicide application, fertilization, bedding, roller-chopping, row planting) will be excluded except where appropriate to meet restoration objectives.
 - iv. Clear-cutting combined with longleaf reestablishment will be used to convert even-aged slash and sand pine stands to uneven-aged longleaf stands over time. Clear-cutting will be used only for longleaf restoration and salvage cutting of storm, fire, disease, or insect damaged timber.
 - v. Limited use of herbicides also will be used to complement prescribed burning to create uneven-aged slash pine stands.

C. Benefits

1. Reduction in stand density will promote the restoration and establishment of a naturally occurring under-story vegetative community and restoration of natural hydrology.
2. Harvest, planting, and prescribed burning operations will promote and maintain longleaf pine restoration within CUs.
3. Thinning will reduce tree density and promote canopy development, restoration and establishment of a naturally occurring under-story vegetative community and increase the aesthetics and natural beauty of the CUs.
4. Thinning operations also will reduce mid-story fuel levels and improve conditions for the use of prescribed fire.

5. Prescribed fire return intervals of 2-5 years within CUs will maintain desirable herbaceous vegetation at fuel loads that reduce the threat of catastrophic wildfires to surrounding areas.

II. Groundcover Management

A. Objective

To establish a groundcover management regime that restores and maintains the ecological functions of naturally occurring upland and wetland communities in the CUs, through prescribed fire, mechanical, and chemical means.

B. Prescription

Establish fire-lines that minimize impacts to the landscape and maximize inclusion of fire into formerly fire-suppressed areas.

1. Implement dormant-season fire in all fire-dependent upland and wetland ecosystems to reduce fuel loads.
2. Implement growing season fires in CUs whenever practical after fuel reduction is accomplished.
3. Return intervals of 2-4 years for growing-season burns is the desired condition of restored CUs. Dormant-season burns will be utilized when growing-season burns are impractical (due either to location or weather conditions), or when return intervals exceed established growing-season schedules.
4. Use site-preparation fire, where practical before reestablishing longleaf pine.
5. Mechanical and/or chemical prescriptions may be used where fire prescriptions are not feasible.
 - a) Herbicide prescriptions will target woody species to conserve herbaceous species present in restoration CUs.

C. Benefits

1. Groundcover treatments in wetlands will reduce woody vegetation and restore and maintain the natural under-story and ground cover plant communities.
2. Dormant-season prescriptions will reduce fuel loads, the risk of catastrophic fire, and prepare sites for implementation of growing-season fire.
3. Growing-season prescriptions will mimic natural fire regimes which will enhance and maintain fire-dependent ecosystems, under-story plant communities, and restored ground cover.
4. Growing-season fire will improve habitat for many species of wildlife and rare plants.
5. Groundcover treatments will promote successful natural regeneration of longleaf pine, prepare sites for restoration planting, and control noxious vegetation.
6. Groundcover treatments will promote and enhance the aesthetic value and outdoor recreational opportunities in CUs.

III. Wildlife Management

A. Objective

To prescribe and implement wildlife habitat and population management strategies that enhances species diversity and population levels.

B. Prescription

1. Where appropriate, determine the presence, location, and population status of threatened, endangered, and other protected species.
2. GIS location data obtained from FNAI for Florida protected species and species of concern will be used to map potential presence within conservation units.
3. When deemed necessary, monitor and evaluate responses of protected species to habitat management activities.
4. Where appropriate, identify and implement habitat and population management measures that improve the recovery and status of protected species.
 - a) Promote and develop inter-agency partnerships that will enhance the management of protected species in the CUs, when appropriate.
5. Identify, promote and establish protocol for public recreational consumptive and non-consumptive uses of wildlife species in the CUs.
6. Promote and establish educational and public outreach opportunities related to wildlife species in the CUs.

C. Benefits

1. Species monitoring will help ensure permit compliance, increase public outreach opportunities, and assist in evaluating management efforts.
2. Species-specific management prescriptions and development of partnerships will promote population growth and recovery of protected species, and improve communication and relationships with regulators.
3. Promotion of recreational opportunities will encourage public participation and improve attitudes about and acceptance of land management objectives.
4. Restoration efforts will create and maintain diverse and healthy biotic communities that will serve as keystone ecosystems for evaluating future management decisions.
5. Restoration efforts will enhance CU suitability and value as wildlife corridors within the RGP - SAJ 86 areas and adjacent natural areas.

IV. Exotic Vegetation Management

A. Objective

Promote control and eradication of exotic and nuisance plant and animal species.

B. Prescription

Monitor vegetation and wildlife in the CUs to identify the occurrence, location and severity of exotic plant and animal infestations.

1. Develop and implement an exotic plant control and eradication plan.
2. Implement herbicide, fire, and other management prescriptions to meet eradication objectives.

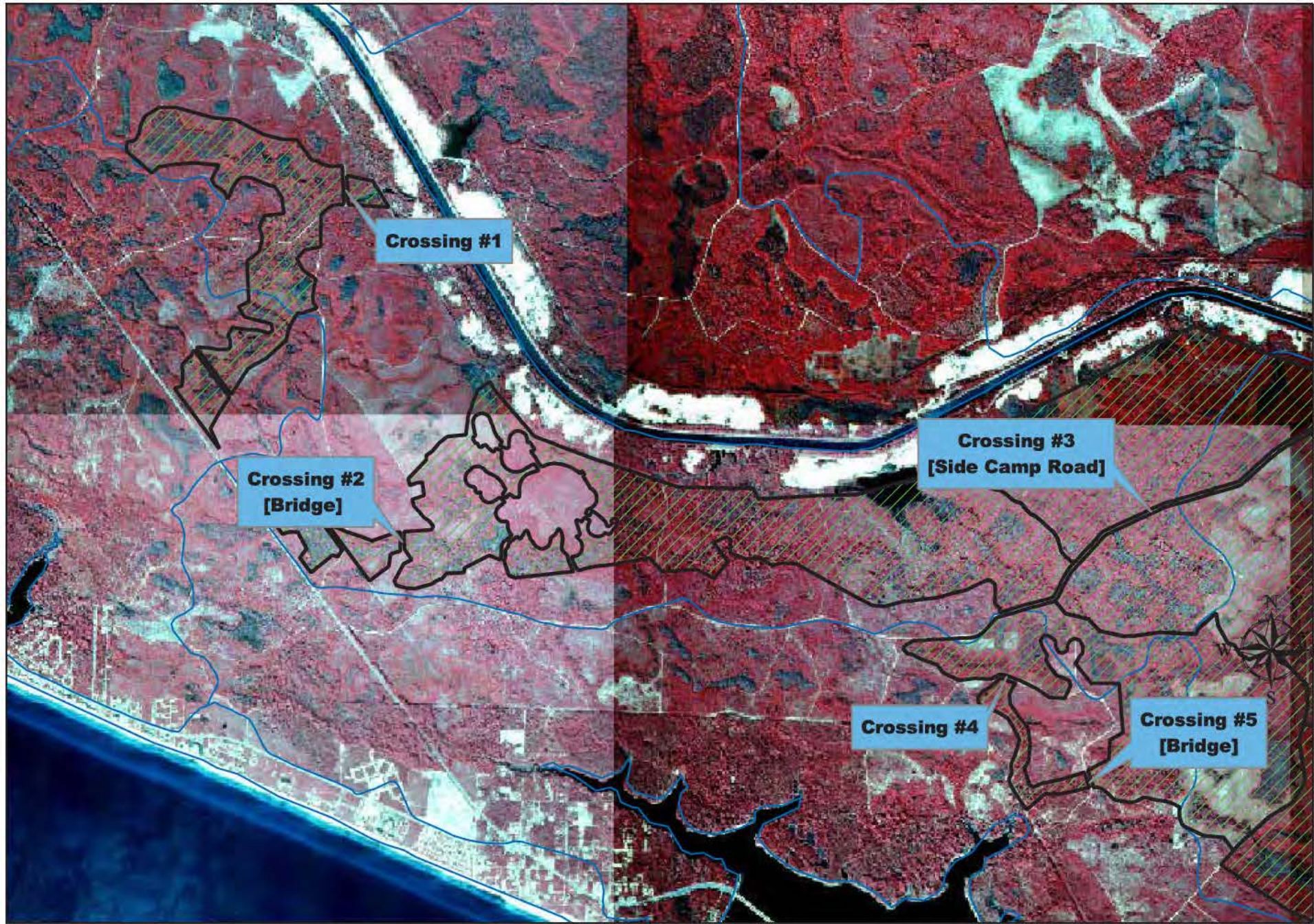
3. Implement lethal and non-lethal measures to control exotic animals.
4. Monitor infestation sites and evaluate the success of control measures to determine ecological lift.

C. *Benefits*

1. Control of exotic plants will improve habitat quality and reduce competition with native species.
2. Control of exotic wildlife species will reduce habitat degradation and competition with native wildlife species.

V. Standards Cited in Document

- A. **Silviculture Best Management Practices**, Florida Division of Forestry, Florida Department of Agriculture, DACS-P-01284 (provides guidelines for Timber harvesting, access, crossings, site prep and planting.
- B. **Florida Master Logger Program**, sponsored by the Florida Forestry Association and the Florida Sustainable Forestry Initiative State Implementation Committee (professional loggers must complete a three day class in safety, timber harvesting, and environmental regulations. Must complete six hours of continuing education yearly to maintain their certification.)
- C. **Florida Natural Areas Inventory (FNAI). 2010**, Guide to the Natural Communities of Florida: 2010 Edition. Florida Natural Areas Inventory, Tallahassee, FL.
- D. **Florida Exotic Pest Plant Council (FLEPPC). 2013**, List of Invasive Plant Species. Fort Lauderdale, FL.
- E. **Sustainable Forestry Initiative (SFI), Inc.**, Independent, charitable organization that is dedicated to promoting sustainable forest management. Principals include measures to protect water quality, biodiversity, wildlife habitat, species at risk and forests with Exceptional Conservation Value. Reviewed and updated every 5 years.



Legend



-  Conservation Units
-  Sub-Basins



Exhibit 19

Conservation Unit Road Crossings

DEED OF CONSERVATION EASEMENT THIRD PARTY BENEFICIARY RIGHTS TO USACE

Prepared by:

Return original or certified recorded document to:

THIS DEED OF CONSERVATION EASEMENT is given this _____ day of _____, 20____, by _____ ("Grantor") whose mailing address is _____

to _____ ("Grantee") with third party enforcement rights to the _____ ("Third Party Beneficiary"). As used herein, the term "Grantor" shall include any and all heirs, successors or assigns of the Grantor, and all subsequent owners of the "Conservation Easement Area" (as hereinafter defined); the term "Grantee" shall include any successor or assignee of Grantee; and the term "Third Party Beneficiary" shall include any successor or assignee of the Third Party Beneficiary.

WITNESSETH

WHEREAS, the Grantor is the fee simple owner of certain lands situated in _____ County, Florida, and more specifically described on the location map in Exhibit "A" attached hereto and incorporated herein (the "Property"); and

WHEREAS, Permit No. _____ ("Permit") and any modifications thereto issued by the Grantee authorizes certain activities which could affect wetlands or other surface waters in or of the State of Florida; and

WHEREAS, the U.S. Army Corps of Engineers Permit No. _____ (Corps Permit) authorizes certain activities in the waters of the United States and requires this site protection instrument over the lands identified in Exhibit B as mitigation for such activities;

WHEREAS, the Grantor, in consideration of the consent granted by the Permit or other good and valuable consideration provided to Grantor, is agreeable to granting and securing to the Grantee a perpetual Conservation Easement as defined in Section 704.06, Florida Statutes (F.S.), over the area of the Property described on Exhibit "B" ("Conservation Easement Area"); and

WHEREAS, Grantor grants this Conservation Easement as a condition of the Permit, solely to off-set or prevent adverse impacts to natural resources, fish and wildlife, and wetland functions; and

WHEREAS, Grantor desires to preserve the Conservation Easement Area in perpetuity in its natural condition, or, in accordance with the Permit, in an enhanced, restored, or created condition; and

NOW, THEREFORE, in consideration of the issuance of the Permit to construct and operate the permitted activity, and as an inducement to Grantee in issuing the Permit, together with other good and valuable consideration provided to the Grantor, the adequacy and receipt of which are hereby



acknowledged, Grantor hereby voluntarily grants, creates, conveys, and establishes a perpetual Conservation Easement for and in favor of the Grantee upon the Conservation Easement Area which shall run with the land and be binding upon the Grantor, and shall remain in full force and effect forever.

The scope, nature, and character of this Conservation Easement shall be as follows:

1. Recitals. The recitals hereinabove set forth are true and correct and are hereby incorporated into and made a part of this Conservation Easement.

2. Purpose. It is the purpose of this Conservation Easement to retain land or water areas in their existing, natural, vegetative, hydrologic, scenic, open or wooded condition and to retain such areas as suitable habitat for fish, plants, or wildlife in accordance with Section 704.06, F.S. Those wetland and upland areas included in this Conservation Easement which are to be preserved, enhanced, restored, or created pursuant to the Permit (or any modification thereto) and any Management Plan attached hereto as Exhibit "C" ("Management Plan") which has been approved in writing by the Grantee, shall be retained and maintained in the preserved, enhanced, restored, or created condition required by the Permit (or any modification thereto).

To carry out this purpose, the following rights are conveyed to Grantee by this easement:

a. To enter upon the Conservation Easement Area at reasonable times with any necessary equipment or vehicles to inspect, determine compliance with the covenants and prohibitions contained in this easement, and to enforce the rights herein granted in a manner that will not unreasonably interfere with the use and quiet enjoyment of the Conservation Easement Area by Grantor at the time of such entry; and

b. To proceed at law or in equity to enforce the provision of this Conservation Easement and the covenants set forth herein, to prevent the occurrence of any of the prohibited activities set forth herein, and to require the restoration of such areas or features of the Conservation Easement Area that may be damaged by any activity or use that is inconsistent with this Conservation Easement.

3. Prohibited Uses. Except for activities that are permitted or required by the Permit (or any modification thereto) (which may include restoration, creation, enhancement, maintenance, and monitoring activities, or surface water management improvements) or other activities described herein or in the Management Plan (if any), any activity on or use of the Conservation Easement area inconsistent with the purpose of this Conservation Easement is prohibited. Without limiting the generality of the foregoing, the following activities are expressly prohibited in or on the Conservation Easement Area (except as authorized or required by the Permit (or any modification thereof) or in a Management Plan which has been approved in writing by the Grantee):

a. Construction or placing of buildings, roads, signs, billboards or other advertising, utilities, or other structures on or above the ground;

b. Dumping or placing of soil or other substance or material as landfill, or dumping or placing of trash, waste, or unsightly or offensive materials;

c. Removing, destroying or trimming trees, shrubs, or other vegetation, except:

i. The removal of dead trees and shrubs or leaning trees that could cause damage property is authorized;

ii. The destruction and removal of noxious, nuisance or exotic invasive plant species as listed on the most recent Florida Exotic Pest Plant Council's List of Invasive Species is authorized;

iii. Activities authorized by the Permit or described in the Management Plan or otherwise approved in writing by the Grantee are authorized; and

iv. Activities conducted in accordance with a wildfire mitigation plan developed with the Florida Forest Service that has been approved in writing by the Grantee are authorized. No later than thirty (30) days before commencing any activities to implement the approved wildfire mitigation plan, Grantor shall notify the Grantee in writing of its intent to commence such activities. All such activities may only be completed during the time period for which the Grantee approved the plan;

d. Excavation, dredging, or removal of loam, peat, gravel, soil, rock, or other material substance in such manner as to affect the surface;

e. Surface use except for purposes that permit the land or water area to remain in its natural, restored, enhanced, or created condition;

f. Activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation, or fish and wildlife habitat preservation including, but not limited to, ditching, diking, clearing, and fencing;

g. Acts or uses detrimental to such aforementioned retention of land or water areas; and

h. Acts or uses which are detrimental to the preservation of the structural integrity or physical appearance of sites or properties having historical, archaeological, or cultural significance.

4. Grantor's Reserved Rights. Grantor reserves all rights as owner of the Conservation Easement Area, including the right to engage or to permit or invite others to engage in all uses of the Conservation Easement Area that are not prohibited herein and which are not inconsistent with the Permit (or any modification thereto), Management Plan, or the intent and purposes of this Conservation Easement.

5. Rights of the U.S. Army Corps of Engineers ("Corps"). The Corps, as a third-party beneficiary, shall have the right to enforce the terms and conditions of this Conservation Easement, including:

a. The right to take action to preserve and protect the environmental value of the Conservation Easement Area;

b. The right to prevent any activity on or use of the Conservation Easement Area that is inconsistent with the purpose of this Conservation Easement, and to require the restoration of areas or features of the Conservation Easement Area that may be damaged by any inconsistent activity or use;

c. The right to enter upon and inspect the Conservation Easement Area in a reasonable manner and at reasonable times to determine if Grantor or its successors and assigns are complying with the covenants and prohibitions contained in this Conservation Easement; and

d. The right to enforce this Conservation Easement by injunction or proceed at law or in equity to enforce the provisions of this Conservation Easement and the covenants set forth herein, to prevent the occurrence of any of the prohibited activities set forth herein, and the right to require Grantor, or its successors or assigns, to restore such areas or features of the Conservation Easement Area that may be damaged by any inconsistent activity or use or unauthorized activities.

The Grantor, including their successors or assigns, shall provide the Corps at least 60 days advance notice in writing before any action is taken to amend, alter, release, or revoke this Conservation Easement. The Grantee shall provide reasonable notice and an opportunity to comment or object to the release or amendment to the U.S. Army Corps of Engineers. The Grantee shall consider any comments or objections from the U.S. Army Corps of Engineers when making the final decision to release or amend this Conservation Easement.

6. No Dedication. No right of access by the general public to any portion of the Conservation Easement Area is conveyed by this Conservation Easement.

7. Grantee's and Third Party Beneficiary's Liability. Grantee's liability is limited as provided in Subsection 704.06(10) and Section 768.28, F.S. Additionally, Grantee and Third Party Beneficiary shall not be responsible for any costs or liabilities related to the operation, upkeep, or maintenance of the Conservation Easement Area.

8. Enforcement. Enforcement of the terms, provisions and restrictions of this Conservation Easement shall be at the reasonable discretion of Grantee, and any forbearance on behalf of Grantee to exercise its rights hereunder in the event of any breach hereof by Grantor, shall not be deemed or construed to be a waiver of Grantee's rights hereunder. Grantee shall not be obligated to Grantor, or to any other person or entity, to enforce the provisions of this Conservation Easement.

9. Third Party Beneficiary's Enforcement Rights. The Third Party Beneficiary of this Conservation Easement shall have all the rights of the Grantee under this Conservation Easement, including third party enforcement rights of the terms, provisions and restrictions of this Conservation Easement. Third Party Beneficiary's enforcement of the terms, provisions and restrictions shall be at the discretion of the Third Party Beneficiary, and any forbearance on behalf of the Third Party Beneficiary to exercise its rights hereunder in the event of any breach hereof by Grantor, shall not be deemed or construed to be a waiver of Third Party Beneficiary's rights hereunder. Third Party Beneficiary shall not be obligated to Grantor, or to any other person or entity, to enforce the provisions of this Conservation Easement.

10. Taxes. When perpetual maintenance is required by the Permit, Grantor shall pay before delinquency any and all taxes, assessments, fees, and charges of whatever description levied on or assessed by competent authority on the Conservation Easement Area, and shall furnish the Grantee with satisfactory evidence of payment upon request.

11. Assignment. Grantee will hold this Conservation Easement exclusively for conservation purposes. Grantee will not assign its rights and obligations under this Conservation Easement except to another organization or entity qualified to hold such interests under the applicable state laws.

12. Severability. If any provision of this Conservation Easement or the application thereof to any person or circumstances is found to be invalid, the remainder of the provisions of this Conservation Easement shall not be affected thereby, as long as the purpose of the Conservation Easement is preserved.

13. Terms and Restrictions. Grantor shall insert the terms and restrictions of this Conservation Easement (or incorporate the terms and restrictions by reference) in any subsequent deed or other legal instrument by which Grantor divests itself of any interest in the Conservation Easement.

14. Written Notice. All notices, consents, approvals or other communications hereunder shall be in writing and shall be deemed properly given if sent by United States certified mail, return receipt requested, addressed to the appropriate party or successor-in-interest.

15. Modifications. This Conservation Easement may be amended, altered, released or revoked only by written agreement between the parties hereto or their heirs, assigns or successors-in-interest, which shall be filed in the public records in _____ County, Florida.

16. Recordation. Grantor shall record this Conservation Easement in timely fashion in the Official Records of _____ County, Florida, and shall rerecord it at any time Grantee may require to preserve its rights. Grantor shall pay all recording costs and taxes necessary to record this Conservation Easement in the public records. Grantor will hold Grantee harmless from any

recording costs or taxes necessary to record this Conservation Easement in the public records.

TO HAVE AND TO HOLD unto Grantee forever. The covenants, terms, conditions, restrictions and purposes imposed with this Conservation Easement shall be binding upon Grantor, and shall continue as a servitude running in perpetuity with the Conservation Easement Area.

Grantor hereby covenants with Grantee that Grantor is lawfully seized of said Conservation Easement Area in fee simple; that the Conservation Easement is free and clear of all encumbrances that are inconsistent with the terms of this Conservation Easement; all mortgages and liens on the Conservation Easement area, if any, have been subordinated to this Conservation Easement; that Grantor has good right and lawful authority to convey this Conservation Easement; and that it hereby fully warrants and defends record title to the Conservation Easement Area hereby conveyed against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF, _____ (“Grantor”) has
hereunto set its authorized hand this _____ day of _____, 20____.

☐ A Florida corporation or ☐ _____ (*choose one*)

By: _____
(Signature)

Name: _____
(Print)

Title: _____

Signed, sealed and delivered in our presence as witnesses:

By: _____
(Signature)

By: _____
(Signature)

Name: _____
(Print)

Name: _____
(Print)

STATE OF FLORIDA
COUNTY OF _____

On this _____, 20____, before me, the undersigned notary public, personally
appeared _____, the person who subscribed to the
foregoing instrument, as the _____ (title), of _____
_____ ☐ (corporation), a Florida corporation, or ☐ _____
_____ (*choose one*) and acknowledged that he/she executed the same on behalf of said ☐
corporation, or ☐ _____ (*choose one*) and the he/she was duly authorized to do
so. He/She is personally known to me or has produced a _____ (state)
driver’s license as identification.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

NOTARY PUBLIC, STATE OF FLORIDA

(Signature)

(Name)

My Commission Expires: _____

MORTGAGEE JOINDER, CONSENT AND SUBORDINATION

For Ten Dollars (\$10.00) and other good and valuable consideration, the adequacy and receipt of which are hereby acknowledged, _____, the owner and holder of a mortgage dated _____, in the original principal amount of \$_____ given by _____ ("Grantor") to _____ ("Mortgagee"), encumbering the real property described on Exhibit "B" attached hereto ("Conservation Easement Area"), which is recorded in Official Records Book _____ at Page _____, (together with that certain Assignment of Leases and Rents recorded in Official Records Book _____, at Page _____, and those certain UCC-1 Financing Statement(s) recorded in Official Records Book _____, at Page _____, all of the Public Records of _____ County, Florida (said mortgage, assignment of leases and rents, and UCC-1 Financing Statements, as modified, are hereinafter referred to as the "Mortgage"), hereby joins in, consents to and subordinates the lien of its Mortgage, as it has been, and as it may be, modified, amended and assigned from time to time, to the foregoing Conservation Easement, executed by _____, in favor of _____ applicable to the Conservation Easement, as said Conservation Easement may be modified, amended, and assigned from time to time, with the intent that the Mortgage shall be subject and subordinate to the Conservation Easement.

IN WITNESS WHEREOF, this Mortgagee Joinder, Consent and Subordination is made this

_____ day of _____, 20____.

By: _____
(Signature)

(Mortgagee)

Name: _____

Title: _____
(Print)

WITNESSES:

By: _____
(Signature)

By: _____
(Signature)

Name: _____
(Print)

Name: _____
(Print)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____ (print name), as _____ (title) of _____ (Grantor of Mortgage), on behalf of the _____ (Mortgagee, Grantor of the conservation Easement). He/She is personally known to me or has produced a _____ (state) driver's license as identification.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

NOTARY PUBLIC, STATE OF FLORIDA

(Signature)

(Name)

My Commission Expires: _____

EXHIBIT A

[LOCATION MAP]

EXHIBIT B

[LEGAL DESCRIPTION AND SKETCH OF CONSERVATION EASEMENT AREA]

EXHIBIT C

[MANAGEMENT PLAN OR "INTENTIONALLY LEFT BLANK"]

Reset Form

Save & Print

TYPE I CONSERVATION UNIT EASEMENT

DEED OF CONSERVATION EASEMENT

THIS DEED OF CONSERVATION EASEMENT is given this ____ day of _____ 20__, by THE ST. JOE COMPANY/ST. JOE TIMBERLAND COMPANY OF DELAWARE, L.L.C., having an address at 133 South Watersound Parkway, Watersound, Florida 32413 (Grantor) to the STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION whose address is Department of Environmental Protection, Division of State Lands, 3900 Commonwealth Boulevard, Mail Station 130, Tallahassee, Florida 32399-3000 (Grantee). As used herein, the term Grantor shall include any and all heirs, successors or assigns of the Grantor, and all subsequent owners of the Property (as hereinafter defined) and the term Grantee shall include any successor or assignee of Grantee.

WITNESSETH

WHEREAS, the Grantor is the sole owner in fee simple of certain lands situated in Bay County, Florida, more specifically described in Exhibit A attached hereto and incorporated herein (Property);

WHEREAS, the Department and Grantor executed an Ecosystem Management Agreement, dated _____, (Agreement), which authorizes certain activities that affect waters in or of the State of Florida;

WHEREAS, the Agreement and individual project approvals issued pursuant to the Agreement ("Approval") requires the set aside of certain areas called Type I Conservation Units, as defined in the Agreement, and requires that the Grantor exclude from development wetlands and uplands within such Type I Conservation Units;

WHEREAS, the Property is a part of a Type I Conservation Unit;

WHEREAS, Grantor grants this conservation easement as a condition of the Approval to offset or prevent secondary and cumulative adverse impacts to water quality and natural resources, such as fish, wildlife, and wetland or other surface water functions, and to provide a net ecosystem benefit as provided in the Agreement;

WHEREAS, the U.S. Army Corps of Engineers (the "Corps") General Permit No. SAJ-105 (RGP) authorizes certain activities in the waters of the United States and requires this conservation easement over the lands identified in Exhibit A as a condition for such activities; and

WHEREAS The Corps is not authorized to hold conservation easements and the Grantee has agreed to hold the easement on behalf of the Corps as well as on its own behalf; and

WHEREAS, this conservation easement is subject to and governed by the Agreement and the RGP and provisions within both the Agreement and RGP affect this conservation easement and owners of property subject to this conservation easement are advised to refer to the Agreement and RGP, which documents are available as public records.

NOW THEREFORE, in consideration of the above and the mutual covenants, terms, conditions and restrictions contained herein, together with other good and valuable consideration, the adequacy and receipt of which is hereby acknowledged, Grantor hereby voluntarily grants and conveys a perpetual conservation easement as defined in Section 704.06 Florida Statutes, for and in favor of the Grantee upon the Property which shall run with the land and be binding upon the Grantor, and shall remain in full force and effect forever.

The scope, nature and character of this conservation easement shall be as follows:

1. Purpose. The purpose of this conservation easement is to retain land or water areas in their natural vegetative, hydrologic, scenic, agricultural or wooded condition so as to preserve their environmental value and to retain such areas as suitable habitat for fish, plants or wildlife, while allowing certain passive recreational activities and facilities. Those wetland or upland areas included in the Type I Conservation Units which are to be enhanced or restored pursuant to the Approval shall be retained and maintained in the enhanced or restored conditions required by the Approval.

2. Rights of Grantee. To carry out this purpose, the following rights are conveyed to Grantee by this easement:

a. The right to take action to preserve and protect the environmental value of the Property;

b. The right to prevent any activity on or use of the Property that is inconsistent with purpose of this conservation easement, and to require the restoration of areas or features of the Property that may be damaged by any activity inconsistent with the purpose of this conservation easement;

c. The right to enter upon and inspect the Property in a reasonable manner and at reasonable times, including the right to use vehicles and all necessary equipment to determine if Grantor or its successors and assigns are complying with the purpose of this conservation easement; and

d. The right to enforce this conservation easement by injunction or proceed at law or in equity to enforce the provisions of this conservation easement and the covenants set forth herein, to prevent the occurrence of any of the prohibited activities hereinafter set forth, and the right to require Grantor to restore such areas or features of the Property that may be damaged by any inconsistent activity or use.

3. Prohibited Activities. Any activity which violates the purpose of this conservation easement is prohibited, including the following:

- a. Construction or placing of buildings, roads, signs, billboards, docks or other similar structures on or above the ground;
- b. Dumping or placing of soil or other substance or material as landfill, or dumping or placing of trash, waste, or unsightly or offensive materials;
- c. Removal or destruction of trees, shrubs, or other vegetation, except for timbering done in accordance with the Principles for Forest and Wildlife Management of Conservation Units within the West Bay EMA ("Forest and Wildlife Plan") which is part of the Agreement and for the purpose of enhancing or restoring wetlands or uplands in a mitigation area in accordance with applicable permits;
- d. Planting or seeding of plants that are outside their natural range or zone of dispersal and has or is able to form self-sustaining, expanding, and free-living populations in a natural community on the Property with which it has not previously associated;
- e. Exploration for or extraction of oil or gas, and excavation, dredging, or removal of loam, peat, gravel, soil, rock, or other material substance;
- f. Surface use except for purposes that allow the land or water area to remain in its natural condition;
- g. Activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation, or fish and wildlife habitat preservation including, but not limited to, ditching, diking and fencing;
- h. Acts or uses detrimental to such aforementioned retention of land or water areas;
- i. Acts or uses detrimental to the preservation of the structural integrity or physical appearance of sites or properties of historical, architectural, archaeological, or cultural significance; and.
- j. The application of fertilizers, herbicides and pesticides is prohibited, except in buffers as authorized in accordance with Section 4(l).
- k. No wells shall be installed within the Property.

4. Authorized activities. Any activity which is consistent with the purpose of this conservation easement is authorized, including the following:

- a. Wetland and upland habitat enhancement and restoration.
- b. Forest management, which shall be conducted through sustainable forestry, uneven age management regimes and best management practices, in accordance with, and as

defined in the Principles for Forest and Wildlife Management of Conservation Units within the West Bay Ecosystem Management Agreement and RGP-SAJ-105 (“Forest and Wildlife Management Plan”) which is part of the Agreement. No timbering of cypress or wetland hardwoods or clear cutting is permitted except as allowed in the Forest and Wildlife Management Plan.

- c. Hunting, fishing, and birding.
- d. Passive recreational facilities and activities such as hiking and biking trails, boardwalks, gathering shelters, restrooms, camping platforms, horseback trails and hitching areas and other facilities of a similar nature. These facilities shall result in no more than minimal impacts. Trails and boardwalks may cross wetlands, but must be minimized to the maximum extent practicable. All other facilities may only be located in uplands.
- e. Wetland mitigation as required by any future permit.
- f. Green Burial Council certified *Conservation Burial Grounds*. This level of certification employs burial/scattering programs that aid in the restoration, acquisition and/or stewardship of natural areas.
- g. Reinstitution of fire regime, including necessary firebreaks, which mimics natural conditions.
- h. Linear utilities and infrastructure facilities, which shall be defined as (i) electric transmission, collection and/or distribution lines, (ii) water transmission, collection and/or distribution lines, (iii) sewer transmission, collection and/or distribution lines, (iv) natural gas transmission, collection and/or distribution lines, (v) data and/or telecommunications transmission, collection and/or distribution lines (phone, cable, fiber optics, internet), and (vi) stormwater conveyances, but not stormwater ponds. In addition, ancillary facilities that are part of and support the linear utilities and infrastructure facilities described above shall be allowed. All linear utilities and infrastructure facilities shall, when practical, be co-located with road crossings and be installed by direct bore methods. The linear infrastructure shall be subject to the criteria and wetland impact limitations as set forth in special condition 5.c of the RGP and paragraph 3 of Article VII. of the Agreement.
- i. Activities needed to maintain, in current condition, existing access, roads and ditches within and through the Property. These allowable maintenance activities do not include activities to relocate such access, roads and ditches.
- j. Nature Centers, including single access roads. A Leadership in Energy and Environmental Design (LEED) certification of silver or higher must be obtained for any enclosed structures. Nature Centers may only be located in uplands. Access roads to serve nature centers must comply with special conditions 5.c and 12.e(i) of the RGP and paragraph 12 of Article V and paragraph 3 of Article VII of the Agreement.

k. Within buffers that are required to be preserved by the Approval and that are part of the Property, construction of boardwalks for dock access and on-grade trails will be permitted. Also, application of fertilizers, herbicides and pesticides is authorized to the extent fertilizers, herbicides and pesticides are used to control exotic plant vegetation within the buffers.

5. Land Disturbance. Activities which result in any manmade change of the land surface, including removing vegetative cover that exposes the underlying soil, excavating, filling, grading, grubbing, discing, blading, contouring, ripping, root raking and includes areas covered by impervious surfaces such as roofs, concrete and asphalt, but excluding pervious hiking and biking trails, pervious horseback riding trails and boardwalks ("Land Disturbance") are prohibited, except to the extent Land Disturbance occurs as a result of activities which are allowed in this Section. The Agreement and RGP place restrictions on the amount of Land Disturbance which can occur within the total area of Conservation Units and require certain mitigation for any Land Disturbance or impacts to converted wetlands within the Conservation Units.

6. Written Approval Required. Written approval from the Corps and DEP shall be required for any uses, activities or facilities sought to be constructed on the Property as allowed by this conservation easement ("Conservation Unit Project Approval"). Written authorization for allowable projects within the Property is required prior to initiation of construction. Conservation Unit Project Approval shall be conducted consistent with special condition 18 of the RGP and Article V of the Agreement. In applying for Conservation Unit Project Approval an applicant will be required to include an avoidance and minimization impact analysis with respect to the proposed uses, activities and facilities and review by the Corps and DEP will include a review of the total scale of facility to insure that the proposed use, activity or facility is limited and consistent with the preservation objectives of the Conservation Units.

7. Reserved Rights. Grantor reserves all rights as owner of the Property, including the right to engage in uses of the Property that are not prohibited herein and which are not inconsistent with the purpose of this conservation easement or any Department rule, criteria, or Agreement.

8. Public Access. No right of access by the general public to any portion of the Property is conveyed by this conservation easement.

9. Responsibilities of Parties. Grantor, its successors or assigns, shall take responsibility for any costs or liabilities related to the ownership, operation, upkeep or maintenance of the Property. In addition, the Grantee, its successors or assigns, shall have no responsibility for any costs or liabilities related to the ownership, operation, upkeep or maintenance of the Property.

10. Taxes. Grantor, its successors or assigns, shall pay, before delinquency, any and all taxes, assessments, fees, and charges of whatever description levied on or assessed by competent authority on the Property, and shall furnish Grantee with satisfactory evidence of payment upon request.

11. Liability. Grantee shall not assume any liability for any injury or damage to the person or property of Grantor or third parties which may occur on the Property, except to the extent Grantee or its employees or agents is found legally responsible therefore. Neither Grantor, its

successors or assigns, nor any person or entity claiming by or through Grantor its successors or assigns, shall hold Grantee liable for any damage or injury to person or personal property which may occur on the Property, except to the extent Grantee or its employees or agents is found legally responsible therefore. Furthermore, the Grantor, its successors or assigns shall indemnify and hold harmless Grantee from all liability, and injury or damage to the person or property of third parties which may occur on the Property, except to the extent Grantee or its employees or agents is found legally responsible therefore. Grantee may not bring any action against Grantor for any injury to or change in the property resulting from natural causes beyond Grantor's control including, without limitation, fire, flood, storm and earth movement, or from any necessary action taken by Grantor under emergency conditions to prevent, abate or mitigate significant injury to the property or to persons resulting from such causes.

12. Hazardous Waste. Grantor covenants and represents that to the best of its knowledge, no hazardous substance or toxic waste exists nor has been generated, treated, stored, used, disposed of, or deposited in or on the Property, and that there are not now any underground storage tanks located on the Property.

13. Enforcement Discretion. Enforcement of the terms, provisions and restrictions of this conservation easement shall be at the discretion of Grantee, and any forbearance on the part of Grantee to exercise its rights hereunder in the event of any breach by Grantor, shall not be deemed or construed to be a waiver of Grantee's rights.

14. Enforcement Costs. If the Grantee prevails in an enforcement action, it shall be entitled to recover the cost of restoring the land to the natural vegetative and hydrologic condition existing at the time of execution of the conservation easement or to the vegetative and hydrologic condition required by the RGP and the Approval.

15. Assignment of Rights. Grantee will hold this conservation easement exclusively for conservation purposes. Grantee will not assign its rights and obligations under this conservation easement except to another organization qualified to hold such interests under applicable state laws. The Corps reserves the right to approve successor grantees for the purpose of meeting the continuing compensatory mitigation requirements of its permit, permits or individual project approvals.

16. Recording in Land Records. Grantor shall record this conservation easement and any amendments hereto in a timely fashion in the Official Records of Bay County, Florida. Grantor shall pay all recording costs and taxes necessary to record this conservation easement in the public records.

17. Successors. The covenants, terms, conditions and restrictions of this conservation easement shall be binding upon, and inure to the benefit of the parties hereto and their respective personal representatives, heirs, successors and assigns and shall continue as a servitude running in perpetuity with the Property.

18. Notices. All notices, consents, approvals or other communications hereunder shall be in writing and shall be deemed properly given if sent by United States certified mail, return receipt requested, addressed to the appropriate party or successor-in-interest.

19. Severability. If any provision of this conservation easement or the application thereof to any person or circumstances is found to be invalid, the remainder of the provisions of this conservation easement shall not be affected thereby, as long as the purpose of the conservation easement is preserved.

20. Alteration or Revocation. This conservation easement may be amended, altered, released or revoked only by Agreement modification as necessary and written agreement between the parties hereto or their heirs, assigns or successors-in-interest, which shall be filed in the public records of Bay County, Florida.

21. Controlling Law. The interpretation and performance of this conservation easement shall be governed by the laws of the State of Florida.

22. Rights of the Corps. The Corps, as a third party beneficiary, shall have all the rights of Grantee under this easement. The Corps shall approve any modification, alteration, release, or revocation of the conservation easement, and shall review and approve as necessary any additional structures or activities on the property that require approval by the Grantee. The Grantor shall provide the Corps (District Engineer) at least 60 days advance notice in writing before any action is taken to modify, alter, release or revoke this Conservation Easement.

TO HAVE AND TO HOLD unto Grantee forever. The covenants, terms, conditions, restrictions and purpose imposed with this conservation easement shall be binding upon Grantor, and shall continue as a servitude running in perpetuity with the Property.

Grantor hereby covenants with said Grantee that Grantor is lawfully seized of the Property in fee simple; that the Property is free and clear of all encumbrances that are inconsistent with the terms and conditions of this conservation easement; that all mortgages have been joined or subordinated; that Grantor has good right and lawful authority to convey this conservation easement; and that Grantor hereby fully warrants and defends the title to this conservation easement against the lawful claims of all persons whatsoever.

IN WITNESS WHEREOF, the Grantor has executed this Conservation easement on the day and year first above written.

Signed, sealed and delivered
in our presence as witnesses:

Print Name:

By: _____
Print Name: _____
Title: _____

Print Name:

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____,
20____, by _____ as _____
of the (corporation's name) _____ He/She is personally
known to me or has produced _____ as identification.

(SEAL)

Notary Public Signature

Printed/Typed Name of Notary

Commission No. _____

Commission Expires: _____



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Field Office
1601 Balboa Avenue
Panama City, FL 32405-3721

Tel: (850) 769-0552

Fax: (850) 763-2177

May 19, 2009

RECEIVED

MAY 20 2009

JACKSONVILLE DISTRICT
USACE

Colonel Paul L. Grosskruger, District Engineer
Department of the Army
Jacksonville District, Corps of Engineers
Panama City Regulatory Office
475 Harrison Avenue, Suite 202
Panama City, Florida 32401-2731

Attn: Don Hambrick

Re: FWS Log No. 4-P-04-054
Reissued Biological Opinion Letter
West Bay to East Walton Counties, FL
Regional General Permit SAJ-86
SAJ-2004-01861

Dear Colonel Grosskruger:

This letter addresses the reinitiation of consultation for the U.S. Army Corps of Engineers (Corps) RGP SAJ-86 and responds to the Corps April 15 and April 28, 2009 letters. This correspondence is provided in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The original biological opinion (BO) for this project was transmitted to the Corps on May 19, 2004 and revised on March 3, 2005. The RGP SAJ-86 was issued by the Corps on June 30, 2004. Since that time, the western population of flatwoods salamander (reticulated flatwoods salamander *Ambystoma bishopi*) has been recognized as a new and separate endangered species. The bald eagle (*Haliaeetus leucocephalus*) was delisted (August 8, 2007), and the telephus spurge (*Euphorbia telephioides*) RGP-86 Telephus Spurge Pre-Application Evaluation form has been updated.

The RGP-86 Flatwoods Salamander Pre-Application Evaluation and RGP-86 Telephus Spurge Pre-Application Evaluation are still required in order to make a determination of impact within and minimize potential take of these species in the action area. If the pre-application evaluation process indicates suitable habitat for flatwoods salamanders within a proposed project area, the Corps is required to re-initiate consultation with the Service.

Our review of the effects of the action indicate the effects to flatwoods salamanders remain the same as those described in the original BO; however, the western population (*Ambystoma bishopi*) has been designated as a distinct species within the action area. No critical habitat is within the boundaries of the RGP. There are no changes to the Terms and Conditions to minimize the potential for incidental take of the reticulated flatwoods salamander. Implementation of these Terms and Conditions are non-discretionary in order to be exempt from the prohibitions of section 9 of the Act. The extent of take to date is 24.83 acres. Therefore 85.15 acres remain under the provisions of the Incidental Take Statement.

Since delisting, the Act no longer protects the bald eagle. However, the MBTA and BGPA do.

- Technical Assistance: The RGP conditions regarding the bald eagle should be revised to read: "if a bald eagle's nest occurs within 660 feet of a project, the applicant should follow the Service's May 2007 National Bald Eagle Management Guidelines. The applicant should also contact the Florida Fish and Wildlife Conservation Commission (FWC) for recommendations relative to Florida's Bald Eagle Management Plan and Permitting Guidelines."

The telephus spurge (*Euphorbia telephioides*) RGP-86 Telephus Spurge Pre-Application Evaluation form has been updated to reflect the following:

- BO Appendix III, Step 3: See www.plantatlas.usf.edu, www.fws.gov/panamacity/species/plants.html for photo reference collections.
- BO Appendix III, Step 3: Ideal survey months are May through August.

According to the Act, Terms and Conditions are not applicable to plants; therefore, actions that avoid and minimize take for plants are listed only in the Conservation Measures section of the BO for the telephus spurge. Additionally, the telephus spurge March 3, 2005 Revised BO included Conservation Recommendations, item number 1, which should be updated by the addition of the following paragraph:

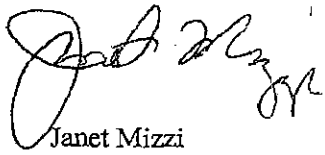
- It is well accepted that there is no exact number below which plant populations are lost or above which they are safe (Matthies et al. 2004; Menges 1990); that is studies have demonstrated variation among the number of plants necessary for a population to survive risks of extinction. As a general rule, authors suggest an effective population size of 50-500 to maintain sufficient genetic variation for adaptation to environmental changes (i.e., viable population). In order to maintain a viable population with an effective size, each population should have between 357 and 3,571 individuals. Studies on 379 populations of eight threatened species in northern Germany demonstrated that very small populations face a considerable risk of extinction, while the risk for populations with more than 1,000 individuals was very small (Matthies et al. 2004). Therefore, in order to consider an experimental translocated population as having the potential for recovery, we recommend a minimum population size of at least 1,000 individuals.

The Service continues to concur with the determination in the Biological Assessment (BA) of "not likely to adversely affect" for red-cockaded woodpecker (*Picoides borealis*), manatee (*Trichechus manatus latirostris*), Gulf sturgeon (*Acipenser oxyrinchus desotoi*) (including its critical habitat), eastern indigo snake (*Drymarchon couperi*), and Godfrey's butterwort (*Pinguicula ionantha*). This concurrence is based upon implementation of the avoidance and minimization measures identified in the final BA and supplemental information provided on December 22, 2003. No additional information that is pertinent to our conclusion has been collected since that time. If these protective, avoidance and minimization measures as identified in your plan or the Terms and Conditions in the BO cannot be implemented, re-initiation of consultation may be required. Additional information on re-initiation of consultation is provided in the Re-initiation Notice within the BO.

After reviewing the current status of the Service's revised BO, the environmental baseline for the action area, the effects and cumulative effects of the RGP SAJ-86, the Corps' information on implementation of the Terms and Conditions to date, and information on file, it is the Service's biological opinion that the Corps RGP SAJ-86 is not likely to jeopardize the continued existence of the species addressed in the Service's revised BO, and it is not likely to destroy or adversely modify designated critical habitat.

This concludes RGP SAJ-86 BO reissuance consultation. If you have any questions about this RGP SAJ-86 BO consultation, please contact staff ecologist Ted Martin of our Panama City Field Office at (850) 769-0552, extension 239.

Sincerely,



Janet Mizzi
Deputy Field Supervisor

Enclosures:

Revised Appendix II, RGP-86 Flatwoods Salamander Pre-Application Evaluation
Revised Appendix II RGP-86 Potential Flatwoods Salamander Pond Description Data Sheet
Revised Appendix III, RGP-86 Telephus Spurge Pre-Application Evaluation

References:

Menges, E. 1990. Population viability analysis for an endangered plant. *Conservation Biology*. 4: 52-62.
Matthies, D., I. Bräuer, W. Maiborn, and T. Tscharnatke. 2004. Population size and the risk of local extinction: empirical evidence from rare plants.

Colonel Grosskruger

4

cc:

St. Joe Company, WaterSound, FL (Thomas Estes)

USFWS, Atlanta, GA (ARD-ES)

USFWS, ES, Jackson, MS (Linda LaClaire)

USFWS, Habitat Conservation/section 7, Atlanta, GA (e-mail copy to Joe Johnston)

NMFS, Habitat Conservation, Panama City, FL (Mark Thompson)

NWFWMD, Havana, FL (Ron Bartel)

FWC, Office of Environmental Services, Tallahassee, FL (Ted Hoehn)

COE, Jacksonville, FL (Osvaldo Collazo)

USEPA, Atlanta, GA (Cecelia Harper)

FDEP, Pensacola, FL (Larry O'Donnell)

Tel: (850) 769-0552
Fax: (850) 763-2177

March 3, 2005

Colonel Robert Carpenter, District Engineer
U.S. Army Corps of Engineers
Jacksonville District Office
475 Harrison Avenue, Suite 202
Panama City, Florida 32401

Attn: Don Hambrick

Re: FWS Log No. 4-P-04-054
Revised Biological Opinion
Regional General Permit 86 (RGP-86)
West Bay to East Walton Counties, Florida

Dear Colonel Carpenter:

Enclosed is the Fish and Wildlife Service's (Service) revised biological opinion (BO) for the U.S. Army Corps of Engineers (Corps) Regional General Permit 86 (RGP-86). This opinion is provided in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The original BO for this project was transmitted to the Corps on May 19, 2004. RGP-86 was issued by the Corps on June 30, 2004. Since that time, we have received new information regarding actions that may affect listed species in a manner not considered in the original opinion. Specifically, a newly proposed construction project would impact the listed plant telephus spurge (*Euphorbia telephioides*), and a new location for the plant has been documented within the RGP boundary. The original BO determined that RGP-86 may affect, but was not likely to adversely affect telephus spurge based on the stipulation that all impacts to known plant locations would be avoided. The new information reveals a more realistic scenario in that permit authorizations under RGP-86 will likely result in adverse effects to telephus spurge. The Service has determined in the revised biological opinion analysis that the permit would not jeopardize the continued existence of this species.

The analysis of impacts to flatwoods salamanders remains the same as the original BO with one minor modification to the salamander "checklist" as noted. There are no other changes to the Terms and Conditions to minimize the potential for incidental take of the flatwoods salamander. Implementation of these Terms and Conditions are non-discretionary in order to be exempt from

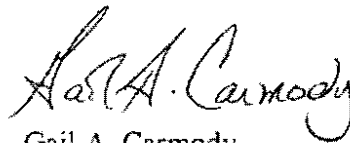
the prohibitions of Section 9 of the Act. According to the Act, Terms and Conditions are not applicable to plants; therefore, actions that avoid and minimize take are listed only in the Conservation Measures section of the BO for the telephus spurge.

The Service continues to concur with the previous determination in the Biological Assessment (BA) of "not likely to adversely affect" for red-cockaded woodpecker, bald eagle, manatee, Gulf sturgeon (including its critical habitat), eastern indigo snake, and Godfrey's butterwort. This concurrence is based upon implementation of the avoidance and minimization measures identified in the final BA and supplemental information provided on December 22, 2003. We have included the avoidance and minimization measures in the Conservation Measures section of the BO. If these protective, avoidance, and minimization measures as identified in your plan or the Terms and Conditions cannot be implemented, re-initiation of consultation may be required. Additional information on re-initiation is provided in the Re-initiation Notice of the biological opinion.

We have also provided Conservation Recommendations for each species that are actions that could be taken by the Corps to further the recovery of federally listed species and to help conserve other species that occur within the RGP area. While they are voluntary actions, we feel that many of the recommendations we have provided will help the Corps meet their responsibilities under Section 7(a)(1) of the Act and will also serve to improve future consultations under the RGP-86.

The following findings and recommendations constitute the report of the Department of the Interior. This concludes formal consultation. If you have any questions about this opinion or consultation, please contact staff biologist Hildreth Cooper of our Panama City Field Office at (850) 769-0552, extension 221.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Gail A. Carmody". The signature is fluid and cursive, with the first name "Gail" and last name "Carmody" clearly distinguishable.

Gail A. Carmody
Project Leader

Enclosure:
Revised Biological Opinion

cc:

St. Joe Company, Jacksonville, FL (Dave Tillis)
USFWS, Atlanta, GA (ARD-ES)
USFWS, ES, Jackson, MS (Linda LaClaire)
USFWS, Habitat Conservation/section 7, Atlanta, GA (e-mail copy to Joe Johnston)
NMFS, Protected Species, St. Petersburg, FL
NMFS, Habitat Conservation, Panama City, FL (Mark Thompson)
NFWFMD, Havana, FL (Ron Bartel)
FWC, Office of Environmental Services, Tallahassee, FL (Rick McCann)
FWC, Non-game Program, Tallahassee, FL (Thomas Eason)
COE, Jacksonville, FL (Osvaldo Collazo))
USEPA, Atlanta, GA (Haynes Johnson)
FDEP, Pensacola, FL (Dick Fancher)

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**U.S. Army Corps of Engineers
Regional General Permit 86
West Bay to East Walton Counties, Florida**

**Revised Biological Opinion
March 3, 2005**

**Prepared by:
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City, Florida**



Table of Contents

CONSULTATION HISTORY	1
BIOLOGICAL OPINION.....	6
DESCRIPTION OF PROPOSED ACTION.....	6
FLATWOODS SALAMANDER.....	14
STATUS OF THE SPECIES/CRITICAL HABITAT	14
Species/Critical Habitat Description	14
Life History	14
Population Dynamics	15
Status and Distribution.....	15
ENVIRONMENTAL BASELINE.....	16
Status of the Species Within the Action Area.....	16
Factors Affecting Species Environment Within the Action Area.....	21
EFFECTS OF THE ACTION	22
Direct Effects	22
Indirect Effects.....	23
CUMULATIVE EFFECTS	23
CONCLUSION.....	23
INCIDENTAL TAKE STATEMENT	24
Amount or extent of take	25
Effect of the take.....	25
Reasonable and prudent measures	25
Terms and conditions.....	25
CONSERVATION RECOMMENDATIONS.....	26

TELEPHUS SPURGE.....	26
STATUS OF THE SPECIES/CRITICAL HABITAT	26
Species Description	27
Status and Distribution.....	27
ENVIRONMENTAL BASELINE.....	28
Status of the Species Within the Action Area.....	29
Factors Affecting Species Environment Within the Action Area.....	29
EFFECTS OF THE ACTION	30
Direct Effects	30
Indirect Effects.....	30
CUMULATIVE EFFECTS	31
CONCLUSION.....	31
CONSERVATION RECOMMENDATIONS.....	32
REINITIATION NOTICE	33
LITERATURE CITED	34

List of Figures, Tables, and Appendices

Figure 1. RGP Boundary.....	8
Figure 2. 300+ sites selected for analysis	18
Figure 3. 83 sites selected from 300+	19
Figure 4. Nine potential salamander locations.....	20
Appendix I. Memo dated April 30, 2004	
Appendix II. Memo dated October 29, 2004	
Appendix III. RGP-86 Telephus Spurge Pre-Application Evaluation	
Appendix IV. RGP-86 Flatwoods Salamander Pre-Application Evaluation	

INTRODUCTION

This document transmits the Fish and Wildlife Service's (Service) revised biological opinion (BO) for the U.S. Army Corps of Engineers (Corps) issuance of Regional General Permit (RGP-86). RGP-86 authorizes certain dredge and fill activities in non-navigable waters of the U.S. which are located in three large watersheds, including the Lake Powell watershed and various drainage basins of the Choctawhatchee Bay and West Bay watersheds within southeastern Walton County and southwestern Bay County, Florida. This opinion is in accordance with Section 7 of the Endangered Species Act of 1973, as amended (Act), (16 U.S.C. 1531 *et seq.*).

This biological opinion is based on information provided in the December 22, 2003, Biological Assessment (BA) and draft permit advertised on August 29, 2003. A complete administrative record of this consultation is on file in the Service's Panama City, Florida Field Office.

CONSULTATION HISTORY

- | | |
|-------------------------------|--|
| May 1999 | An interagency group met to review cumulative impacts to wetlands in the project area. The focus was primarily on specific projects being proposed by the St. Joe Company in the vicinity of Panama City Beach. |
| May 1999 through October 2001 | The interagency group continued to meet with varying representatives of agencies, applicants, and consultants involved in development projects in the area. The group addressed ways to improve coordination and review of specific projects and approaches to evaluating cumulative impacts. On April 20, 2001, the group met at Disney Wilderness Preserve to learn more about the mitigation approach used by the Orlando Airport Authority and others. |
| October 2001 | The Service presented a potential landscape approach of addressing build-out of the area and assessing impact and conservation needs to the group. The study area at that time was the southwestern quadrant of West Bay. |
| Winter 2002 | The interagency group further explored regulatory mechanisms for assessing cumulative impacts and implementing a comprehensive conservation plan for the watersheds of southern West Bay, Lake Powell, and southeastern Choctawhatchee Bay. |

Winter 2002 to present	The interagency teams continue to meet regularly to develop the "West Bay to East Walton Regional General Permit" (RGP-86) and the State equivalent regulatory mechanism, an "Ecosystem Management Agreement."
July 16, 2003	The interagency team discussed the consultation requirements. The consultant requested that the Service identify the species that should be addressed in the project analysis. The Service noted that this is the purpose of the BA, which should be prepared in conjunction with the Federal action agency, the Corps of Engineers. Species lists for the counties would be provided by the Service.
August 1, 2003	The Service provided a species list only for Walton County since a current list for Bay County was provided in 2001 before the project area was expanded.
August 22, 2003	All parties teleconferenced to discuss the BA.
August 26, 2003	The consultant provided a draft species list and proposed determinations of effects.
August 29, 2003	The Corps issues a public notice for RGP-86.
September 24, 2003	The Service participated in a Corps public workshop to discuss RGP-86.
September 29 – October 3, 2003	The St. Joe Company enlisted consulting herpetologist, John Palis, to evaluate potential flatwoods salamander habitat within the project area.
October 23, 2003	The Service provided written concurrence of the species lists used in the BA.
October 30, 2003	A draft BA was transmitted by the consultant to the Corps and to the Service.
November 13-14, 2003	The interagency team provided verbal comments on the BA.

December 4 and 9, 2003	The Service assisted the consultant and John Palis with field evaluations of potential flatwoods salamander habitat.
December 11, 2003	Another draft BA was transmitted to the Service.
December 16-17, 2003	The interagency team met to discuss the BA and other items related to RGP-86.
December 22, 2003	The consultant transmitted the final BA to the Service.
December 23, 2003	In a letter to the Service, the Corps concurs with the findings of the BA and requests initiation of formal consultation.
December 24, 2003	The Service transmitted an electronic copy of the draft BO to the Corps with copies as requested to WilsonMiller and the St. Joe Company.
January 12, 2004	The Service participated in a public workshop regarding DEP's Ecosystem Management Agreement.
January 27, 2004	WilsonMiller provided comments on the draft BO to the Service and to the Corps.
January 30, 2004	A revised draft of the BO was transmitted to the Corps.
February 5, 2004	At the request of the agencies, WilsonMiller provided a "salamander checklist" as an addition to the BA.
February 25, 2004	The Service and Corps met to discuss suggested revisions to the BO.
March 18, 2004	The Service faxed a memorandum to the Corps and WilsonMiller regarding telephus spurge conservation.
April 21, 2004	WilsonMiller conducted a survey for telephus spurge north of Highway 98.

April 30, 2004	WilsonMiller provided details of the telephus spurge survey and a memorandum describing revised Conservation Measures.
May 6, 2004	The Corps concurred with the Service that the additional information was sufficient to proceed with the final biological opinion.
May 19, 2004	The final BO was delivered to the Corps.
May 27, 2004	The Service and other agencies received preliminary materials describing the North Glades Development project.
June 9, 2004	The first RGP pre-application meeting and site visit to a newly documented telephus spurge location. The Service advised the North Glades applicant that more information would be needed regarding telephus spurge locations, impacts, and conservation.
June 18, 2004	The Service received a copy of a draft dredge and fill permit application for "North Glades Development." The packet included an evaluation of telephus spurge for the project.
June 30, 2004	RGP-86 was issued by the Corps.
July 28, 2004	An interagency meeting was convened to discuss pending projects for authorization under RGP-86, including North Glades and potential re-initiation for telephus spurge effects. The applicant was advised that additional information would be needed.
July 28, 2004	The Service received an e-mail from the Corps requesting re-initiation for the North Glades project.
August 3, 2004	The Service transmitted a draft list of additional information to the North Glades consultant and to the Corps.
August 10, 2004	The Service advised the North Glades consultant that the list of additional information should be considered final.

August 11, 2004	The Service and the consultant conducted a teleconference to discuss the technical details of the analysis.
September 9, 2004	The Service attended an interagency pre-application meeting for the Waterfall project within the RGP boundary. The meeting illustrated the need to modify the flatwoods salamander checklist for clarification. (Appendix 1)
October 18, 2004	The Service sent a reminder to the North Glades applicant that the consultation information has not been received.
October 29, 2004	The Service received via e-mail from the consultant the information necessary to proceed with consultation.
November 3, 2004	The Service proposed to the interagency group a modification to the flatwoods salamander checklist as suggested at the September 9, 2004, meeting regarding the Waterfall project.
December 2, 2004	The Service attended an interagency "RGP Team" meeting and clarified the consultation process. There was also discussion about the availability of "negative" survey data for the telephus spurge.
December 23, 2004	The Service again requested the "negative" survey data from the St. Joe Company.
December 29, 2004	The Service requested from the St. Joe Company additional telephus spurge survey information related to plants documented south of the Breakfast Point Mitigation Bank.
January 5, 2005	The consultant for the St. Joe Company responded with three documents that clarified survey information for the telephus spurge.
February 25, 2005	The Corps concurred with the draft BO which was delivered on February 11, 2005.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Regional General Permit #86 (RGP-86) was cooperatively developed by several State and Federal agencies to address the cumulative effects of existing and anticipated development pressures within a fast growing region of the Florida panhandle. A public notice for the permit was published on August 29, 2003. The area addressed by the permit is approximately 47,480 acres in southwest Bay County and southeast Walton County (Figure 1, page 8). Approximately 90 percent of the property is presently in silviculture (forestry) management and is owned by the St. Joe Company. However, as recent trends near the coastline indicate, forestry is giving way to more lucrative residential and commercial development. In addition, just outside the RGP area is the location for a proposed new regional airport, which is undergoing separate review by the Federal Aviation Administration (FAA).

Wetland regulatory agencies have been inundated with permit applications in the area, particularly along U.S. Highway 98 and in the vicinity of Lake Powell. These agencies, along with other Federal and State natural resource agencies, have recognized the need to develop an ecosystem approach to reviewing these permits and assessing the adequacy of mitigation sequencing. RGP-86 provides a mechanism for addressing the cumulative effects of many potential dredge and fill permits by influencing the extent and intensity of development across the landscape. It is accompanied by a State regulatory mechanism, which is known as an Ecosystem Management Agreement (EMA) and is administered by the Florida Department of Environmental Protection (FDEP).

RGP-86 does not directly control development in the area, but it provides an incentive for landowners to participate in the watershed plan that was developed by the agencies. Landowners may continue to submit applications for routine individual permits; however, it is recognized that agency review will require more time and may not be favorable unless ecosystem benefits similar to the principles of RGP-86 can be achieved. The basic principles of RGP-86 are that a maximum 20 percent of a watershed's low quality wetlands can be impacted; these wetland impacts must be fully compensated within the larger watershed; less than one percent of high quality wetlands will be impacted and fully compensated; the Lake Powell watershed wetland functions will not be diminished by any amount; large areas of wetlands and uplands (Conservation Units) will be set aside from future development; and compensatory mitigation will be consolidated in two large mitigation banks.

One recently proposed construction project within the RGP boundary is the cause for Section 7 re-initiation. This project, known as North Glades, will be constructed within the only previously known location of a federally listed plant, telephus spurge (*Euphorbia telephioides*) within the RGP boundary. The permit applicant has indicated that impacts to some of the plants cannot be avoided. In addition, a new location for the plant has been recently discovered nearby on other property owned by the applicant. This information will be discussed in more detail in the telephus spurge section of the BO.

Conservation Measures

The interagency working group developed the following Conservation Measures that will be incorporated within RGP-86. These measures will further the recovery of the species under review.

1. A maximum of 20 percent of low quality wetlands on a project site or within a watershed sub-basin can be impacted. Impacts will be compensated in a mitigation bank, on site, or within identified Conservation Units. The interagency team defined low quality wetlands as those planted for pine silviculture and ditches.
2. Impacts to high quality wetlands (wetlands not in silviculture) will be limited to necessary, minimized road crossings. Total fill of high quality wetlands in the entire 47,480-acre project area cannot exceed 125 acres.
3. Avoidance of impacts to wetlands could assist in the recovery of the flatwoods salamander, indigo snake, bald eagle, and Godfrey's butterwort, if these areas are managed appropriately.
4. Restoration and management of two mitigation banks will secure for conservation two large, strategically placed parcels totaling approximately 7,700 acres. These banks are currently used for industrial forestry, and without RGP-86 could be partially converted to development sites in the future. The mitigation banks could assist in the recovery of the flatwoods salamander, red-cockaded woodpecker, indigo snake, bald eagle, Godfrey's butterwort, telephus spurge, Gulf sturgeon, and manatee.
5. Approximately 10,665 acres of uplands and wetlands (27 percent of the project area) will be designated as Conservation Units (CU's). These areas will be removed from development potential and industrial forestry practices. They will eventually be restored in amounts relative to parcel sizes of future development projects. The interagency working group developed specific prescriptions for wildlife management that focus on listed species. The CU's include significant amounts of uplands, which do not normally receive direct attention in wetland regulatory programs. The CU's could eventually assist in the recovery of the flatwoods salamander, red-cockaded woodpecker, indigo snake, bald eagle, Godfrey's butterwort, telephus spurge, Gulf sturgeon, and manatee.

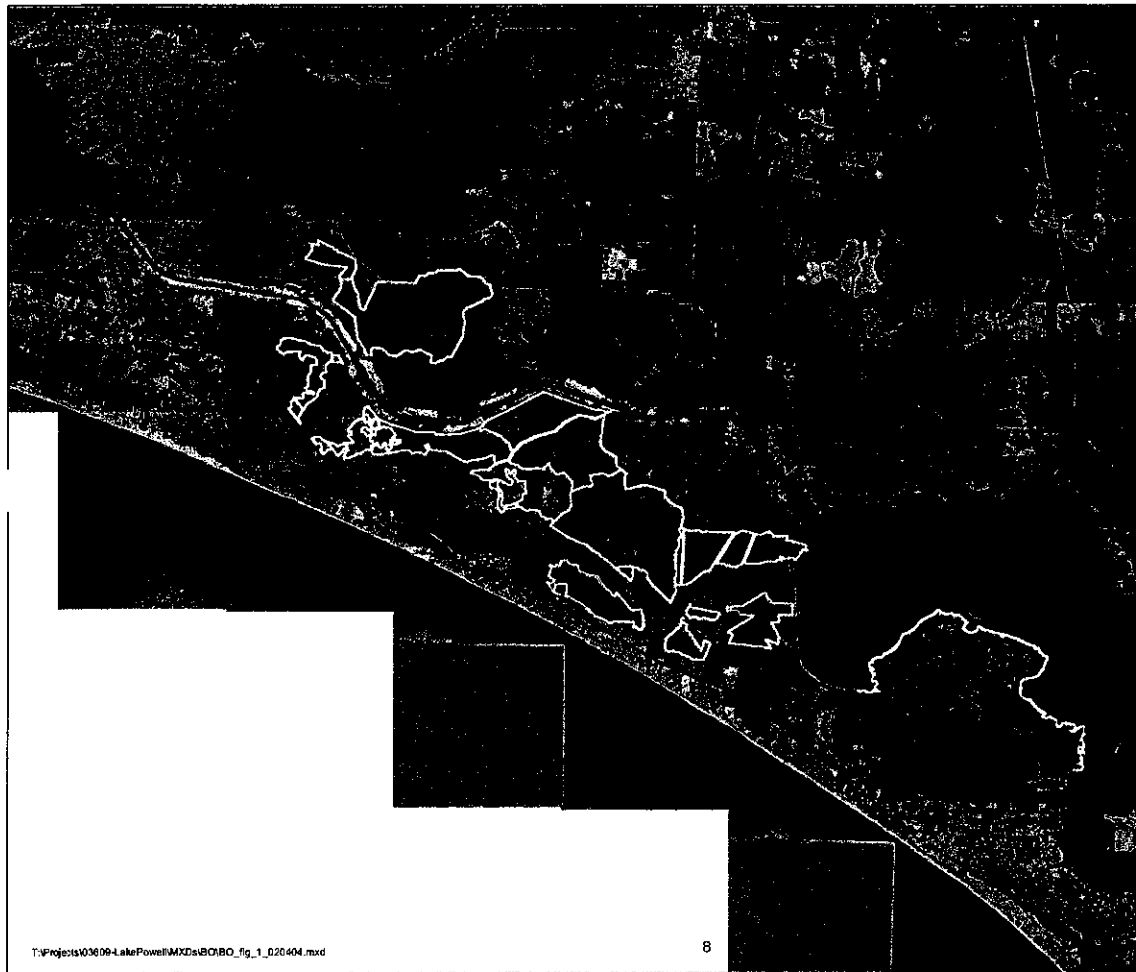


Figure 1

**RGP Boundary
Biological Opinion**

**West Bay to
East Walton RGP**

Legend

Conservation Units

- Project Area (Including Tidal Soils)
- Devil's Swamp Mitigation Bank
- Breakfast Point Mitigation Bank

Disclaimer:
This exhibit was prepared utilizing GIS data provided by various sources that may include but not limited to federal, state, district and local agencies. Data provided by other sources are not warranted by WilsonMiller for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a wetland jurisdictional determination, true title search, property appraisal, survey, or for zoning verification.

Map Date:
02/04/04



0 0.5 1 2 3 4 Miles

WilsonMiller
New Orleans Planning, Design & Engineering

6. In general, low quality wetlands provide somewhat of a buffer to high quality wetlands in the project area. For specific projects, buffers to high quality wetlands will be comprised of uplands and/or low quality wetlands, and will be on average not less than 50 feet with a minimum of 30 feet in some locations. The buffers will remain in a natural condition with no application of fertilizers and herbicides. Providing buffers where they are not currently required could assist in the recovery of the flatwoods salamander, red-cockaded woodpecker, indigo snake, bald eagle, Godfrey's butterwort, telephus spurge, Gulf sturgeon, and manatee.
7. A sub-basin watershed approach to wetlands avoidance is a priority over the larger watershed approach. Protection of sub-basins should provide better protection of water quality and quantity functions. This could assist in the recovery of species such as Gulf sturgeon and manatees, which may occur in receiving water bodies.
8. Environmental Resource Permitting (ERP) stormwater attenuation standards will be applied to all development projects. This is a higher standard than currently exists in the Northwest District of the Florida Department of Environmental Protection (FDEP). The increased protection could assist in the recovery of species such as Gulf sturgeon and manatees, which may occur in receiving water bodies.
9. Corps jurisdictional determinations (JD) will be applied to all development projects. The Corps JD is generally more encompassing than the FDEP method.
10. No fill in wetlands will be allowed for septic tanks or drainfields.
11. *Habitat Management Guidelines for the Bald Eagles in the Southeast Region* (USFWS, 1987) will be applied to all development sites, mitigation banks, and CU's.
12. Road construction at WaterSound North, a proposed project under RGP-86, will include wildlife crossings as identified in the project plans dated January 30, 2004.
13. The North Glades applicant has conducted additional surveys for telephus spurge within the RGP-86 Conservation Units (CU) in Bay County, Florida, and within the Breakfast Point mitigation bank (BPMB) (Appendix I). As a result, one new population of telephus spurge containing over 200 plants was located in the Breakfast Point mitigation area and adjacent lands to the south that have no conservation designation. The portion of the population within the BPMB will be managed and monitored in conjunction with the existing management requirements within the RGP-86 permit. [US. Fish and Wildlife Service (USFWS) recovery plan tasks 1.33, 3.1, 3.2, 3.3].
14. The North Glades applicant has agreed to place 2.33 acres (containing approximately 6,825 plants) of 6.43 acres (containing approximately 17,250 plants) of the telephus spurge population of the North Glades development parcel into a conservation easement to protect and manage into perpetuity. The applicant has provided a monitoring plan for the North Glades conservation easement area to assess success of restoration activities (Appendix II). [USFWS recovery plan tasks 3.1, 3.2, 3.3].

15. The North Glades applicant has agreed to transfer 500 plants of telephus spurge to an as yet undetermined location within the BPMB. These plants would otherwise be destroyed by the proposed development plan. The applicant will set up 5 monitoring plots with 100 plants transplanted within each plot. Each plot will be quantitatively monitored for 5 years to assess their overall survival and viability (ERC, 2004). [USFWS recovery plan task 5.0].
16. All proposed project sites within the RGP will be surveyed for presence or absence of telephus spurge according to the survey protocol (Appendix III).

Action area

For purposes of the Endangered Species Act, action area is defined as all areas affected directly or indirectly by a Federal action, including interdependent and interrelated actions and proposed Conservation Measures. Although each potentially affected species will define a separate action area, the most inclusive geographic area is referenced for simplicity.

The action area for this analysis is generally described as the proposed boundary of the RGP, including the mitigation banks. Receiving waters under consideration for aquatic or water-dependent species are West Bay, Lake Powell, the intracoastal waterway, and extreme southeast Choctawhatchee Bay. Adjacent wetlands and uplands were considered where development or conservation actions could potentially affect non-aquatic species.

Determination of effects

Based on the proposed protective, avoidance, and minimization measures and the analysis provided in the BA, the Service concurs with the following determinations of effects. More detail regarding these species and potential effects of the project is found in the BA.

-Piping plover (*Charadrius melodus*) – No Effect

- Only one historical record occurs near the project. The site is not within listed critical habitat for the species. There are no direct effects to the site, and indirect effects would be difficult to measure.

-Sea turtles – No Effect

- Beachfront habitat is located near the project site at Lake Powell inlet, but not within the RGP boundary. Almost all beachfront that is not presently developed at Lake Powell is within Camp Helen State Recreation Area. Based on the project description and location, the Service concurs with the determination that no effects to sea turtles will occur as a result of the proposed action.

- Wood storks (*Mycteria americana*) – No Effect
 - No documented occurrences in vicinity.
- American alligator (*Alligator mississippiensis*) – No Effect
 - Alligators were listed due to similarity of appearance with crocodiles; however, the project is not located within the range of the crocodile.
- Eastern indigo snake (*Drymarchon corais couperi*) - No Effect
 - No documented occurrences in the vicinity.
- Plants (federally listed) – Six federally listed plant species were considered in the BA.

These were selected from the Service's lists of plants that have the potential to occur in Bay and Walton counties. Additional plant surveys were conducted, although they were limited considering the size of the project area and the timeframe for RGP development. No federally listed plant species were observed within the project area during the initial surveys that were conducted as part of this project; however, subsequent surveys verified and expanded known locations of one plant, telephus spurge, in the project area.

 1. Cooley's meadow rue (*Thalictrum cooleyi*) – No Effect
 - Only one known population of Cooley's meadow rue occurs in Florida, and it appears that suitable soils may not be present in the project area. This species does not tolerate disturbance, and most impacts of the permit would be in areas that are highly disturbed.
 2. Crystal Lake nailwort (*Paronychia chartacea* ssp. *minima*) – No Effect
 - There are no recorded observations of this species within the project area; there is no suitable habitat (sandhill upland lakes and karst ponds); and the known species range is well northeast of the project area.
 3. Florida skullcap (*Scutellaria floridana*) – No Effect
 - There are no recorded observations of this species within the project area. The only known record in Bay County occurs approximately 17 miles from the project, and all other records in its range are in counties even farther to the east. This species does not tolerate disturbance, and most impacts of the permit would be in areas that are highly disturbed.
 4. White birds-in-a-nest (*Macbridea alba*) – No Effect
 - Within the project area, potentially suitable habitat for white birds-in-a-nest may be present in cleared or recently planted areas, in roadside ditches, or along the edges of pine plantations. However, this species has not been observed in the project area, and the nearest observations are in eastern Bay County in the vicinity of Sandy Creek and East Bay, approximately 17 miles from the project site.

5. Godfrey's butterwort (*Pinguicula ionantha*) – May Affect, Not Likely to Adversely Affect

- There are no recorded observations of this species within the project area, but there are records in the vicinity to the southeast of the project. Suitable habitat may be present in small pockets within pine plantations that could be affected by the developments within the project area. The species could also be found in herbaceous ecotones of the more high quality wetlands that will be protected. Beneficial effects of the project include the following: protection of high quality wetlands and high quality ecotone habitat that may be adjacent to them; establishment of buffers around preserved wetlands; and protection of uplands and wetlands within conservation units and two mitigation banks. Without RGP-86, most of the suitable habitat would continue to be negatively affected by intense silviculture.

6. Telephus spurge (*Euphorbia telephioides*) - Likely to Adversely Affect

- The Service concurs with the determination for this species.

-Manatees (*Trichechus manatus latirostris*) – May Affect, Not Likely to Adversely Affect

- There are few documented records of occurrence in the action area. The species is considered transitory in this area.
- Project could indirectly affect seagrass through hydrologic alterations and increased sediment, nutrient, and chemical loading. However, effects are expected to be of a scale that will not measurably alter the system's ecological balance due to the expanse of the receiving waterbody. Conservation Measures address water quality issues to the extent currently practicable by adopting ERP stormwater criteria.
- Note that the manatee key also leads to a May Affect, Not Likely to Adversely Affect determination, even though the project is not located in Section 10 waters. This determination is based on the fact that the potential indirect effects related to water quality are insignificant in consideration of the large geographic area covered by RGP-86, including extensive shoreline areas.

-Gulf sturgeon (*Acipenser oxyrinchus desotoi*) – May Affect, Not Likely to Adversely Affect

- The project could indirectly affect Gulf sturgeon habitat due to increased stormwater associated with development. The Service received concurrence from National Marine Fisheries Service (NMFS) that we should be the lead agency in this case because potential impacts are related to water quality (Bolton, August 2003). NMFS would be the lead agency only if there were proposed direct impacts to sturgeon habitat. There are few documented records of species occurrences in West Bay, where the species is transitory. Critical habitat is located near the action area in Choctawhatchee Bay; however, only a small portion of the Choctawhatchee Bay watershed occurs in the action area. Indirect

effects are expected to be of a scale that will not measurably alter the system's ecological balance due to the expanse of the receiving waterbody and the Conservation Measures provided that address water quality issues to the extent currently practicable. These measures are described in the BA. Furthermore, the influence of these hydrologic alterations and increased sediment, nutrient, and chemical loadings would be minor in comparison to large influence of nutrient and sediment inputs currently stemming from the Choctawhatchee River. However, if measurable impacts on any of the primary constituent elements essential for the conservation of the Gulf sturgeon are documented, re-initiation of consultation with the Service should occur. The primary constituent elements are those habitat components that support feeding, resting, sheltering, reproduction, migration, and physical features necessary for maintaining the natural processes that support these habitat components. Relevant to this project, any impacts that alter the abundance of prey items, disrupt aggregation areas, decrease water quality, or increase sediment quality would potentially affect the Gulf sturgeon. The added stormwater provisions of RGP-86 minimize adverse effects.

-Red-cockaded woodpeckers (*Picoides borealis*) – May Affect, Not Likely to Adversely Affect

- The action area has been surveyed on numerous occasions. No active cavities were recorded, including an evaluation of two historical cavity trees within the action area. Almost all upland habitats have been converted to silviculture, and most remaining unplanted wetlands are cypress/bayhead communities with dense shrub and mid-story layers. Wildlife surveys for projects will be conducted as they come into the planning stages. If active cavities are found, the landowner will notify the Corps, which will re-initiate consultation with the Service. Additional information on re-initiation is provided in the Re-initiation Notice of this BO.

-Bald eagles (*Haliaeetus leucocephalus*) – May Affect, Not Likely to Adversely Affect

- One documented bald eagle nest is located in the action area. The nest is located within the proposed Breakfast Point mitigation bank. The management plan for the bank incorporates the *Habitat Management Guidelines for the Bald Eagles in the Southeast Region* (USFWS, 1987). Other areas have been surveyed, but will be surveyed again when each proposed large project goes into the planning stages. If new nests are found, the *Habitat Management Guidelines for Bald Eagles* will be incorporated into the project. If the guidelines cannot be implemented, initiation of consultation for the bald eagle may be required.

-Flatwoods salamander (*Ambystoma cingulatum*) – Likely to Adversely Affect

- The Service concurs with the determination for this species.

Based on the information provided in the project BA and supplemental information, and with the implementation of the protective, avoidance, and minimization measures, we concur that

RGP-86 would likely adversely affect telephus spurge and flatwoods salamanders. These two species will be addressed further in the biological opinion.

FLATWOODS SALAMANDER

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes the biology and ecology of the flatwoods salamander. The Service uses this information to assess whether a Federal action is likely to jeopardize the continued existence of this species. The Environmental Baseline section summarizes information on status and trends of the species specifically within the action area. These summaries provide the foundation for the Service's assessment of the effects of the proposed action, as presented in the Effects of Action section, and to make the Conservation Recommendations listed at the end of this opinion.

The flatwoods salamander (*Ambystoma cingulatum*) is listed as a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). The flatwoods salamander was designated as threatened in the Federal Register, April 1, 1999 (64 FR 15691), and became effective on May 3, 1999. No critical habitat has been designated for this species. Recovery planning is underway, but no recovery plan has been adopted.

Species description

The flatwoods salamander is a slender, small-headed mole salamander that is seldom greater than 5 inches in length. Adult dorsal color ranges from black to chocolate-black with highly variable, fine, light gray lines forming a net-like or cross-banded pattern across the back. Undersurface is plain gray to black with a few creamy or pearl gray blotches or spots. Flatwoods salamander larvae are long and slender, broad-headed and bushy-gilled, with white bellies and striped sides (Ashton, 1992; Palis, 1995). Flatwoods salamanders are known to occur in isolated populations across the lower southeastern Coastal Plain, with the majority of the remaining known populations located in Florida.

Life history

Adult and sub-adult flatwoods salamanders live in underground burrows. Adult flatwoods salamanders move above ground to their wetland breeding sites during rainy weather, in association with cold fronts, from October to December (Palis, 1997). Typical breeding sites are isolated pond cypress (*Taxodium ascendens*), blackgum (*Nyssa sylvatica* var. *biflora*), or slash pine (*Pinus elliottii*) dominated depressions which dry completely on a cyclic basis. They are generally shallow and relatively small, and have a marsh-like appearance with sedges often growing throughout, and wiregrass (*Aristida* sp.), panic grasses (*Panicum* spp.), and other herbaceous species concentrated in the shallow water edges. After breeding, adult flatwoods salamanders leave the pond.

Optimum adult habitat for the flatwoods salamander is an open, mesic (moderate moisture) woodland of longleaf/slash pine (*Pinus palustris*/*P. elliotii*) flatwoods maintained by frequent fires, with a dominant ground cover of wiregrass (*Aristida spp.*). The ground cover supports a rich herbivorous invertebrate community that serves as a food source for the species (64 FR 15692).

In a study by Ashton (1992), flatwoods salamanders were found greater than 1,859 yards from their breeding pond. However, based on more recent data (Semlitsch, 1998) and additional peer review, the final listing rule recommends a 1,476-foot "buffer" around breeding ponds to protect the majority of a flatwoods salamander population from the adverse effect of certain specified, silvicultural practices. This buffer extends 1,476 feet out from the wetland edge.

Since they may disperse long distances from their breeding ponds to upland sites, desiccation can be a limiting factor. Thus, it is important that areas connecting their wetland and terrestrial habitats are conserved in order to provide cover and appropriate moisture regimes during their migration. High quality habitat for the flatwoods salamander includes a number of isolated wetland breeding sites within a fire maintained landscape of longleaf pine/slash pine flatwoods having an abundant herbaceous ground cover (Sekerak, 1994). In Florida, Palis (1997) found that 70 percent of the active breeding sites were surrounded by second-growth longleaf or slash pine flatwoods with nearly undisturbed wiregrass ground cover.

Population dynamics

A flatwoods salamander population has been defined as those salamanders using breeding sites within 2 miles of each other, barring an impassable barrier such as a perennial stream (Palis, 1997). Since temporary ponds are not likely permanent fixtures of the landscape due to succession, there would be inevitable extinctions of local populations (Semlitsch, 1998). By maintaining a mosaic of ponds with varying hydrologies, and by providing terrestrial habitats for adult life stages and colonization corridors, some prevention of local population extinction can be achieved. A mosaic of ponds would ensure that appropriate breeding conditions would be achieved under different climate regimes. Colonization corridors would allow movement of salamanders to new breeding sites or previously occupied ones (Semlitsch, 1998).

Fire is needed to maintain the natural pine flatwoods community. The disruption of the natural fire cycle has led to an increase of slash pine on areas previously dominated by longleaf pine, increases in hardwood understory and canopy, and subsequent decreases in herbaceous ground cover (64 FR 15701). Isolated ponds that are surrounded with pine plantations and are protected from fire may become unsuitable breeding sites for the flatwoods salamander. This is a result of canopy closure and the reduction in herbaceous vegetation necessary for egg deposition and larval development (Palis, 1993).

Status and distribution

Historical records for the flatwoods salamanders in its range are limited. Longleaf pine/slash pine flatwoods historically occurred in a broad band across the lower southeastern Coastal Plain. The flatwoods salamander likely occurred in appropriate habitat throughout this area (64 FR

15691). Range-wide surveys in Alabama, Florida, Georgia, and South Carolina have been ongoing since 1990 in an effort to locate new populations. Most surveys were searches for the presence of larvae in the grassy edges of ponds.

The combined data from the surveys completed since 1990 indicate that 59 populations of flatwoods salamanders are known from across the historical range. Most of these occur in Florida (47 populations or 80 percent). Eight populations have been found in Georgia, four in South Carolina, and none have been found in Alabama. Some of these populations are inferred from the capture of a single individual. Slightly more than half the known populations for the flatwoods salamander occur on public land (40 of 59, or 68 percent).

ENVIRONMENTAL BASELINE

Status of the species within the action area

Historical data on flatwoods salamanders in the action area is limited. Most of the area is privately owned and has been intensively managed for silviculture for many years. Little remains of the natural terrestrial landscape. Almost all uplands and most wetlands were converted to pine plantations with site preparation that included clearcutting, roller chopping, herbicide application, and bedding. In addition, pine flatwoods are not considered wetlands under State of Florida best management practices for silviculture; therefore, this habitat type receives no special consideration when converted and managed for industrial forestry.

There are no documented occurrences of flatwoods salamanders in Bay County and only one recent record in Walton County. The Walton County record is for one individual at one location in Point Washington State Forest, which is adjacent to the RGP-86 boundary but separated to a great extent by a four-lane highway. One large parcel of the State Forest bisects the RGP area at the western end, and other parcels are adjacent to the RGP boundary north of the highway in that vicinity. The known record for the flatwoods salamander at the State Forest is located south of the four-lane highway. Further field investigations were recommended for the RGP area due to the proximity to the known location and the absence of surveys across this vast expanse of private lands in the project area. There is also one other known occurrence approximately seven miles north of the project area in Pine Log State Forest in Washington County.

The St. Joe Company (St. Joe) owns the majority of lands in the action area. St. Joe has received assistance from the Service in recent years in an effort to develop a habitat suitability model for flatwoods salamanders. Such a model would provide useful information for salamander management and recovery, particularly in the Florida panhandle where St. Joe has much of its lands. Unusually dry conditions in recent years delayed progress on the model, but a fair amount of background data collection was conducted in the project area. The area also has been visited on several occasions by one of the foremost flatwoods salamander experts, John Palis. Mr. Palis was first contracted by St. Joe to visit the project area on March 8, 2000. This cursory visit identified potential habitat and that "flatwoods salamanders may occur at this site" (Palis, 2000). Subsequent field inspections were conducted by John Palis in the action area related to the habitat model and to Camp Creek Golf Course Phase II.

Mr. Palis was again contracted to evaluate potential flatwoods salamander habitat specifically in the RGP area. Details of his survey methods are described in the biological assessment. Approximately 300 potential sites were initially selected using aerial photography and GIS data. These sites were throughout the RGP area, not just on St. Joe Company lands (Figure 2, page 18). Upon further review of high resolution photography, historical photography, and soils maps, Palis selected 83 of the 300 sites "that merited a field visit to determine their potential as flatwoods salamander habitat" (WilsonMiller, 2003) (Figure 3, page 19). A team including Palis, the applicant, and consultants for the applicant inspected these sites, and any others that were noted in the field. Each site that was deemed to have at least a "small potential" for suitable habitat was re-visited by Palis. The final analysis concluded that only nine wetlands appeared to be suitable habitat (Figure 4, page 20).

There is no set protocol at this time for providing reasonable assurance that salamanders do not occur at a particular location. However, the consensus among herpetologists is that a reasonable effort would consist of drift fence surveys surrounding a potential breeding pond to be conducted in two consecutive "normal" weather years. There has not been an opportunity to adequately survey for the presence or absence of flatwoods salamanders in any of the potentially suitable habitats due to a recent drought. However, based on the remote sensing analysis, site inspections, and the proximity to at least two known locations, the Corps and the St. Joe Company have agreed to presume presence of flatwoods salamanders at the nine potential locations. This appears to be a reasonable approach given the size of the project area and the limited time frame to conduct surveys. Positive results from any future surveys would require re-initiation of Section 7 consultation if there is a potential to affect suitable habitat not addressed in the incidental take section of this opinion.

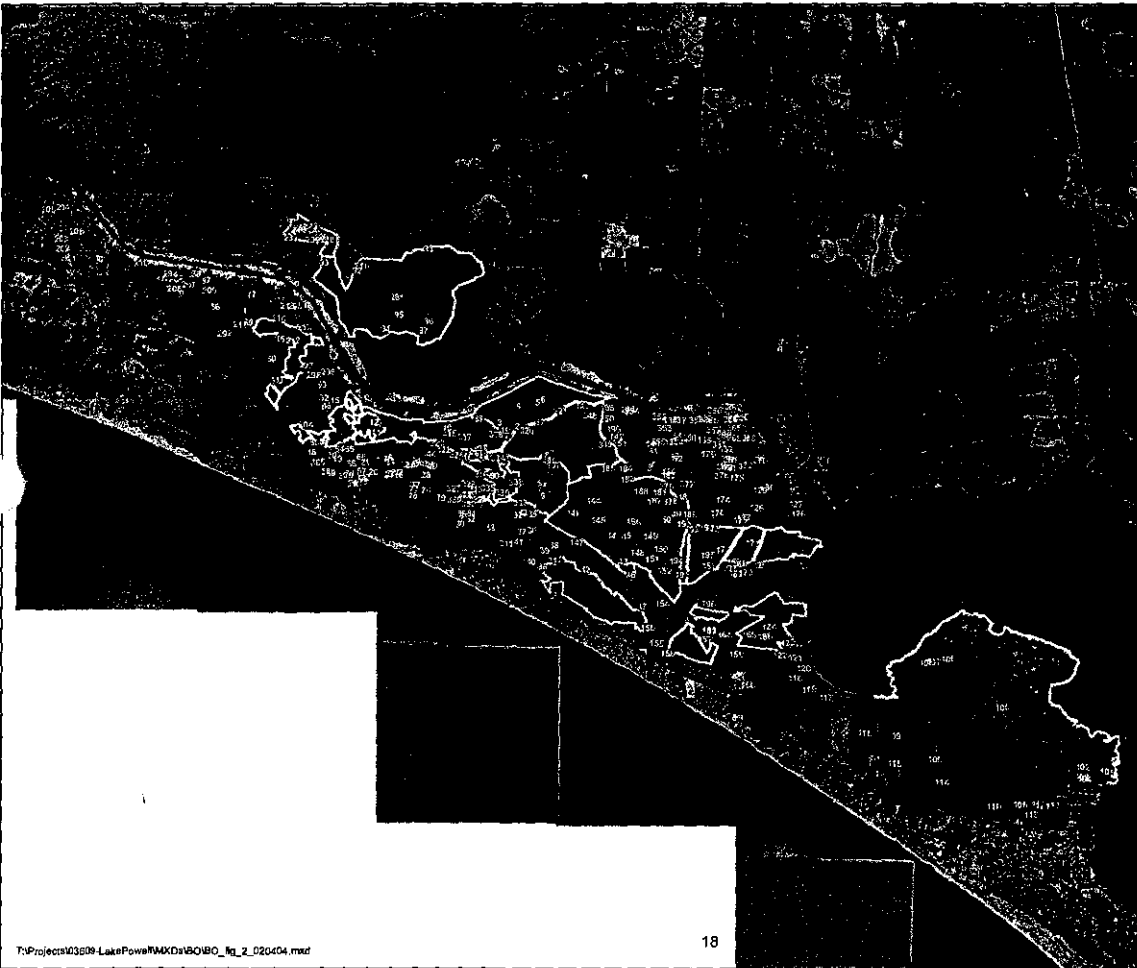


Figure 2

**300+ Sites Selected
for Analysis
Biological Opinion**

**West Bay to
East Walton RGP**

Legend

- Conservation Units
- RGP Area (including Tidal Soils)
- Devil's Swamp Mitigation Bank
- Breakfast Point Mitigation Bank

- Ponds Reviewed Prior to Field Surveys for Potential Flatwoods Salamander Habitat
- 203 Pond Identification Number

Disclaimer:
This exhibit was prepared utilizing GIS data provided by various sources that may include but not limited to federal, state, district and local agencies. Data provided by other sources are not warranted by WilsonMiller for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a wetland jurisdictional determination, true title search, property appraisal, survey, or for zoning verification.

Map Date:
02/04/04



0 0.5 1 2 3 4 Miles

WilsonMiller
New Orleans, LA Planning, Design & Engineering



Figure 3
83 Sites Selected
from 300+
West Bay to
East Walton RGP

Legend
 Conservation Units
 RGP Area (including Tidal Solis)
 Devil's Swamp Mitigation Bank
 Breakfast Point Mitigation Bank

● Ponds Surveyed for Potential
 Flatwoods Salamander Habitat

203 Pond Identification

Disclaimer:
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 or for any particular use that may require additional
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 property appraisal, survey, or for zoning verification.

Map Date:
 02/04/04



0 0.5 1 2 3 4 Miles

WilsonMiller
 New Direction In Planning, Design & Engineering

Figure 4
Nine Potential
Salamander Locations
West Bay to
East Walton RGP

- Legend**
- Conservation Units
 - GP Area (Including Tidal Soils)
 - Devils Swamp
 - Breakfast Point
 - Ponds Considered Potential Habitat Based on Field Survey Results
 - 46 Pond Identification

Disclaimer:
 This exhibit was prepared utilizing GIS data provided by various sources that may include but not limited to federal, state, district and local agencies. Data provided by other sources are not warranted by WilsonMiller for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a wetland jurisdictional determination, true title search, property appraisal, survey, or for zoning verification.

Map Date:
 02/04/04



0 0.5 1 2 3 4 Miles

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 New Directions In Planning, Design & Engineering



Factors affecting species environment within the action area

West Bay Sector Plan - Bay County officials recently conducted a special planning effort for a portion of the RGP and additional adjacent areas totaling approximately 75,000 acres. The "West Bay Sector Plan" identifies potential development and conservation strategies for the area, and is predicated on re-location of the Panama City/Bay County International Airport. Although the Sector Plan may encourage and accelerate development, it could reduce adverse effects in comparison to existing land use regulations. There are no known flatwoods salamander records within the sector planning area. Potential habitat occurs in a proposed sector conservation area that coincides with the Breakfast Point mitigation bank. It is likely that other habitat could be found in the approximately 30,000 acres identified as the West Bay Preservation Area.

Camp Creek Golf Course, Medallist, and Highway 98 - These three projects are within the RGP boundary. Each project required Corps permits and formal consultations for flatwoods salamanders. Similar to the approach agreed upon for the RGP, each project area was presumed to have salamanders based on the presence of suitable habitat and the proximity to known locations. The amount of presumed take from these three projects totals 606 acres of buffer habitat. There was no direct take of breeding pond habitat.

Public Lands - Point Washington State Forest occurs within the RGP boundary. There is one known location of a flatwoods salamander breeding pond in the forest, but it is a considerable distance from any potential development that could occur in the RGP. The forest is actively managed in a manner that should improve salamander populations. Pine Log State Forest is in proximity to the RGP boundary, but not located within the project area. As with Point Washington, there is one documented occurrence of flatwoods salamanders, and the forest is managed to improve habitat for the species. The Northwest Florida Water Management District (WMD) also owns large parcels adjacent to the project area. There are no known occurrences of flatwoods salamanders on WMD land, but there is good potential that active management will improve habitat. The RGP conservation units blend with the State forest and WMD lands to provide an opportunity for habitat improvement and connectivity across a large area of Bay and Walton counties.

EFFECTS OF THE ACTION

RGP-86 is designed to manage the cumulative effects of numerous potential Section 404 dredge and fill permits. The RGP guides development to specific areas allowing no more than 20 percent of low quality silviculture wetlands to be impacted within each sub-watershed in the RGP area. More than 99 percent of high quality, unplanted wetlands will remain. Two mitigation banks of 7,700 acres will compensate for the loss of wetland functional values to both low and high quality wetlands. Conservation units of 13,200 acres will be removed from development potential as a condition of the permit, but will be encumbered by conservation easements concurrently as future development projects receive permit authorization. The conservation units and mitigation banks establish large, contiguous blocks of manageable lands, wildlife corridors, and provide for reduction of potential stormwater and hydrological impacts. Effects of the project on salamander habitat are based on two important premises: 1) best available methods were used to identify potential habitat, and 2) presence of salamanders is presumed for these areas although none have been documented.

Direct effects

The BA identifies specific direct effects of the project to include development projects within two potential habitats identified as Ponds 64 and 46. Pond 64 is the only potential breeding habitat that is not located within a conservation unit or one of the two mitigation banks. Pond 46 was added to a conservation unit following its discovery and evaluation; however, some of the surrounding buffer habitat of Pond 46 falls outside the conservation unit and is therefore subject to future development plans. All other identified suitable habitat, including buffers, is located either within a conservation unit or a mitigation bank. Direct effects could occur in other locations if suitable habitat is discovered at a later time; however, this situation would constitute new information that would trigger re-initiation of consultation.

The BA describes the method by which John Palis and the consultants quantified the amount of suitable habitat that could be affected at Ponds 64 and 46. This is based on a draft project design for a residential/golf course development adjacent to Pond 64 and presumed future development within suitable buffer habitat of Pond 46 that is outside the conservation unit. The BA indicates that approximately 57 acres of fair to fairly good buffer habitat will be affected at Pond 64. Approximately 53.6 acres of potential buffer habitat will be affected at Pond 46.

Management of the conservation units and the mitigation banks should ultimately benefit flatwoods salamander habitat. The conservation units will be managed according to *Principles for Forest and Wildlife Management for Conservation Units Within the Regional General Permit Area* that is part of RGP-86. The banks will be managed according to their mitigation banking instruments. The ultimate goal in both conservation units and banks is to restore the habitat to historical natural condition.

Indirect effects

Flatwoods salamanders are thought to be sensitive to soil and groundcover disturbing activities, especially when that disturbance creates an impediment to movement from upland habitat to the ephemeral wetlands they use for breeding and larval development. Soil disturbance can also result in potential sedimentation and erosion affecting nearby wetlands habitat. However, construction that could occur within proximity to suitable habitat is limited by the boundaries of the conservation units and mitigation banks and by the proposed buffers. In addition, a proposed road near Pond 64 has been re-designed to include underpasses for reptiles, amphibians, and small mammals. This would maintain a connection between the pond and an area to the north that will be placed in a conservation easement within the development and which connects to a large conservation unit.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed project are not considered in this opinion because they require separate consultation pursuant to section 7 of the Endangered Species Act.

RGP-86 was specifically designed through 3 years of interagency coordination to address cumulative effects that could be expected from increased development pressure in the area. The Service has evaluated numerous development projects in the area in recent years, and has conducted formal consultation for flatwoods salamanders for three of these projects. The general permit provides a more coordinated ecosystem approach for implementation of the current dredge and fill program in the area. The cooperation of the largest landowner in the area has been instrumental in the process. Additional evaluation of flatwoods salamander habitat will occur on a project-by-project basis using the procedures described in Appendix IV.

CONCLUSION

After reviewing the current status of the flatwoods salamander, the environmental baseline for the RGP-86 action area, the effects of the proposed activities, proposed protective, avoidance, and minimization measures, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the flatwoods salamander. Within the RGP project area, nine wetlands were identified as potential suitable habitat for the flatwoods salamander. No known breeding habitat for flatwoods salamander will be affected. As conditions of issuing the permit for the project, mitigation banks totaling 7,692 acres will be established to compensate for loss of wetland values and conservation units totaling 13,200 acres will be removed from development potential. Seven of the nine potential flatwoods salamander ponds are located completely within a conservation unit or mitigation bank. Of the two ponds not included, only one is completely outside a conservation unit or mitigation bank. The combined acreage of affected buffer habitat in both ponds totals 110.6 acres. This acreage, which has been established as the amount of take for the affected potentially occupied habitat, is

very small when compared to the amount of suitable upland and wetland habitat (18,357 acres) that will be restored and managed in perpetuity within the conservation units and mitigation banks. Loss of 110.6 acres of potential suitable habitat will not appreciably reduce the survival and recovery of the flatwoods salamander. No potential breeding pond habitat will be affected. Less than 2.4 percent of the buffer habitat surrounding these ponds will be taken. The RGP project area will allow for protection and expansion of populations if any are eventually located at the site. The existing and future land uses without the RGP (silviculture and haphazard development) would be more of a threat to recovery of the species than issuance of the permit. No critical habitat has been designated for the flatwoods salamander; therefore, none would be affected.

There are approximately 160 ponds in Florida with a conservative estimate of 376,000 acres of pond and buffer habitat in the State (average 5-acre pond size plus 1,476-ft. buffer). Therefore, the amount of take could be viewed as 0.0003 of the amount of known habitat in the State of Florida. As a reminder, it should be pointed out that all effects are for habitat that is **presumed** to support flatwoods salamanders, and that a majority of the buffer habitat around the two affected ponds will remain and be improved.

INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include major habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to noticeably disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with the Terms and Conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the Corps of Engineers for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and assure implementation of the Terms and Conditions, or (2) fails to require applicants to adhere to the Terms and Conditions of the incidental take statement through enforceable terms, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the project and its impacts on the species to the Service as specified in the incidental take statement [50 CFR §402.14(I)(3)].

Amount or extent of take

The Service has determined that incidental take of individual flatwoods salamanders is difficult to detect for the following reasons: (1) adult flatwoods salamanders are difficult to locate and observe. Individuals killed during construction would likely be buried under dirt and debris, and/or, (2) losses may be masked by natural fluctuations in numbers of individuals. Although mortality of individuals is difficult to document, the level of take of this species was determined as follows: An estimated 110.6 acres of potential buffer habitat is presumed to be taken by development activities allowed under RGP-86.

Effect of the take

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to result in jeopardy to the species. The amount of take is for **presumed occupied** habitat and is small when compared to potential habitat that will remain in conservation units and mitigation banks, both of which will eventually be restored to more suitable habitat and managed in perpetuity. The amount of take is also for buffer habitat only; no take is given for potential breeding ponds themselves. No critical habitat has been designated for the flatwoods salamander; therefore none will be affected.

Reasonable and prudent measures

The Service believes the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize take of flatwoods salamanders.

1. All applicants for development projects will receive information about flatwoods salamander habitat.
2. Future development proposals will include a verification that the ponds on the site have been evaluated for their suitability as flatwoods salamander breeding ponds, as described in the Terms and Conditions.
3. Future owners of the conservation units will receive information about the flatwoods salamander Conservation Measures of RGP-86.

Terms and conditions

In order to be exempt from the prohibitions of section 9 of the Endangered Species Act, the Corps and applicants for RGP-86 must comply with the following Terms and Conditions, which implement the reasonable and prudent measures, described above. These Terms and Conditions are non-discretionary.

1. The Conservation Measures as described in the BA and in the proposed action section of this BO will be implemented.

2. The 5-year review and renewal process will provide an evaluation of salamander effects and conservation.
3. As part of the pre-application process for RGP-86, project sites will be assessed using the *Flatwoods Salamander Pre-Application Evaluation* (Appendix IV). This requirement is addressed in Special Condition 19.a (8) of the permit.
4. As Special Condition 13.d of RGP-86, sale or transfer of conservation units requires that a copy of RGP-86 and this biological opinion be provided to the new owner.

CONSERVATION RECOMMENDATIONS FOR FLATWOODS SALAMANDERS

Section 7(a)(1) of the Endangered Species Act (Act) directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The following conservation recommendations will be implemented if possible:

1. The Corps recognizes that a joint effort is underway to develop a predictive model to determine habitat suitability for flatwoods salamander. The research to develop the model has been ongoing for 2 years and requires another year for completion. To the extent it is available for use, the Corps and the St. Joe Company should apply the model to the project area.
2. The Corps and the St. Joe Company should participate in conservation planning for telephus spurge in the RGP action area.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

TELEPHUS SPURGE

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes the biology and ecology of telephus spurge. The Service uses this information to assess whether a Federal action is likely to jeopardize the continued existence of the species. The Environmental Baseline summarizes information on status and trends of the species specifically within the action area. These summaries provide a foundation for the Service's assessment of the effects of the proposed action, as presented in the Effects of Action section, and to make the Conservation Recommendations listed at the end of this opinion.

Telephus spurge was listed as a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). The telephus spurge was designated as threatened in the Federal Register, May 8, 1992 (57 FR 19813-19819) and became effective on June 8, 1992. No critical habitat has been designated for this species. This species is endemic to Bay, Franklin, and Gulf counties, Florida. It is threatened by habitat degradation due to conversion of habitat to pine plantations with accompanying mechanical destruction and eventual shading, as well as real estate development within its habitat. Use of herbicides within powerline right-of-ways may also adversely affect telephus spurge. A recovery plan was approved on June 22, 1994 (USFWS 1994).

Species description

Telephus spurge is a perennial herb with a stout storage root and numerous, erect stems to 1 foot tall. Stems and leaves are smooth and fleshy with milky sap. The leaves are alternate, 1-2 inches long, without leaf stalks, obovate to oblanceolate, usually over 1 cm wide at the widest part, with maroon midribs and margins. The species flowers from April through July with flowers that are reddish-green cyathia (cup-like structures). It produces one female flower and several male flowers on short stalks, surrounded by 4-5 minute, petal-like glands. The fruit is a 3-lobed capsule. Naturally occurring telephus spurge is found in a variety of habitat types including pine savannas and wet prairies to sandhills, scrubby and mesic flatwoods, and coastal scrub on low sand ridges within 4 miles of the Gulf of Mexico (Chafin 2000, WilsonMiller 2004). Biologists from Florida Natural Areas Inventory (FNAI) and WilsonMiller have documented populations of telephus spurge persisting under powerlines, pine plantations, and remnant pine flatwoods and coastal scrub (WilsonMiller 2004). Botanists at Historic Bok Sanctuary have had minimal success with greenhouse propagation by transplanting individual plants (Cheryl Peterson, personal communication, September 21, 2004).

Status and distribution

When the USFWS listed telephus spurge, there were 22 known locations of this species. Since listing, the number of known extant telephus spurge locations increased from 22 to approximately 42 known locations due to additional survey work (Moranz, et.al., 2001; ERC 2004). However, several locations may now be extirpated.

There are currently 41 occurrences of telephus spurge documented in the Florida Natural Areas Inventory database (Sept 2004). Thirty sites (FNAI 1, 3, 4, 6, 10-19, 23-25, 27-34, 36-39, 41) are concentrated in a 28 square mile area east and south of the town of Port St. Joe in Gulf County; however, FNAI 1, 10, and 17 are believed to be extirpated. Outside the main concentration area, three sites (FNAI 7, 8, and 9) are found 40 miles west in Bay County. FNAI 9 is believed extirpated also. Two sites (FNAI 26, 35) were documented 20 miles east in Franklin County but are both now believed extirpated due to development. Six sites (FNAI 2, 5, 20, 21, 22, 40) were scattered to the east of the main concentration, but FNAI 2 is now believed to be extirpated. Twelve occurrences (FNAI 3, 18, 24, 25, 28, 29, 30, 31, 32, 33, 36, and 41) within the main area of concentration are protected on the St. Joseph State Buffer Preserve

(SJBP). The SJBP sites range mostly from 3-30 in plant numbers with a few ranging from 30-100 and one with numbers in the 1000's. The remaining sites are on private lands with most having from 0-50 plants, a few having 50-300 plants, and 4 sites having plant numbers in the 1000's. Plant numbers from most sites in the 2001 survey have been reduced compared to 1988 survey data. This is attributed mostly to conversion to pine plantations or development as well as the exclusion of fire. No plants were found at seven sites during recent surveys, but it is difficult to say whether the plants are actually extirpated or were simply not visible due to the absence of recent fire or other disturbance.

Appropriate management is occurring on the SJBP and has created a positive stimulus for telephus spurge. cursory surveys from a recent site visit (August 2004) by USFWS biologists as well as discussions with staff from SJBP lead us to believe that the SJBP houses the largest and best managed populations of telephus spurge to date.

The telephus spurge occurrence records in the proposed North Glades project area are documented as FNAI 7 and 8. Originally located in 1988, surveyors documented approximately 200 plants at each site. Upon more specific surveys, the applicant's contractors located approximately 17,250 plants within a 6.43 acre area. Based on individual plant count data, this is the second largest population documented to date and is located in the western most extent of the species range since FNAI 9 is believed extirpated.

The North Glades applicant has conducted additional surveys within the RGP-86 Conservation Units in Bay County, Florida, and within the BPMB. As a result, one new population of telephus spurge containing over 200 plants was located in the BPMB and on adjacent lands that have no conservation designation. These 200 plants within BPMP will be managed and monitored in conjunction with the existing management requirements of the RGP-86 permit. We refer to this site as FNAI 42, the designation it will be given once data is entered.

The Service's recovery plan for telephus spurge states a goal of 15 populations of telephus spurge that are distributed throughout the species' historical range and that are adequately managed and protected before the species can be delisted (USFWS 1994). To apply this criterion, we would have to determine how many populations exist. The number of occurrences is greater than the number of populations because more than one occurrence may be part of the same population. We estimate that St. Joe Buffer Preserve's 12 locations equate to 3 populations. Bay County sites located on Panama City Beach (FNAI 7 and 8) are one population, and FNAI 42 will be a separate population (once there is a complete build out within the RGP-86 permitted area). Due to the extensive area covered by the RGP-86 permit and associated mitigation bank areas, not all suitable habitat has been surveyed throughout the RGP-86 area nor the mitigation bank areas, but the potential for locating additional telephus spurge sites seems fairly high.

ENVIRONMENTAL BASELINE

Under Section 7(a)(2) of the Act, when considering the effects of the action on federally listed species, we are required to take into consideration the environmental baseline. The

environmental baseline includes past and ongoing natural factors and past and present impacts from all Federal, State, or private actions and other activities in the action area (50 CFR 402.02), including Federal actions in the area that have already undergone Section 7 consultation and the impacts from State and private actions that are contemporaneous with the consultation in progress.

Status of the Species Within the Action Area

This revision of the original BO focuses specifically on the North Glades development. The original BO identified several federally listed species known or presumed to occur within the project boundary. At the time it was determined that plant surveys within the RGP-86 project area were limited considering the size of the project area. A conservation measure incorporated into the permit stipulated that all impacts to telephus spurge would be avoided and that consultation would be re-initiated if impacts could be avoided. Since completion of the original BO, additional surveys for telephus spurge have occurred within the RGP-86 permit boundaries. This resulted in the location of one additional site of telephus spurge referred to above as FNAI 42. Also during that time, a landowner proposed the North Glades development project that would impact telephus spurge at FNAI 7 and 8. Upon realization that the North Glades development would adversely impact the telephus spurge, the Corps re-initiated consultation with the Service and will continue to do so should additional sites containing telephus spurge be located and impacted by future development plans within the RGP-86 permit area.

The proposed North Glades project area consists of 66.96 acres. Of this, 6.43 acres contains approximately 17,250 telephus spurge plants. The applicant estimates that 4.10 acres and approximately 10,425 plants will be adversely impacted by the proposed development. The remaining 2.33 acres with approximately 6,825 plants will be managed and conserved through a perpetual conservation easement. It is unlikely that if the population were left without management in its current location that it would persist over time due to habitat loss and degradation. There are no other Federal actions ongoing or proposed for the action area at the present time.

Factors Affecting Species Environment Within the Action Area

This analysis describes factors affecting the environment of the species in the action area. The baseline includes State, local, Tribal, and private actions within the action area already affecting the species or that will occur contemporaneously with the proposed action and would affect the environment of the telephus spurge. Unrelated Federal actions affecting the telephus spurge that have completed formal or informal consultation are also part of the environmental baseline, as are Federal and other actions within the action area that benefit the telephus spurge.

RGP-86 was cooperatively developed by several State and Federal agencies to address the cumulative effects of existing and anticipated development pressures within a fast growing region of the Florida panhandle. The area addressed by the permit is approximately 47,480 acres in southwest Bay County and southeast Walton County. Approximately 90 percent of the property is presently in silviculture (forestry) management and is owned by the St. Joe Company.

Current forestry practices are now giving way to more lucrative residential and commercial developments for which the RGP-86 permit was intended.

Several development projects have occurred or are proposed in the vicinity of telephus spurge sites FNAI 7 and 8. These include Hombre Golf Club, Wingate Motel, Bay Medical Center, Sonny's Bar-B-Q, Beckrich Office Complex, "Alf Coleman," Highlands West, and Home Depot. One of these sites, Wingate Motel, is known to have telephus spurge that will likely be impacted by the proposed project. Another project, Home Depot, was recently completed prior to telephus spurge being documented on the periphery. It is likely that plants were destroyed by the construction of businesses and access roads associated with Home Depot.

Within the RGP area, approximately 10,665 acres of uplands and wetlands will be designated as Conservation Units. These areas will be removed from development potential and industrial forestry practices. They will eventually be restored in accordance with specific prescriptions for wildlife management that focus on listed species. Restoration and management of two wetland mitigation banks will secure for conservation two large, strategically placed parcels totaling approximately 7,700 acres. The previous land use of the banks is industrial forestry. It was intended for these mitigation banks to assist in the recovery of several federally listed species, including telephus spurge. The majority of the BPMB is of the soil types suitable to telephus spurge.

Telephus spurge sites FNAI 7 and 8 occur in an area proposed for a development project that would be permitted under RGP-86. FNAI site 42 is located in the BPMB and adjacent lands to the south of the bank boundary. Surveys for telephus spurge were conducted in 15 different locations within the Conservation Unit areas of the RGP (ERC, 2004). No additional populations have been located but due to the amount of habitat covered under the RGP-86 permit and the availability of suitable habitat, we believe that additional telephus spurge locations may exist. The Corps will continue to re-initiate consultation if the species is located prior to development. Active management within the mitigation banks and the Conservation Unit areas will improve the habitat for telephus spurge.

EFFECTS OF THE ACTION

Direct Effects

An estimated count of 10,425 plants of telephus spurge will be lost due to the proposed project, with a corresponding loss of habitat (4.10 acres). However, viability of the remaining North Glades telephus spurge population (6,825 plants over 2.33 acres) in the action area will be maintained and managed.

Indirect Effects

The applicant owns the remaining portion of the population and has agreed to place it into a conservation easement and manage it, so the population is not subject to direct impacts from future development projects. However, given the location of the population and the proposed development, this population will be isolated from any other natural habitat thereby reducing the

chance for natural expansion or rescue effect should this population be inadvertently disturbed. This site will be managed in as natural a state as possible given that the location will become completely surrounded by urban development (highways, restaurants, commercial stores, etc.).

Private activities in the action area that may adversely impact the species indirectly include human trampling, increased exotic species invasion and competition, increased edge effect (i.e., increased sunlight, increased temperature), contaminant impacts from parking lot and highway runoff, as well as the proposed management attempts such as mowing and exotic species control.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require a separate consultation pursuant to section 7 of the Act.

Specifically for the North Glades project, the 6,825 plants located on the remaining 2.33 acres within the conservation easement area could potentially be impacted by future development plans. The applicant has agreed to protect and manage appropriately this remaining 2.33 acres of the telephus spurge habitat and population into perpetuity, therefore no other State, tribal, local, or private actions are reasonably certain to occur at this particular site that would affect the telephus spurge.

Future actions within the RGP boundary will include industrial, commercial, and private residential development, which in turn could lead to further fragmentation, fire suppression and/or direct impacts to unknown, yet existing, populations of telephus spurge. Additional evaluation of telephus spurge habitat will occur on a project-by project basis using the procedures described in Appendix III.

CONCLUSION

Transplanting endangered or threatened plant species from project impact areas, while minimizing impacts to individuals, is generally not recommended. The intent of the Act is to protect the ecosystems upon which these federally listed species depend. Thus, protecting habitat is considered to be a key factor for ensuring conservation of listed species. In this case, even if the entire plant population on North Glades was protected from direct impacts, the long-term plans for the surrounding area will eventually see this population further fragmented and eventually isolated from all natural corridors. This project will involve transplanting of telephus spurge individuals to a protected site that has yet to be identified, and will also include the long-term commitment of active management and monitoring of the parent population within the North Glades conservation easement. At a minimum, we will learn whether transplanting telephus spurge is a viable option to be used for future unavoidable impacts to the species. At

most, we will create a new population that resides in a more natural setting conducive for long-term protection, management and viability.

The USFWS has set a goal of 15 populations of telephus spurge that are distributed throughout the species' historical range and that are adequately managed and protected before the species can be delisted (USFWS 1994). Currently three centrally located populations are protected in the St. Joe Buffer Preserve. The total number of locations of this plant is not considered a limiting factor toward recovery of the species; rather, it is the protection of populations that is limiting the species' recovery. The Conservation Measures provided by the applicant will increase the number of protected populations from three to five or possibly, six. This includes the three on the SJB, the North Glades population (FNAI 7 and 8), the BPMB population (FNAI 42) and possibly an additional population depending on placement and the results from the translocation efforts. The location of the transplanted plants will determine whether they will be considered a new population.

After reviewing the current status of telephus spurge, the environmental baseline for the action area, the effects of the proposed development, the cumulative effects, and the proposed conservation measures, it is our biological opinion that the proposed development is not likely to jeopardize the continued existence of telephus spurge. No critical habitat has been designated for this species; therefore none will be affected.

CONSERVATION RECOMMENDATIONS FOR TELEPHUS SPURGE

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid the adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We request that the following conservation recommendations be implemented.

1. Place the translocation study area more than 3 kilometers from other known populations if connected by natural habitat or about 1 kilometer if permanently unsuitable habitat is in between the populations. If the translocation is deemed successful, the transplanted population would count as an additional protected population and will aid in reaching the recovery goal of 15 protected populations.
2. Develop in cooperation with USFWS a long-term conservation strategy for telephus spurge on St. Joe Company lands in Bay and Gulf counties.

In order for us to be kept informed about actions that minimize or avoid adverse effects or that benefit listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in this biological opinion. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

HC/hc/kh/c:BO kathy'sfinal.doc

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WilsonMiller

TO: Hildreth Cooper, USFWS
Gail Carmody, USFWS
Don Hambrick, USACE

FROM: Ann Redmond and Trina Mitchell

CC: Dave Tillis, Thomas Estes, St. Joe Company

SUBJECT: *Euphorbia telephioides* (Telephus Spurge) Populations in the Action and Project Area

DATE: April 30, 2004

On March 18, Hildreth Cooper informed WilsonMiller that the Service is concerned about the presence of telephus spurge populations in the Action and Project Areas. Patty Kelly, U.S. Fish and Wildlife Service (USFWS), had raised some questions about the impacts of the RGP on the species. Following the Biological Assessment of January 2004, a more detailed discussion of the telephus spurge has occurred. The content is related below.

The Telephus spurge was first listed in 1992 (USFWS 1994). Based on vouchered specimens, this plant is an endemic species that occurs in Bay, Gulf, and Franklin Counties, Florida (Institute for Systematic Botany 2002). The plant occurs from Panama City Beach east to the Ochlockonee River (USFWS 1994). It has been recorded in 41 locations, nearly half of which are on public land (Map 1).

All known occurrences of Telephus spurge are on sites within 4 miles of the Gulf of Mexico (USFWS 1994). Numerous populations are protected on St. Joseph Bay State Buffer Preserve and adjacent tracts of land (SJBBP); many occurrences are on private timberlands and utility right-of-ways (Chafin 2000, FNAI 2003, Hilsenbeck 2004, Willson 2004). Ed and Lisa Keppner have searched for the telephus spurge in Bay County and have found none (Keppner 2004). Hilsenbeck (2004) believes that the spurge's listing as a G1/S1 plant should be downgraded based on the abundance of the species in the SJBBP area.

Populations in Action Area

Two populations of Telephus spurge (*Euphorbia telephioides*) have been documented outside the Action Area, but near the Project Area, and one has been documented within the Project Area (FNAI 2003, 2004; Chafin 2004; Kindell 2004; WilsonMiller 2004)(Map 2). FNAI (2003) element occurrence (EO) data indicate that during the 2001 survey, no plants were observed in population EUPHTELE*0009 outside the Project Area (Table 1). The other two populations were re-confirmed in 2001 (Table 1), including the one within the Project Area.

WilsonMiller, Inc., resurveyed for the population within the Project Area (EUPHTELE*0007) on April 21, 2004, and found numerous individuals along US 98 within an area approximately 0.5 mile long (Map 3). Individuals were observed within the "beauty strip," a narrow strip (about 20 feet wide) of longleaf pine-false rosemary-saw palmetto habitat located on the north side of US 98, between the highway and the slash pine plantation.

Table 1. Recorded Locations of Telephus Spurge in Bay County, Florida

Location	Last Observation	EO Data	EO Data	FNAI Map Label
Project Area	2004-04-21	2004-04-21. In a ~0.5-mile-long, 20-ft-wide strip along the north side of U.S.98. 2001-08-01. Now only on north side of road (PNDKIN02FLUS). 1988-08-08: 1.9 MI W OF JCT US98 AND US98 BYP; BOTH SIDES OF ROAD.	2004-04-21. More than 600 plants observed by WilsonMiller ecologists in the "beauty strip" of longleaf pine, wiregrass, false rosemary, saw palmetto, and Sporobolus floridana. 2003-09-26: no plants seen in survey of north side of road - habitat intact; narrow strip of flatwoods between US98 to south and titi/baygall to north; mostly shrubby (Ilex glabra, I. coriacea) with a few patches of wiregrass (PNDJOH01FLUS); 2001-08-01: 100+ plants seen. Etiolating in dense duff, about 10% of them in fruit or flower. Most plants are small, with only a few leaves. (PNDKIN02FLUS). 1988-08-08: 200+, FLOWERING, FRUITING IN LEAF; NICE POPULATION.	EUPHTELE*0007
Outside Project Area, South side of US Highway 98	2001-08-01	2001-08-01: Directions given in this field in 1988 do not match where EO is mapped in GIS database. 1988-08-08: 0.7 MI E OF 30D ON ALT 30, S SIDE OF ROAD.	2001-08-01: Approximately 30 plants seen only within road right-of way, at edge of the flatwoods. All plants were small, and about 10 of them had fruits and flowers, (PNDKIN02FLUS) 1988-08-08: 200, FLOWERING AND FRUITING.	EUPHTELE*0008
Outside Project Area, south of US Highway 98 on CR30H	1988-08-23	1988-08-23: 0.2 MI S OF US 98 BYP ON CR 30H, E SIDE.	2001-08-01: no plants seen, possibly due to very dense vegetation. (PNDKIN02FLUS). 1988-08-23: 200+ COMMON IN OPEN AREAS, IN LEAF, FRUIT, FLOWER	EUPHTELE*0009

Source: WilsonMiller 2004; FNAI 2003, 2004.

Additional populations of *Telephus spurge* may be located within the Project Area west of the area indicated on Map 2, in cleared or recently planted areas, along roads, or along the edges of pine plantations.

Species Habitat Requirements

This species occurs in dry habitats along the Gulf coast on both sides of the Apalachicola River (USFWS 1994). This species occurs in longleaf pine savannas, scrubby and mesic flatwoods, and coastal scrub on low sand ridges near the Gulf of Mexico (Chafin 2000). The habitats for the population reconfirmed by Wilson Miller and for those recorded in the FNAI 2003 data are under power lines, in natural pinelands, and in remnant longleaf pine-saw palmetto-rosemary/wiregrass flatwoods. Hilsenbeck (2004) has observed the *Telephus spurge* in a wider variety of habitats in the SJBBP area than have been previously noted, from seasonally wet prairies to sandhills. In the wet prairies it co-occurred with *Rhynchospora oligantha* and a variety of sedges.

Habitat Conditions within the Project Area

Suitable habitat for *Telephus spurge* within the Project Area is almost entirely in planted pine and thus is typically in poor to very poor condition. However, the habitat in which the EUPHTELE*0007 population occurs is remnant longleaf pine-saw palmetto-rosemary/wiregrass flatwoods in a long, narrow strip along the north side of U.S. 98 (Map 2). This area is poor to good quality, lower quality resulting primarily from fire suppression.

Soils for the easternmost two populations are mapped as Leon Sand surrounded by Pottsburg Sand. Soils in the western population are mapped as Pamlico-Dorovan and Pottsburg Sand, although it occurs next to Leon Sand and it is unlikely that the spurge would occur in the wet Pamlico-Dorovan soils. These same types of soils complexes occur in the Breakfast Point Peninsula Conservation Unit and the Breakfast Point Mitigation Bank (Map 4; NRCS 1984).

Silviculture-associated activities that have been detrimental to this species include bedding, dense shading, and fire suppression (USFWS 1994). Coastal real estate and road development in the vicinity of Panama City Beach are known to have destroyed *Telephus spurge* habitat (USFWS 1994). Suitable habitat may already be protected where it occurs under power lines; however, herbicide use in these areas is a concern. Cooper (2004b) indicated that USFWS staff thought the EUPHTELE*0009 population may have been destroyed by the recent Pier Park development, but this site is 2.9 miles east of the Pier Park site and has not yet been cleared or developed.

Effects of the Proposed Action

A "may affect, not likely to adversely affect" determination was made for *Telephus spurge* in the Biological Assessment.

Where suitable habitat occurs under planted pine, it probably has been substantially degraded; where habitat occurs in the "beauty strip" and in power line and road right-of-ways, it likely has been somewhat protected and maintained. Power line right-of-ways and, to a lesser extent, road right-of-ways will continue to be somewhat protected and

maintained as suitable habitat under the Proposed Action. One of the two populations verified in 2001 occurred in road right-of way; the other two populations (one verified and one not verified in 2001) occurred in longleaf-palmetto flatwoods.

Direct and indirect beneficial effects associated with the Proposed Action on potentially suitable habitat within the Project Area include the immediate preservation and eventual restoration of uplands within the conservation units and immediate protection and beginning restoration within the Devil's Swamp and Breakfast Point Mitigation Banks.

Potentially suitable habitat may be negatively affected by eventual construction of roads, residential communities, and other developments. Negative effects would likely include loss of potential habitat within the Project Area, outside the conservation units.

General Conservation Measures of RGP 86

The Applicant will implement methods recommended by USFWS (1994) in suitable habitat in the conservation units and in the mitigation banks. Suitable habitats include sandhills, scrubby and mesic flatwoods, and powerline right-of-ways through these habitats.

- Reduction of canopy without compacting, mixing, and/or rutting soils or destroying ground cover;
- Burning appropriately, primarily during the growing season (generally April through September) and depending on habitat. For instance, natural fire regime in sandhills is more frequent than in scrub (2 to 5 years in sandhills; catastrophic fire every 20 to 80 years in scrub [FNAI and FDNR 1990]);
- Substituting mowing for use of herbicides;
- Preventing vehicles from driving through easily damaged scrub habitats.

Specific Conservation Measures for Telephus Spurge

Further discussion with Hildreth Cooper of the USFWS about the Telephus spurge population resulted in the drafting of this memorandum, which is intended to provide draft language for a conservation measure to be added to the biological opinion. Proposed language for this conservation measure follows:

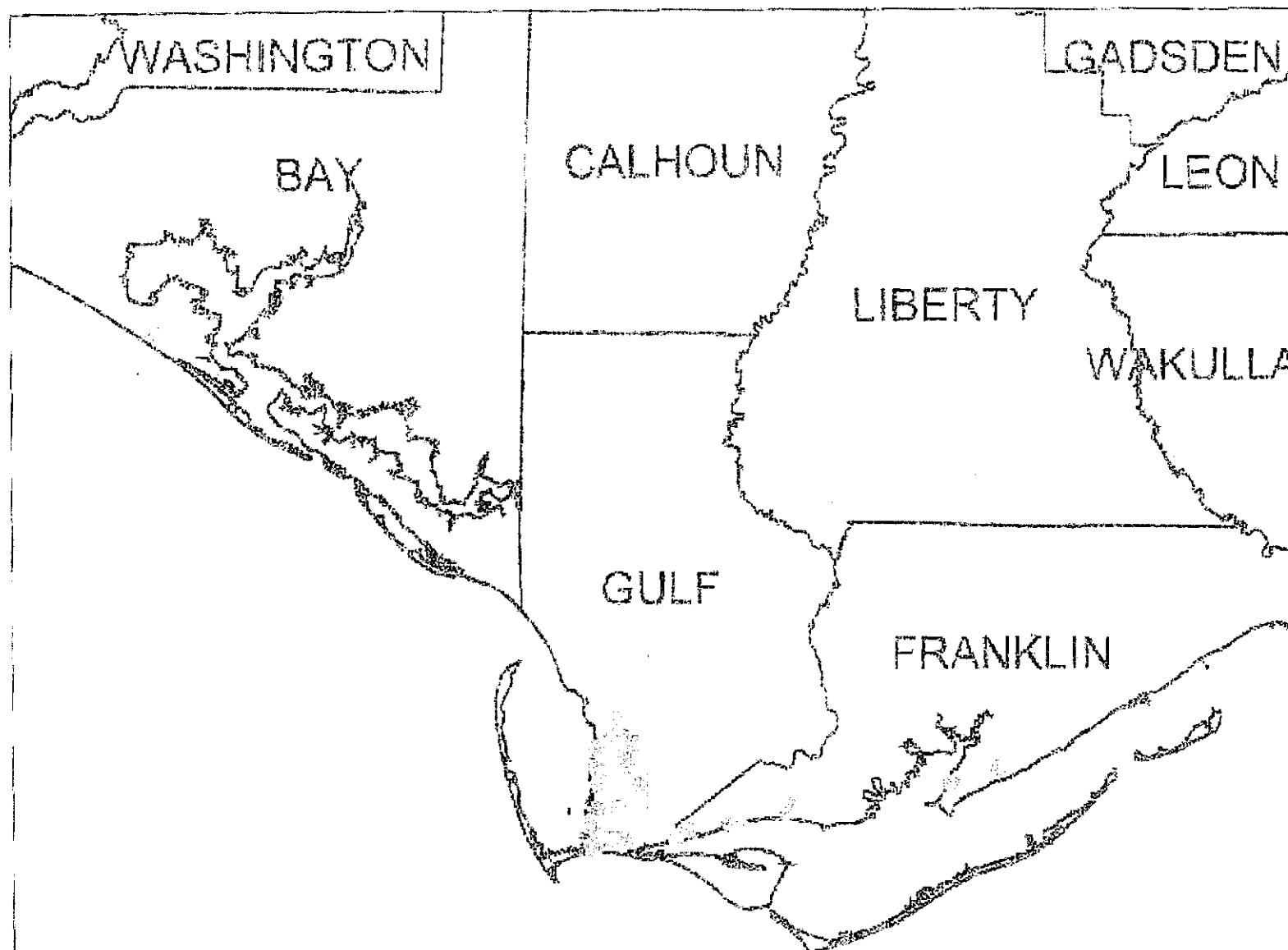
If the Applicant proposes a project that would impact the telephus spurge population indicated on Map 3 (WilsonMiller Observations of Telephus Spurge), impacts to this population should be avoided. If the proposed project cannot avoid impacts to this telephus spurge population, then re-initiation of consultation may be required. Consultation will take into consideration potential transplanting of individuals that would be impacted by a proposed project. Those individuals may be transplanted to appropriate areas of the Breakfast Point Mitigation Bank.

To support this process, the specific location of this population (WilsonMiller Observations) is provided on Map 3 and on Figure 5 of the

Biological Opinion (attached), and will also be recorded in the St. Joe Company's internal real estate database no later than May 1, 2004.

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Map 1

Locations of
Recorded Population of
Telephus Spurge
(*Euphorbia telephoides*)

Legend

FNAI Species Points

Disclaimer:
This version was produced using GIS data
provided by various sources that may include
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local agencies. Data provided by other sources
are not warranted by FNAI and for the purpose of
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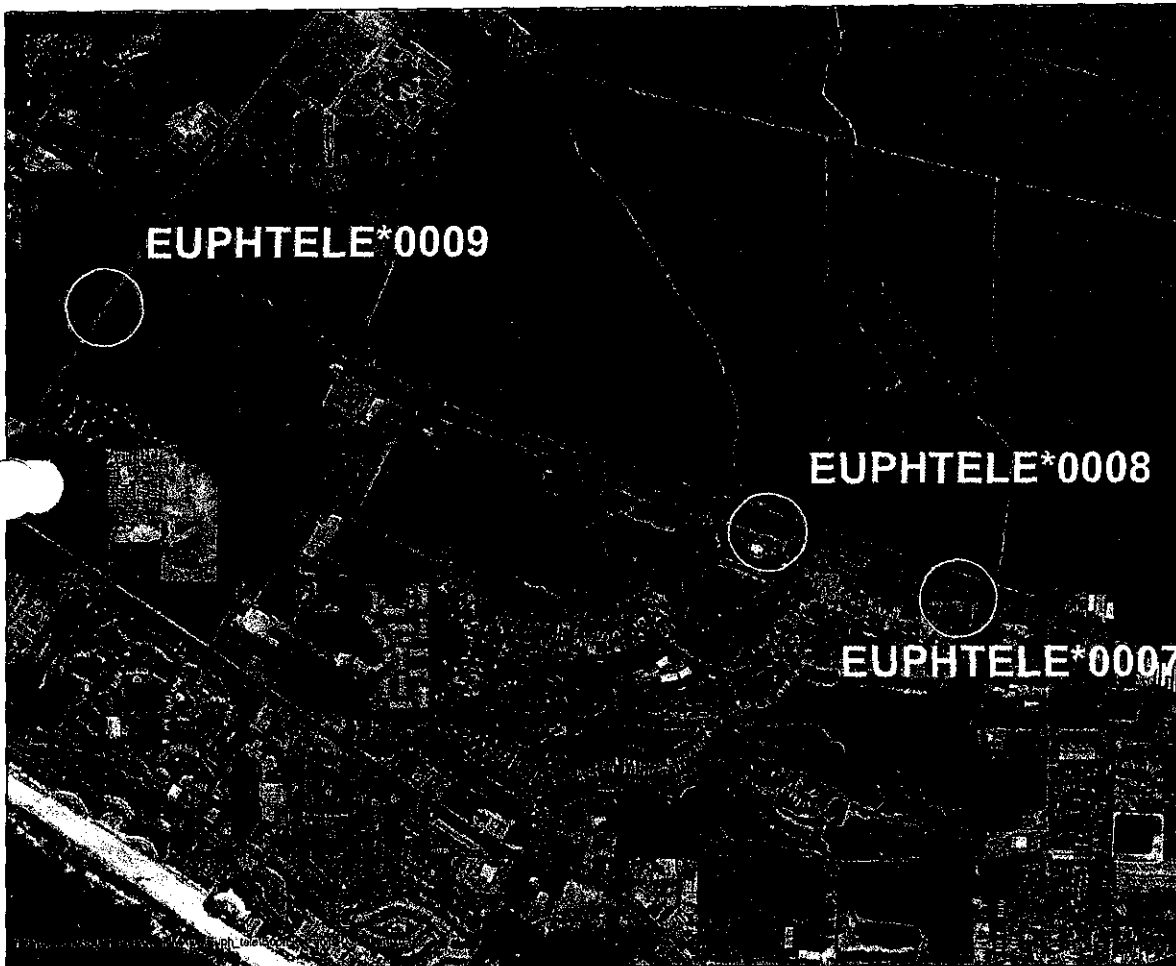
Map Date
12/12/04



0 4.5 9 18 Miles

Wildlife




Florida Natural Heritage Program



Map 2

**Locations of
Recorded Populations of
Telephus Spurge
(*Euphorbia telephioides*)
within the West Bay
to East Walton RGP
(on 2003 FDOT Aerials)**

Legend

-  RGP Area (Including Tidal Soils)
-  Breakfast Point
-  FNAI Points for
Euphorbia telephioides

EUPHTELE*0007 FNAI Map Label for
Occurrence Record

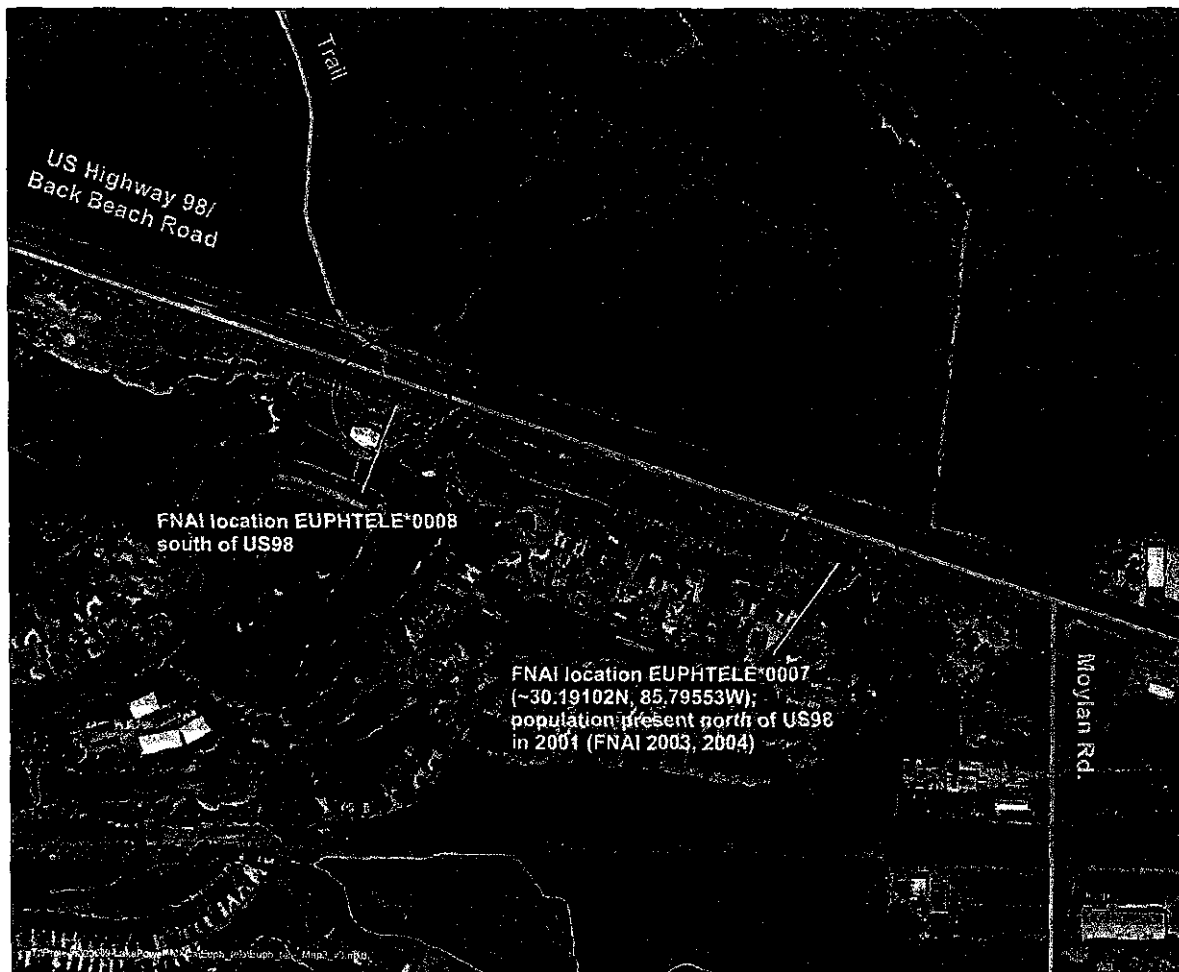
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This exhibit was prepared utilizing GIS data
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local agencies. Data provided by other sources
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jurisdictional determination, true site search,
property appraisal, survey, or for zoning verification.

Map Date:
03/22/04



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Miles

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Map 3

**Observed Population of
Telephus Spurge
(*Euphorbia telephioides*)
within the West Bay
to East Walton RGP**

Legend

- WilsonMiller Observations
of Telephus Spurge
- FNAI Telephus Spurge
location EUPHTELE*0007
- RGP Area
- Roads

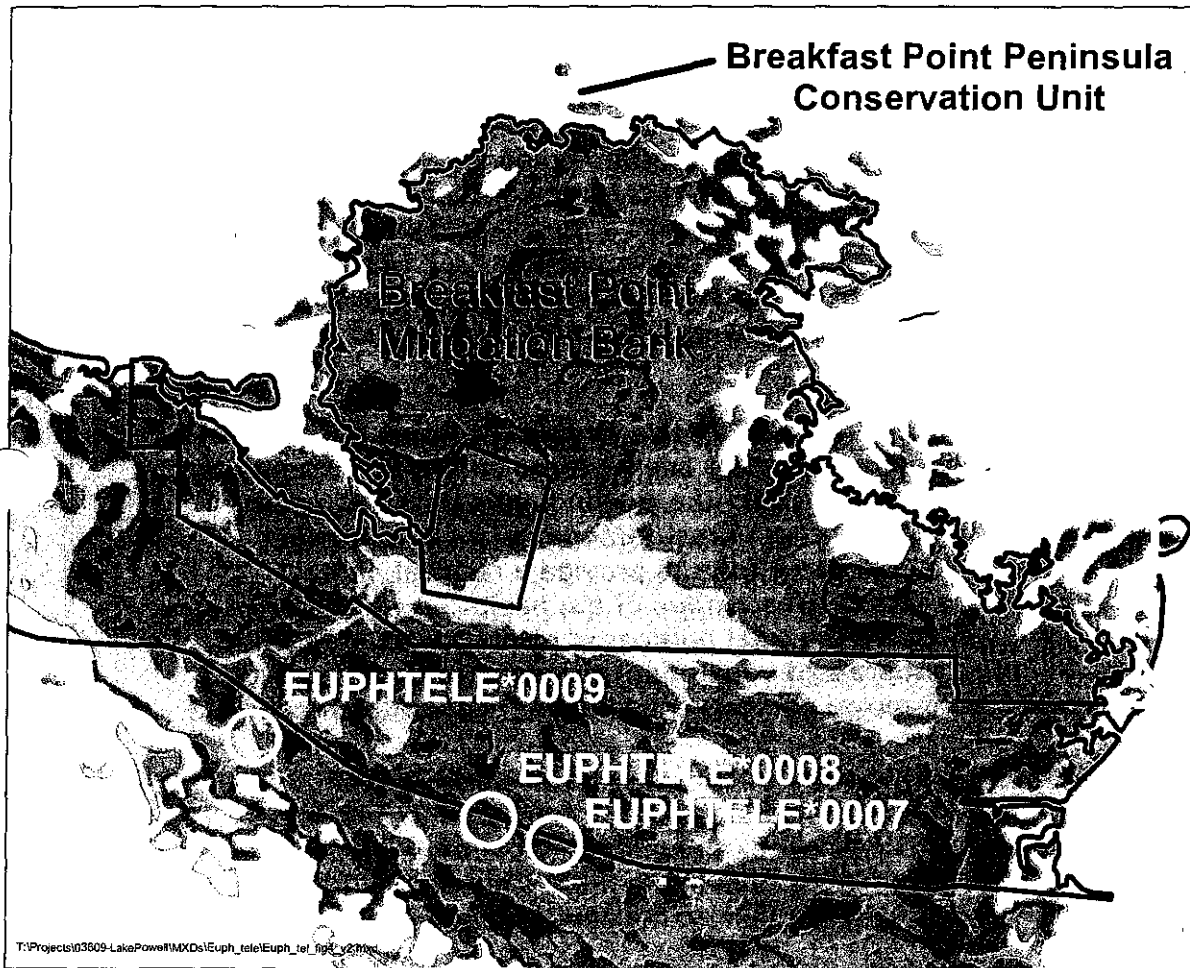
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informational determination, true life search,
property appraisal, survey, or for zoning verification.

Map Date:
04/2/04



0 150 300 600
Feet

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Map 4

**Locations of
Recorded Populations of
Telephus Spurge
on NRCS Soils Data**

Legend

FNAI Points for Telephus Spurge
EUPHTELE*0007 Map Label ID for FNAI
Points

- ☐ RGP Area
- ☐ Breakfast Point Mitigation Bank
- ☐ Breakfast Point Peninsula Conservation Unit

NRCS Soil Types

- ☐ LEON SAND
- ☐ PAMLICO-DOROVAN COMPLEX
- ☐ POTTSEBURG SAND
- ☐ RUTLEGE SAND

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information. This map is for informational purposes
only and should not be substituted for a wetland
jurisdictional determination, true site search,
property appraisal, survey, or for zoning verification.

Map Date:
05/08/04



0 0.3 0.6 1.2
Miles

Wilson Miller
New Directions In Planning, Design & Engineering

**Recommendations for the necessary actions regarding *E. telephioides*
At the Glades North site Bay County, Florida**

The following is a summary of the actions ERC Tallahassee has completed to satisfy the components of the USFWS document titled ***Guidance on completion of consultation for *E. telephioides* (ET)***, provided by Hildreth Cooper (see Attachment A). The structure of the summary below follows that found in the USFWS document.

1) Brief description of proposed action:

Preserve and restore ET habitat in the conservation easement of the Glades North site. A large, viable population has been located in the proposed conservation easement associated with Glades North, this will afford long term protection of ET and provide a monitoring plan to assess successful restoration and appropriate response of ET to restoration activities. This is an experimental restoration that will combine knowledge of natural history with a mechanical woody vegetation removal schedule that is designed to mimic periodic fires. This is the most pragmatic approach to preservation of an existing population in situ near the Glades North development and urban build out. (See Attachment B1)

Preserve and restore ET habitat in the Breakfast Point Mitigation Bank. A large, viable population has been located on the BPMB lands and will be managed in conjunction with the existing mitigation instrument with an emphasis for the successful restoration of plant communities known to contain ET. With our efforts to provide a restoration and monitoring plan to assess the restoration of the habitat in which the ET is currently found, we expect the total number of plants to increase (with the reduction in fire suppressed vegetation) through the use of selective logging - vegetation removal and prescribed burns. (See Attachment B2)

Limited transplantation study of no more than 500 plants. A plan to locate and transfer ET that will be negatively affected by the impact sites on the Glades North site has been created. 5 plots will be set up in the BPMB and each will receive 100 plants. These will be quantitatively monitored for 5 years to assess their overall survival and viability. (See Attachment C)

2) Description of direct impact area should include: (most already provided in "Attachment L" of the permit application package)

- **Acreage of project area**
- **Acreage of plant population**
- **Acreage of plant population to be impacted**
- **Approx. number of plants found within project**
- **Approx. number of plants to be "taken" from site**

- **GIS layer with points of occurrence documenting plant locations**

Acreage of project area*:	66.96 acres
Acreage of plant population*:	6.43 acres
Acreage of plant population to be impacted**:	4.10 acres
Approx. number of plants found in project area***:	17,250
Approx. number of plants to be "taken" from project area***:	10,425
(* See Figure 1)	
(** See Figure 2)	
(***) See Figure 3)	

3) Proposed actions to minimize effects to *Euphorbia telephioides*:

- **Management plan for remaining population, including area to east of North Glades (i.e. burning/mowing commitments, invasive control, keep natural, etc)**
 - Long term protection commitment of population (conservation easement, Bay County Conservancy, St. Joe conservation unit, etc)
 - Monitoring plan—set up plots beginning prior to construction for pre-impact comparison, number of years client will monitor plots with justification of timeline, annual report on monitoring results with caveat to adjust management should the population decline below an acceptable % (support % with available literature if possible) over documented timeframe (support with literature if possible).
- **Monitoring plan for translocation site to include the following:**
 - # of plots to be monitored;
 - number of years client will monitor plots with justification of timeline;
 - annual report on monitoring results with caveat to adjust management should the population decline below an acceptable % (support with available literature if possible) over documented timeframe (support with literature if possible);
 - Description/supporting info for introduction site, i.e. similar habitat community type, same

- soil type, distance from parent population (FWS prefers site to be 1 km or > from known populations), map, acreage of site (needs to be sufficient size to support a viable population (200+ plants, unless better literature available to support);**
- **Plan for movement of plants, time of year, when to complete movement, who to move;**
- **GIS layer/map with location of translocated site and specific plant locations;**
- **How/when will movement of population to introduced site be deemed a success?**

Management plan(s) for remaining populations, two separate reports detail how the population in the conservation easement will be restored, monitored and managed (Attachment B1) and the other report details the restoration, monitoring and management of the population within BPMB (Attachment B2). Finally, a Monitoring plan for the translocation of *E. telephioides* is included in a report called: Guidelines for transplantation methodology and long-term monitoring of relocated *Euphorbia telephioides* (Attachment C).

4) Provide (include map/GIS layer) survey data results (positive or negative) from other locations throughout the RGP boundary and the species range which are not reported by common data sources such as Florida Natural Areas Inventory (FNAI) data source:

Gis data for other locations of *Euphorbia telephioides* not reported by common data sources are included as separate electronic attachments to this document labeled:

Etelephiodes_GN.shp
Etelephiodes_BPMA.shp

5) If possible, discuss proposed projects which might impact other documented *Euphorbia telephioides* sites (impact meaning management, development, etc):

Projects along the Highway 98 corridor may inadvertently effect existing *Euphorbia telephioides* populations, however we believe we have crafted a regional solution to maintaining a population in Bay County through protection and management of the North Glades and Breakfast Point Mitigation Bank populations

E. telephoides recommendations



**Figure 1 - Acreage of Glades
North project area, Proposed
Conservation Easement and
E. telephoides population
within project area**

Legend

- Proposed Site Plan
 - Project Area - 66.86 acres
 - Plant Population Area - 6.43 acres
 - Conservation Easement - 2.19 acres
- 2003 B&W Aerial DOQQ

N
1:3,600

JPB_082704

 Ecological Resource
Consultants, Inc.



Figure 2 - Acreage of Glades North project area, Proposed Conservation Easement, proposed impacts/no impacts to *E. telephioides* population within project area

Legend

- Proposed Site Plan
 - Project Area - 86.96 acres
 - Plant Impact Area - 4.10 acres
 - Plant No Impact Area - 2.33 acres
 - Conservation Easement - 2.10 acres
- 2003 B&W Aerial DOQQ

N
1:2,500

JPEL_000004

Ecological Resource Consultants, Inc.



Figure 3 - Acreage of Glades North project area, Proposed Conservation Easement, with proposed impacts/no impacts to *E. telephoides* population within project area

Legend

- Proposed Site Plan
- Project Area - 66.96 acres
- Conservation Easement - 2.19 acres
- Impacted Plants ~10,433 plants
- Impacted Plants ~6618 plants
- Non-Impacted Plants ~6618 plants
- Non-Impacted Plants
- 2003 B&W Aerial DOQQ

N
1:3,800

JPB 09/04

ERC Ecological Resource Consultants, Inc.

Attachment A

USFWS document titled **Guidance on completion of consultation for *E. telephioides*** (ET), provided by Hildreth Cooper

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DRAFT

FWS PCFO 8-3-04

Guidance on completion of consultation for *Euphorbia telephioides* at North Glades:

COE provides letter to FWS requesting initiation of formal section 7 consultation

Provide to FWS a Biological Evaluation including the following components:

- 1) Brief description of proposed action
- 2) Description of direct impact area should include: (most already provided in "Attachment L" of the permit application package)
 - Acreage of project area
 - Acreage of plant population
 - Acreage of plant population to be impacted
 - Approx. number of plants found within project
 - Approx. number of plants to be "taken" from site
 - GIS layer with points of occurrence documenting plant locations
- 3) Proposed actions to minimize effects to *Euphorbia telephioides*:
 - Management plan for remaining population, including area to east of North Glades (i.e. burning/mowing commitments, invasive control, keep natural, etc)
 - Long term protection commitment of population (conservation easement, Bay County Conservancy, St. Joe conservation unit, etc)
 - Monitoring plan—set up plots beginning prior to construction for pre-impact comparison, number of years client will monitor plots with justification of timeline, annual report on monitoring results with caveat to adjust management should the population decline below an acceptable % (support % with available literature if possible) over documented timeframe (support with literature if possible).
 - Monitoring plan for translocation site to include the following:
 - # of plots to be monitored;
 - number of years client will monitor plots with justification of timeline;
 - annual report on monitoring results with caveat to adjust management should the population decline below an acceptable % (support with available literature if possible) over documented timeframe (support with literature if possible);
 - Description/supporting info for introduction site, i.e. similar habitat community type, same soil type, distance from parent population (FWS prefers site to be 1 km or > from known populations), map, acreage of site (needs to be sufficient size to support a viable population (200+ plants, unless better literature available to support);
 - Plan for movement of plants, time of year, when to complete movement, who to move;
 - GIS layer/map with location of translocated site and specific plant locations;
 - How/when will movement of population to introduced site be deemed a success?
- 4) Provide (include map/GIS layer) survey data results (positive or negative) from other locations throughout the RGP boundary and the species range which are not reported by common data sources such as Florida Natural Areas Inventory (FNAI) data source.
- 5) If possible, discuss proposed projects which might impact other documented *Euphorbia telephioides* sites (impact meaning management, development, etc).

Attachment B

B1: Monitoring Plan for the Conservation Easement Population

The number of pages in this document is 10.

As per guidance on completion of consultation for *Euphorbia telephioides* at North Glades, USFSW document.

3. Proposed actions to minimize effects to *Euphorbia telephioides*.

a. Long term Management plan for existing (in situ) population inside of North Glades site on lands to be designated as a conservation easement. Includes Long term protection commitment of population on conservation lands and monitoring plan. This population is located at least 1 kilometer (0.62 miles) from the existing population on the Breakfast Point Mitigation Bank site.

1. Monitoring Plan for *Euphorbia telephioides* to be used at the reference site and the restoration site of the conservation easement at the North Glades site, Bay county, Florida.

Introduction

Why develop monitoring procedures?

Monitoring procedures or protocols are detailed study plans that explain how the methodology is to be carried out and how the data are to be collected, managed, analyzed and reported, and are very important components of quality assurance for natural resource restoration and monitoring programs. Protocols are necessary to ensure that changes detected by monitoring are actually occurring in nature and not simply a result of measurements taken by different people or in slightly different ways.

Developing a monitoring procedure requires that the life history of the organism in question is known. In general, little is known about the biology of *Euphorbia telephioides* (ET) but we are beginning to understand more about the distribution and populations of this plant. For example, we know that ET is an herbaceous perennial that sprouts each year from underground stems and produces flowers in late spring and has ripened fruit (capsules) by mid summer. ET continue to flower throughout the growing season. A measurement of plants toward the end of the growing season will give an indication as to their ability to reproduce, i.e. count individuals in flower and fruit. Plants begin to turn yellow and senesce by later summer/early fall. Plants were observed with leaves and stems in late October of 2004. All known populations are found in a relatively small area of Florida and in some locations the populations could be described as locally abundant. We also know that this species grows in a range of primarily upland plant communities, all of which would have historically burned with a 2-5 year fire frequency and all of which are dominated by a canopy of *Pinus palustris* (longleaf pine) and/or *P. elliotii* (slash pine) with a groundcover that contains wiregrass (Clewett, 1997). ET grows in variety of dry to mesic sites, all with sandy soils and all sites are located within a few miles of the coastline of the Gulf of Mexico. These general factors will guide the restoration strategy and guide our selection of reference sites.

It's important to get consensus on the scope and design since changing these is time consuming and costly once you begin the field work and measurements.

Designing natural resource monitoring of rare plants is something you want to get right the first time, since it's difficult and costly to make major changes after you collected the data as per a particular methodology. Monitoring involves systematic data collection that provides information on the progress of the restoration project

and allows the monitoring practitioners to determine if the project goals have been met. A restoration project involving ET should be monitored until it appears to be healthy with appropriate reproduction and viability. Ideally a reference site should be used for collection of base-line data but due to the lack of management in areas where this plant is currently known to occur, it may not be possible to locate an ideal reference site. The reference site should be similar to restoration site in terms of soils, plant community composition, fire regime, topographic and physiographic location, hydrology, etc. (*fide* Hildreth Cooper, USFWS, personal communication, August 11, 2004).

What are the measurements of success?

From the results of monitoring it can be determined if the restored population is successfully growing in similar conditions to those of the reference site. For this particular study, success would entail a restored, healthy ET populations in appropriate habitat. A healthy population for the purpose of this study is one in which the plants within the restoration site are determined to be viable and self-perpetuating. Excellent viability according to USFWS would mean a population of 200+ individuals in a natural, appropriate landscape (site has been well managed and burned, i.e. no fire suppression), with indication of sexual reproduction, and with intact associated native vegetation that displays appropriate growth form (*fide* Hildreth Cooper, USFWS, personal communication, August 11, 2004).

This is not an outline for the study of population dynamics since a study of this magnitude would take decades of intensive quantitative measurements of the following: germination rates, seed and seedling survival, pollination biology, herbivory, individual survivorship, mortality, and reproductive success of individual plants using molecular techniques. This study seeks to measure the long term prognosis/success of a restored TE site through the use of quantitative measurements in quadrats over a five (5) year period and comparison to a reference site.

Monitoring

Ecologic restoration of plant communities is dynamic and is expected to go through various series or successional stages until a particular ecologic target is achieved. As such, periodic evaluation regarding the attainment of target conditions requires monitoring of sample areas to measure the effectiveness of the restoration techniques and the appropriate response of ET to the changes in its immediate environment. The annual monitoring will provide quantitative and qualitative information that can be objectively analyzed. The results of this analysis will allow for interpretation and conclusions from the data. These results will then be reported and if it is deemed that the current methodology is not producing the appropriate ecological response and the population is in decline, the methodology will be rethought and adaptive management can be applied as needed.

Ecological monitoring or sampling techniques described in this attachment will allow for the objective measure of species composition, species richness, as well as the proportional distribution (frequency, density and coverage) of lifeforms (groundcover, shrubs and trees). The experimental design for sampling of populations that allows for objective conclusions is derived from widespread and generally accepted procedures/protocol found in Field and Laboratory Methods for General Ecology (Brower, et.al.,1990; Barbour, Burk and Pitts, 1980). The

distribution, fecundity and overall health of the vegetation on this site is expected to respond favorable to the physical removal of primarily woody/fire suppressed vegetation by mechanical means. In order to track the changes in community structure, species composition and species diversity, we propose to use a transect along which plots will be sampled for the cover, density and frequency of groundcover/shrubs and trees. In areas where trees display a random distribution, i.e. outside of planted pine areas, point quarter sampling will be used to measure the canopy.

Plants will be identified using vascular plant identification manuals appropriate for this area of Florida (Clewett, 1985; Godfrey, 1988; Hall, 1978; Tobe, et. al. 1995 and Wunderlin 1998).

Extensive observations of similar ecosystems and studies were utilized in the development of the protocols (Burks, K.C. 1982; Burks, K.C. 1995; Clewett, 1985a; Ewel, 1990; FNAI, 1990; Frost, et. al. 1986; Glitzenstein, et. al., 1995; Harper, 1914; Anglin, 2004 personal communication; Burks, 2004 personal communication). In addition to using quantitative methods through such means as transects and plots, qualitative observations on the overall health and succession of plant assemblages will be noted by photography and notes during quantitative measurements. Invasive exotics will also be noted during all sampling on site. All vegetative sampling will be done once annually in summer (July-September) to ensure that ET can be measured in flower and in fruit.

Protocols

Vegetative monitoring will be carried out pre-restoration in August of 2004 and once annually thereafter for five (5) years. Two types of monitoring will be carried out, quantitative and qualitative. The quantitative monitoring/sampling will be through the use of transects, plots and point quarter method. The proposed location of quantitative transect are shown on a forthcoming map. The qualitative monitoring will record the overall health and notes on lifeforms of associated vegetation as well as any sightings of invasive exotics in the quadrats and in the immediate surrounding area.

An annual report will include the results of the quantitative and qualitative measurements/observations. This summary will include interpretation and drawing conclusions from the data and how these findings are instructive of the overall progress toward the restoration goals for ET. This critical thinking will allow for evaluation, readjustment and interpretation of the restoration methodology and techniques. Adaptive management will be used to adjust and revise management activities accordingly. Photographs taken during the sampling will visually support written observations and overall trends toward restoration goals.

Quantitative Plant Sampling

1. Groundcover, shrubs and subcanopy.

Definitions of vegetation lifeforms.

a. **Groundcover** is the herbaceous or weakly woody plant layer closest to the ground, typically less than 1.5 m tall and if weakly woody the plants have a diameter of less than 2.54 cm (1 in) at 1.5 m height.

b. **Shrub layer** are woody plants typically less than 1.5 meter tall but could grow as tall as 3 m. Stems are always woody and plants may have several stems from a common root system. No stem diameter requirement, although typically will be less than 2.54 cm (1 in) in diameter at 1.5 m.

c. **Subcanopy layer** are woody plants 3 m tall or taller with a stem 10 cm (4 in) diameter or less at breast height (1.5 m). Typically subcanopy plants have a single stem. Young trees or saplings with slender stems are often included in this layer.

If space allows, the quantitative sampling will be designed along a 50 meter transect that will be placed in a polygon of a particular plant assemblage that is known to contain ET. If the site cannot accommodate a single, linear, unbroken 50 meter transect, a modification to the standard transect approach will be used by breaking up the transect such so as to create several short transects that when combined would equal 50 meters. If transect will not yield a representative sample of the ET population then the location of each plot will be determined either by a systematic method such as a grid or by a standard random procedure such as using a randomly selected point as the center of the plot. The overall goal being to sample a transect that could be described as a representative sample within a known population of ET. These representative samples will measure the proportional distribution of groundcover, shrub, subcanopy and tree species. Trees are not the subject of this sampling technique but will be noted if they occur in the plots described below. Tree sampling is a separate measurement, see trees sampling below. Each sample plot will be located along five points/locations, with each point distributed every ten meters (these will be georeferenced and marked by insertion of an iron piece at each point) along the transect. At each point three, 1 m x 1 m plots or square quadrats will be measured and sampled. These permanent plots will be georeferenced and marked by insertion of an iron piece at each corner for future location with a metal detector. The plots will be distributed in a linear fashion perpendicular to the 50 meter transect. Each transect will thus have five groups of three 1m x 1m plots for a total of 15 separate plots. All groundcover coverage will be measured using the following scale: 3%, 6%, 12%, 25%, 50%, 75%, 100%. This scale was developed for use with a square, 1 m x 1 m plot. Beginning with the total area of each plot, i.e. 100% coverage, the proportional relationship of each successive subdivision of the square is calculated by simply halving each portion, such that you end up with areas of the following percentage: 50, 25, 12.5, 6.23, 3.1, etc. These subdivisions can be estimated and consistently applied by training field botanists to visualize each species as it relates to the overall plot and fitting its coverage into the coverage classes above.

The cover, density, frequency and shrub (if any) height will be recorded in each plot. Shrub height measure will use the following scale: 1 less than 0.5m; 2=0.5-2m; 3=2-5m; 4=5-10m; 5=10m or greater.

2. Trees. Trees in this sampling technique include all woody plants with a main trunk greater than 10 cm (4 in) diameter at breast height (breast height = 1.5 m) and have a stem at least 3 m tall. Basal areas of trees are determined from trunk circumference measured 1.5 m above the ground, generally a flexible tapeline is used with circumference units converted into diameter units for ease of use. A direct measurement of foliage coverage is difficult in trees, but the basal area generally is accepted by the scientific community as proportional to coverage.

This site consists of a relatively natural stand of upland pine forest. Point quarter sampling will be used, five points along the 50 m transect (each 10 m apart) will be used as the center for four compass directions (N, S, E, W), which divide the sampling site into four quarters or quadrants. Every 10 m of the transect will be georeferenced and marked with a metal piece to aid in relocation for annual monitoring. In each quadrant, the distance in meters to the center point of the nearest individual tree, regardless of species will be measured. Only one tree per quadrant is measured so that a total of four plants per point are measured. The tree is identified and the dbh is recorded as diameter expressed in cm.

Photography

The photographic specifications used in conjunction with the quantitative plant sampling protocol will include photographing the sampling site at either end of the 50 meter transect line. The photographs will include as much view as is typical for a standard 35 mm digital camera. Close up photos of important features may also be collected along the transects. All labeling of photographs in final reports will include the date of photo, photographer, location and figure or photo number. Electronic storage of photographs should be backed up for future reference.

Baseline Monitoring

Before ecological restoration activities are begun, the monitoring plots will be sampled. This data will be used for future comparison and will include the following information for each plot or quadrant.

1. General site conditions on, around and in the vicinity of the transects and plots.
2. Evidence of past land use activities will be noted, especially those that might effect plant distribution, composition and abundance.
3. The proportional distribution of groundcover, shrub and tree species using the protocol of sampling outlined in quantitative plant sampling, above.
4. Presence of invasive exotics in or adjacent to plots.

Analyzing the Data

The annual monitoring will provide quantitative and qualitative information that can be objectively analyzed. The results of this analysis will allow for interpretation and conclusions from the data. These results will then be reported and evaluated. If it is determined that the restoration methodology is not producing the appropriate ecological response as this relates to the success for this species, the methodology will be re-evaluated.

Reports and Record Keeping

Reports including all observations, raw and processed data, digital photographs will be compiled into a report this will be available to agency staff by the end of November of each year. Annual monitoring will in July of each year. A copy of all records, in addition to those submitted, will be maintained at the offices of Ecological Resource Consultants, ERC.

Success

This restoration project is expected to be successful in restoring the pre-existing plant communities and increasing the health of the ET population or at least show a strong trend toward this effect on the site. The measurement for increased health of ET will be quantitative, i.e. measuring coverage of various life forms of associated

species, measuring coverage and numbers of individuals, with notes on those that display increased flowering, fruiting inside the plots, overall species richness and invasive exotic coverage; and subjective, general appearance of plants and general aspect of the population overall, evidence of invasive exotic encroachment. A complete list of plants species (species richness) typical for each sampling area (restoration site and possibly a reference site) will be included in the report and new plants added to as they are discovered in the sample sites.

Reference Site

If it can be located, an appropriate reference community will be selected from well managed public lands that contain a healthy, viable population of ET. The same sampling technique as described in the quantitative plant sampling above, will be used to collect relevant data that will be used for comparison. Target conditions of the restoration site may be modified in lieu of new information collected from reference communities. Target community type and realistic goals for this may need revision with the approval by the authorizing agencies.

Restoration of the ET site within the North Glades conservation easement site

The procedure for restoration at the North Glades conservation easement (NGCE) is unique as it is designed to mimic fire. It is our understanding that the use of fire will not be an option at the NGCE site. Because of this, an experimental approach has been developed that involves using fire ecology principles without the direct use of fire which can be unpredictable and would not be a pragmatic choice for use in the proposed urban buildout. We propose that mowing of the site at least once a year in March be carried out within the NGCE. By mechanically removing annual growth a simulation of fire may be achieved. The longleaf pines would be maintained in what would look to that average observer as a "park like" aspect, i.e. groundcover should be generally kept under 0.5 meter, including woody species such as gallberry (*Ilex glabra*) and fetterbush (*Lyonia* spp.).

From our understanding of ET natural history we have observed that this species is found in areas that would have burned at least once every 2-5 years. In addition, by examination of historic aerials, ET typically grew in fire created, open landscapes with widely scattered trees. At the NGCE site, the judicious use of mechanical means to reduce woody growth would mimic the effects of fire on woody growth found in the groundcover/low shrub layer and subcanopy. Mechanical means would not mimic all aspects of fire but it would provide part of the physical environment that will enhance ET growth and reproduction. We have observed that the easement along highway 98 has been mowed for many years, inhibiting the formation of unnaturally dense vegetation that is typically found in fire suppressed pine dominated communities. This mechanical removal of groundcover and shrub vegetation (basically all woody vegetation except for the existing canopy) has unintentionally enhanced the ET population on the Glades North site. It is hoped that the proposed restoration involving the removal of woody vegetation will ultimately result to the same or similar success in regard to the enhancement of the ET population in the NGCE area. Because there is always the chance for colonization by unwanted species, all invasive exotics will be removed/controlled as per the permit.

Removal and maintenance of woody vegetation

As already stated, the definition of trees in this report are those woody vascular plants that include subcanopy and canopy woody plants with a main trunk greater than 10 cm (4 inches) at breast height and have stem greater than 3 meters tall. Lack of appropriate fire or mechanical removal of woody vegetation in the groundcover, shrub and subcanopy layers often results in an artificial landscape of native woody species that would have no historical equivalent reference. In many cases species such as *Ilex glabra*, *Ilex coriacea*, *Cyrilla racemiflora*, *Cliftonia monophylla*, *Magnolia virginiana*, etc. would only have reached the density and dominance that one encounters in fire suppressed landscapes in ecotones of wetlands and within wetlands in landscapes that would have historically burned once every 2-5 years. To further complicate this picture of the landscape, silvicultural activities have created a landscape of pine monoculture (in this case slash pine) planted on furrows. The restoration of such a landscape depends on many factors such as last site preparation date and age of planted pines, length of time without fire, mechanical thinning or removal of competing woody vegetation. The goal of restoration at the NGCE is to thin the pines to appropriate density and remove all inappropriate woody vegetation. A machine such as a gyrotrac that will not rut and significantly disturb the soils will be used to reduce the fire suppressed woody vegetation to wood chips. Trees and any other vegetation that should not be removed will be designated by appropriate flagging by ERC staff, all other woody vegetation will be maintained by cutting at or within 1-3 inches of the soil or duff surface. The cut woody stems are to be reduced to wood chips or into similarly small fragments. Wood chips should be distributed so as not to make large areas of thick deposits that might inhibit ET growth. If it is feasible removal of all the cut woody stems from the site would be beneficial to the ET.

The timeline for the restoration can be broken down into the following general sequence. After year 5, October of 2008, the woody vegetation will be removed by the current owner every other year in perpetuity, no further monitoring will be required after this time.

	Year				
	2004	2005	2006	2007	2008
Baseline Monitoring	August				
Selective Harvesting / Vegetation Removal	Oct.	Oct.	Oct.	Oct.	Oct.
Annual Monitoring		July	July	July	July
Annual Reporting	Nov.	Nov.	Nov.	Nov.	Nov.

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Attachment B

B2: Monitoring Plan for the Breakfast Point Population

As per guidance on completion of consultation for *Euphorbia telephioides* at North Glades, USFSW document.

3. Proposed actions to minimize effects to *Euphorbia telephioides*.

a. Long term Management plan for existing (in situ) population outside of Glades North site. Includes Long term protection commitment of population on conservation lands and monitoring plan. This population is located at least 1 kilometer (0.62 miles) from the existing population on the North Glades site.

1. Monitoring Plan for *Euphorbia telephioides* to be used at the reference site and the restoration site in the Breakfast Point Mitigation Bank, Bay county, Florida.

Introduction

Why develop monitoring procedures?

Monitoring procedures or protocols are detailed study plans that explain how the methodology is to be carried out and how the data are to be collected, managed, analyzed and reported, and are very important components of quality assurance for natural resource restoration and monitoring programs. Protocols are necessary to ensure that changes detected by monitoring are actually occurring in nature and not simply a result of measurements taken by different people or in slightly different ways.

Developing a monitoring procedure requires that the life history of the organism in question is known. In general, little is known about the biology of *Euphorbia telephioides* (ET) but we are beginning to understand more about the distribution and populations of this plant. For example, we know that ET is an herbaceous perennial that sprouts each year from underground stems and produces flowers in late spring (April) and has ripened fruit (capsules) by mid summer (June-July). ET continue to flower throughout the growing season. A measurement of plants toward the end of the growing season (July) will give an indication as to their ability to reproduce, i.e. count individuals in flower and fruit. All known populations are found in a relatively small area of Florida and in some locations the populations could be described as locally abundant. We also know that this species grows in a range of primarily upland plant communities, all of which would have historically burned with a 2-5 year fire frequency and all of which are dominated by a canopy of *Pinus palustris* (longleaf pine) and/or *P. elliottii* (slash pine) with a groundcover that contains wiregrass (Clewett, 1997). ET grows in variety of dry to mesic sites, all with sandy soils and all sites are located within a few miles of the coastline of the Gulf of Mexico. These general factors will guide the restoration strategy and guide our selection of reference sites.

It's important to get consensus on the scope and design since changing these is time consuming and costly once you begin the field work and measurements.

Designing natural resource monitoring of rare plants is something you want to get right the first time, since it's difficult and costly to make major changes after you collected the data as per a particular methodology.

Monitoring involves systematic data collection that provides information on the progress of the restoration project and allows the monitoring practitioners to determine if the project goals have been met. A restoration project involving ET should be monitored until it appears to be healthy with appropriate reproduction and viability. Ideally a reference site should be used for collection of base-line data but due to the lack of management in areas where this plant is currently known to occur, it may not be possible to locate an ideal reference site. The reference site should be similar to restoration site in terms of soils, plant community composition, fire regime, topographic and physiographic location, hydrology, etc. (*fide* Hildreth Cooper, USFWS, personal communication, August 11, 2004).

What are the measurements of success?

From the results of monitoring it can be determined if the restored population is successfully growing in similar conditions to those of the reference site. For this particular study, success would entail restored, healthy ET populations in appropriate habitat. A healthy population for the purpose of this study is one in which the plants within the restoration site are determined to be viable and self-perpetuating. Excellent viability according to Norden and Chafin, FNAI, 2003 and the USFWS (*fide* Hildreth Cooper, August 10, 2004) would mean a population of 200+ individuals in a natural, appropriate landscape (site has been well managed and burned, i.e. no fire suppression), with indication of sexual reproduction, and with intact associated native vegetation .

This is not an outline for the study of population dynamics since a study of this magnitude would take decades of intensive quantitative measurements of the following: germination rates, seed and seedling survival, pollination, herbivory, individual survivorship, mortality, and reproduction for individual plants. This study seeks to measure the long term prognosis/success of a restored TE site through the use of quantitative measurements in quadrats over a ten year period and comparison to a reference site.

Monitoring

Ecologic restoration of plant communities is dynamic and is expected to go through various successional stages until a particular ecologic target is achieved. As such, periodic evaluation regarding the attainment of target conditions requires monitoring of sample areas to measure the effectiveness of the restoration techniques and the appropriate response of ET to the changes in its immediate environment. The annual monitoring will provide quantitative and qualitative information that can be objectively analyzed. The results of this analysis will allow for interpretation and conclusions from the data. These results will then be reported and if it is deemed that the current methodology is not producing the appropriate ecological response and the population is in decline, the methodology will be rethought and adaptive management can be applied as needed.

Ecological monitoring or sampling techniques described in this attachment will allow for the objective measure of species composition, species richness, as well as the proportional distribution (frequency, density and coverage) of lifeforms (groundcover, shrubs and trees). The experimental design for sampling of populations that allows for objective conclusions is derived from widespread and generally accepted procedures/protocol found in Field and Laboratory Methods for General Ecology (Brower, et.al., 1990; Barbour, Burk and Pitts, 1980).

The distribution, fecundity and overall health of the vegetation on this site is expected to respond favorable to the proposed physical removal of primarily woody/fire suppressed vegetation by mechanical means and by prescribed fire. In order to track the changes in community structure, species composition and species diversity, we propose to use a transect along which plots will be sampled for the cover, density and frequency of groundcover/shrubs and trees. In areas where trees display a random distribution, i.e. outside of planted pine areas, point quarter sampling will be used to measure the canopy.

Plants will be identified using vascular plant identification manuals appropriate for this area of Florida (Clewel, 1985; Godfrey, 1988; Hall, 1978; Tobe, et. al. 1995 and Wunderlin 1998).

Extensive observations of similar ecosystems and studies were utilized in the development of the protocols (Burks, K.C. 1982; Burks, K.C. 1995; Clewell, 1985a; Ewel, 1990; FNAI, 1990; Frost, et. al. 1986; Glitzenstein, et. al., 1995; Harper, 1914; Anglin, 2004 personal communication; Burks, 2004 personal communication, Huffman, 2004, personal communication). In addition to using quantitative methods through such means as transects and plots, qualitative observations on the overall health and succession of plant assemblages will be noted by photography and notes during quantitative measurements. Invasive exotics will also be noted during all sampling on site. All vegetative sampling will be done once annually in summer (July-September) to ensure that ET will be reproducing, e.g. in flower or fruit.

Protocols

Vegetative monitoring will be carried out pre-restoration in August of 2004 and biannually thereafter for five (5) years. Two types of monitoring will be carried out, quantitative and qualitative. The quantitative monitoring/sampling will be through the use of transects, plots and point quarter method. The qualitative monitoring will record the species richness as well as any sightings of invasive exotics in the quadrats and in the immediate surrounding area.

An annual report will include the results of the quantitative and qualitative measurements/observations. This summary will include interpretation and drawing conclusions from the data and how these findings are instructive of the overall progress toward the restoration goals for ET. This critical thinking will allow for evaluation, readjustment and interpretation of the restoration methodology and techniques. Adaptive management will be used to adjust and revise management activities accordingly. Photographs taken during the sampling will visually support written observations and overall trends toward restoration goals.

Quantitative Plant Sampling

1. Groundcover, shrubs and subcanopy.

Definitions of vegetation lifeforms.

- a. **Groundcover** is the herbaceous or weakly woody plant layer closest to the ground, typically less than 1.5 m tall and if weakly woody the plants have a diameter of less than 2.54 cm (1 in) at 1.5 m height.
- b. **Shrub layer** are woody plants typically less than 1.5 meter tall but could grow as tall as 3 m. Stems are always woody and plants may have several stems from a common root system. No stem diameter requirement, although typically will be less than 2.54 cm (1 in) in diameter at 1.5 m.

c. **Subcanopy layer** are woody plants 3 m tall or taller with a stem 10 cm (4 in) diameter or less at breast height (1.5 m). Typically subcanopy plants have a single stem. Young trees or saplings with slender stems are often included in this layer.

If space allows, the quantitative sampling will be designed along a 50 meter transect that will be placed in a polygon of a particular plant assemblage that is known to contain ET. If the site cannot accommodate a single, linear, unbroken 50 meter transect, a modification to the standard transect approach will be used by breaking up the transect such so as to create several short transects that when combined would equal 50 meters. If transect will not yield a representative sample of the ET population then the location of each plot will be determined either by a systematic method such as a grid or by a standard random procedure such as using a randomly selected point as the center of the plot. The overall goal being to sample a transect that could be described as a representative sample within a known population of ET. These representative samples will measure the proportional distribution of groundcover, shrub, subcanopy and tree species. Trees are not the subject of this sampling technique but will be noted if they occur in the plots described below. Tree sampling is a separate measurement, see trees sampling below. Each sample plot will be located along five points/locations, with each point distributed every ten meters (these will be georeferenced and marked by insertion of an iron piece at each point) along the transect. At each point three, 1 m x 1 m plots or square quadrats will be measured and sampled. These permanent plots will be georeferenced and marked by insertion of an iron piece at each corner for future location with a metal detector. The plots will be distributed in a linear fashion perpendicular to the 50 meter transect. Each transect will thus have five groups of three 1m x 1m plots for a total of 15 separate plots. All groundcover coverage will be measured using the following scale: 3%, 6%, 12%, 25%, 50%, 75%, 100%. This scale was developed for use with a square, 1 m x 1 m plot. Beginning with the total area of each plot, i.e.100% coverage, the proportional relationship of each successive subdivision of the square is calculated by simply halving each portion, such that you end up with areas of the following percentage: 50, 25, 12.5, 6.25, 3.1, etc. These subdivisions can be estimated and consistently applied by training field botanists to visualize each species as it relates to the overall plot and fitting its coverage into the coverage classes above.

The cover, density, frequency and shrub (if any) height will be recorded in each plot. Shrub height measure will use the following scale: 1 less than 0.5m; 2=0.5-2m; 3=2-5m; 4=5-10m; 5=10m or greater.

Plots will be used to measure trees, each will be 10 m x 10 m. One plot will be randomly distributed at one point, chosen from the 5 points used to sample groundcover as described above, along the 50 meter transect. Each 10 m x 10 m plot will be georeferenced and marked by insertion of an iron piece at each corner for future location with a metal detector. The center of the plot will be located at the randomly chosen point along the 50 meter transect. In each plot the trees will be identified and the dbh will be recorded along with an estimate of the tree height using the following scale: 1=10m or less; 2=11-20m; 3=21-29m; 4=30m or greater. Density and cover can be calculated from measuring basal area in the methodology described above.

Photography

The photographic specifications used in conjunction with the quantitative plant sampling protocol will include photographing the sampling site at either end of the 50 meter transect line. The photographs will include as much view as is typical for a standard 35 mm digital camera. Close up photos of important features may also be collected along the transects. All labeling of photographs in final reports will include the date of photo, photographer, location and figure or photo number. Electronic storage of photographs should be backed up for future reference.

Baseline Monitoring

Before ecological restoration activities are begun, the monitoring plots will be sampled. This data will be used for future comparison and will include the following information for each plot or quadrant.

5. General site conditions on, around and in the vicinity of the transects and plots.
6. Evidence of past land use activities will be noted, especially those that might effect plant distribution, composition and abundance.
7. The proportional distribution of groundcover, shrub and tree species using the protocol of sampling outlined in quantitative plant sampling, above.
8. Presence of invasive exotics in or adjacent to plots.

Analyzing the Data

The once annual monitoring will provide quantitative and qualitative information that can be objectively analyzed. The results of this analysis will allow for interpretation and conclusions from the data. These results will then be reported and evaluated. If it is determined that the restoration methodology is not producing the appropriate ecological response as this relates to the success for this species, the methodology will be re-evaluated.

Reports and Record Keeping

Reports including all observations, raw and processed data, and digital photographs will be compiled into a report. Annual monitoring will occur in summer (July-September) of each year. A copy of all records, in addition to those submitted, will be maintained at the offices of Ecological Resource Consultants, ERC.

Success

This restoration project is expected to be successful in restoring the pre-existing plant communities and increasing the health of the ET population or at least show a strong trend toward this effect on the site. The measurement for increased health of ET will be quantitative, i.e. measuring coverage of various life forms of associated species, measuring coverage and numbers of ET individuals, with notes on those that display increased flowering, fruiting inside the plots, overall species richness and invasive exotic coverage; and subjective, general appearance of plants and general aspect of the population overall, evidence of invasive exotic encroachment. A complete list of plants species (species richness) typical for each sampling area (restoration site and possibly a reference site) will be included in the report and new plants added to as they are discovered in the sample sites.

Reference Site

If it can be located, an appropriate reference community will be selected from well managed public lands that contain a healthy, viable population of ET. The same sampling technique as described in the quantitative plant sampling above, will be used to collect relevant data that will be used for comparison. Target conditions of the restoration site may be modified in lieu of new information collected from reference communities. Target community type and realistic goals for this may need revision with the approval by the authorizing agencies.

Restoration of the ET site within the BPMB

The procedure for restoration follows that proposed for the regional general permit (RGP) for Breakfast Point Mitigation Bank. See the following for a download of this permit from the U.S. Army Corps of Engineers, Jacksonville, Florida.

http://www.saj.usace.army.mil/permit/permitting/general_permits/SAJ_86/SAJ86_TOC.htm

The timeline for the restoration can be broken down into the following general sequence. August 2004 obtain baseline data from restoration site in BPMB and reference site June-August 2005 controlled burn After the 2005 burn cycle, another burn cycle may be initiated after 2 years if appropriate amounts of vegetation/organic fuels have been produced, i.e. enough to carry a fire. This burn regime will be determined by the a qualified St. Joe forester (Kevin Smith) and in consultation with the qualified mitigation supervisor (John Tobe) as per the permit referenced above. All invasive exotics will be removed/controlled as per the permit.

The timeline for the restoration can be broken down into the following general sequence. After 2011 the site will no longer be managed by the mitigation bank sponsor and will most likely be managed in perpetuity by the State of Florida, no further monitoring will be required after November 2013.

	Year							
	2004	2005	2006	2007	2008	2009	2010	2011
Baseline Monitoring	August							
Prescribed Burn		April-July		April-July		April-July		April-July
Exotic Species Removal		All	All	All	All	All	All	
Annual Monitoring		July	April & June	July	July	July	July	July
Annual Reporting		Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.

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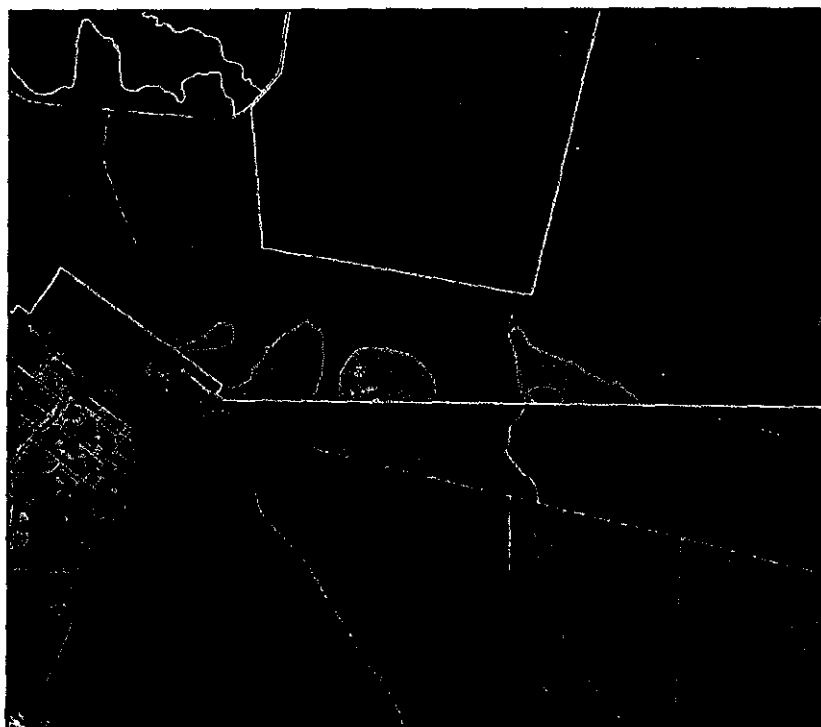


Figure 1 - E. Telephioides
found in the Breakfast Point
Mitigation Area (BPMA)

Legend

- Plant populations in BPMA
- Search Area BPMA
- Breakfast Point Mitigation Area
- 2003 B&W Aerial DOQQ

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Ecological Resource
Consultants, Inc.

Attachment C
Transplantation Methodology

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As per guidance on completion of consultation for *Euphorbia telephioides* at North Glades, USFSW document.

3. Proposed actions to minimize effects to *Euphorbia telephioides*.

a. Guidelines for transplantation methodology and long-term monitoring of relocated *Telephus Spurge*, *Euphorbia telephioides*.

I. Introduction

Why attempt to transplant *Euphorbia telephioides* (ET) from the Glades North site?

ET is a Florida endemic with a limited distribution in Gulf, Franklin and Bay counties. Because ET has been determined to be a species that is critically imperiled and in Florida it is considered to be imperil worldwide according to the Florida Natural Areas Inventory (see www.fnai.org). In addition, this species is considered threatened by the U. S. Endangered Species Act/U. S. Fish and Wildlife Service (USFWS). According to the link supplied by the USFWS (see www.natureserve.org), ET is known from 40 occurrences with total of fewer than 5,000 plants. Also published as a "natureserve conservation status factors", the global short term trend reports a "total number of plants known on private lands reduced from 1,000's in 1988 to 100's in 2001 survey". After some qualitative measurements of one known FNAI occurrence in Bay county and field inspections of some known and unknown populations in Gulf county, the information endorsed by the USFWS on the naturaserve site (as it pertains to the number of occurrences and total number of plants) is incorrect, see attachment L, A Preliminary Survey for *Euphorbia telephioides*, Telephus Spurge, unpublished report by Tobe, J, et. al., April 2004. It is the opinion of the author that there are currently more that 40 known populations and a greater number of individual plants than were reported in the 2001 survey. This begs the question as to why transplantation should be considered if another known population could be reinvigorated through a rigorous management plan. It is the author's assumption that transplantation is going to be considered for the population of ET in question and thoughts on this topic are the subject of this paper.

Relocation of rare plants (and animals) has always been controversial however most biologists agree that this is a pragmatic solution for populations of rare species that will be otherwise destroyed if not "rescued". In addition, translocation of existing plants is considered to be part of the recovery plan for ET, except that no one published any attempts at relocation of this species (Center for Plant Conservation, Missouri Botanical Garden, 1995; U.S. Fish and Wildlife Service, 1994).

Why develop transplantation methodologies and monitoring procedures?

Transplantation methodologies and monitoring procedures or protocols are detailed study plans that explain how the methodology is to be carried out and how the data are to be collected, managed, analyzed and reported, and are very important components of quality assurance for natural resource relocation and monitoring programs. Protocols are necessary to ensure that changes detected by monitoring are actually occurring in nature and not simply a result of measurements taken by different people or in slightly different ways.

Developing a transplantation methodology requires that a detailed life history of the organism is known and can be applied to a strategy for relocation.

In general, little is known about the biology of *Euphorbia telephioides* (ET) but we are beginning to understand more about the distribution and populations of this plant. For example, we know that ET is an herbaceous perennial that sprouts each year from underground stems and produces flowers in late spring and has ripened fruit (capsules) by mid summer. ET continues to flower throughout the growing season. A measurement of plants toward the end of the growing season will give an indication as to their ability to reproduce, i.e. count individuals in flower and fruit. All known populations are found in a relatively small area of Florida and in some locations the populations could be described as locally abundant. We also know that this species grows in a range of primarily upland plant communities, all of which would have historically burned with a 2-5 year fire frequency and all of which are dominated by a canopy of *Pinus palustris* (longleaf pine) and/or *P. elliotii* (slash pine) with a groundcover that contains wiregrass (Clewett, 1997). ET grows in variety of dry to mesic sites, all with sandy soils and all sites are located within a few miles of the coastline of the Gulf of Mexico. These general factors will guide the restoration strategy and guide our selection of reference sites.

It's important to get consensus on the scope and design since changing these is time consuming and costly once you begin the field work and measurements.

Designing natural resource monitoring of rare plants is something you want to get right the first time, since it's difficult and costly to make major changes after you collected the data as per a particular methodology. Monitoring involves systematic data collection that provides information on the progress of the transplantation/translocation project and allows the transplantation monitoring practitioners (e.g. ERC/USFWS staff) to determine if the project goals have been met. A transplantation/translocation project involving ET should be monitored until it appears mature and self-sustaining, which could take years or decades. Assessment of translocated plants will involve a comparison of adult survival and reproductive individuals between translocated plants and plants similarly measured in the reference site. Thus the monitoring of translocated plants will have to be paired with an "undisturbed" or at least an appropriately managed reference site. Ideally the reference site should be used for collection of base-line data. The reference site should be similar to translocation site in terms of soils, plant community composition, fire regime, topographic and physiographic location, hydrology, etc. (fide Hildreth Cooper, USFWS, personal communication, August 11, 2004).

Parameters to be measured in the translocation and reference site.

Quantitative plant monitoring of a both translocation and reference sites will include the following measurements for each vascular plant species identified in the sample quadrat: (1) density, (2) coverage, (3) frequency. The following are specific measurements to be made of ET in the quadrats: (1) number of reproductive plants (flowering or fruiting), (2) if it can be determined, the number of seedlings versus vegetative plants, (3) notes on the number of etiolated or stressed plants, (4) evidence of herbivory or any other gross morphological damage. This data will be collected once annually toward the end of the growth cycle. Sample timing should be worked out as much as is feasible with the burn management cycle. The sampling ranges above are preferred since this plant tends to go dormant in fall and unless a

summer burn or mechanical injury initiates new growth, the plant body is likely to be absent after November. The timing of the sampling will allow for the collection of population related data such as number of sprouts in a given area, how much the translocated population has been able to spread vegetatively and sexually, by measuring the total number of sprouts and seedlings in a given area.

What are the measurements of success?

From the results of monitoring it can be determined if the transplanted population is successfully growing in similar conditions to those of the reference site. For this particular study, success would entail the establishment of new, healthy plant populations in appropriate habitat. A healthy population for the purpose of this study is one in which the translocated plants are determined to be viable and self-perpetuating. Excellent viability according to Norden and Chafin, FNAI, 2003 and the USFWS (*fide* Hildreth Cooper, USFWS, personal communication, August 11, 2004), would mean a population of 200+ individuals in a natural, appropriate landscape (site has been well managed and burned, i.e. no fire suppression), with indication of sexual reproduction, and with intact associated native vegetation.

This is not an outline for the study of population dynamics since a study of this magnitude would take decades of intensive quantitative measurements of, for example, the following: germination rates, seed and seedling survival, pollination biology, herbivory, individual survivorship, mortality, and reproduction for individual plants. This study seeks to create a successful transplantation methodology and a means to measure the survivorship and make an estimate as to the long term prognosis/success of the transplants through the use of quantitative measurements in quadrats over a five (5) year period.

Selection of the site to be used for the transplants, i.e. the translocation site.

The translocation site is to be determined by more field work to locate a site that most closely resembles the Glades North site. Extant ET populations were discovered after a search of Breakfast Point Mitigation Bank (BPMB). Our search strategy was based on overlaying the published soil survey polygons on the 2004 DOQQ's and searching for the best aerial signatures. We have searched the bulk of these CU's and have determined that the ET does not occur in the areas we searched. As of August 11, 2004 we have located a population of over 200 plants within the Breakfast Point Mitigation Bank. This site is currently planted in slash pine and fire suppressed. If plants are to be transplanted, areas adjacent to this population would be appropriate sites as they would be within the 1 kilometer range as recommended by the recovery plans for rare plants.

Site preparation of recipient site prior to transplantation.

The recipient site will be prepared for reception of the donor plant material by removing excessive, fire suppressed woody vegetation mechanically or through a management plan that includes burning. In all cases the recipient site should have a management plan that includes controlled fire in a cycle that occurs every 2-5 years. And if at all possible burning should be done between, May-August.

If the site consists of fire suppressed planted pine, especially those in pine plantations, some thinning will probably be needed to prevent damaging crown fires.

The extent of thinning will be determined in a case by case basis. The intact groundcover should show appropriate response after burning, i.e. woody species may stump sprout but should have been burned to ground level and percent coverage greatly reduced.

II. Transplantation methodology

Selection of the thickened root/rhizome.

ET is an herbaceous perennial with thickened roots/rhizomes that move vertically and horizontally through the soil column and a deep taproot that is generally found vertically in the soil column. In a limited sample we found that the thickened roots could be located within the upper 6-14 inches (16-35 cm) of the soil surface, the tap root can extend to an undetermined depth. The thickened roots/rhizomes act as a storage organ much like the familiar tuber of a potato. These thickened roots/rhizomes are the organ of choice for producing more plants. Standard plant propagation techniques often involve dividing thickened roots as a means of asexual propagation. The deeper taproot might also be used, if it can be readily extracted. As of this time no known published reports are known for specific propagation techniques for ET. Propagation by seed production is another alternative but it is unlikely that the large number of seeds needed for a large scale study would be available. It is our proposal that those plants slated for destruction will be the source material for ET used for transplantation.

Within the development footprint for the Glades North site, we propose to locate and dig the thickened roots-rhizomes in early fall, most of the summer grown, above ground stems, will have disappeared since the plants will have entered fall/winter dormancy. Provisions to identify and relocate sufficient plant material will have to be made in late July-early August. In fall the thickened portions will have accumulated food reserves, typically in the form of starches and will have the greatest chance for transplantation survival as they will have the entire winter to adjust to the new soil environment. The final length of thickened rhizome to use in transplantation/translocation will be determined in the field. At this time we estimate a 6-12 inch (16-30 cm) section of the root can be collected and stored in a bag of moist sand for transport to a new location. Hundreds of root fragments can be stored for several days in a single large zip lock bag kept at 50 °F (10 °C). A large cooler with ice would easily handle up to 20 zip lock bags filled with root fragments. Thus up to 1,000+ root fragments could easily be stored and transported in a large, standard cooler.

Planting the collected roots or donor material.

After the appropriate recipient site has been selected and prepared. The transplantation/recipient sites will be selected and divided to produce a 1m x 1m grid pattern. Each 1m x 1m area will be considered a potential sample site. When a 1 m x 1 m plot or square quadrat is selected as a translocation site it will be georeferenced using a GPS and marked by insertion of an iron piece at each corner for future location with a metal detector, **see Figure 1**. From the grid described above, 5 random sample sites will be selected for the donor material. Careful attention to ecotones and microhabitats will be considered and reasonable scientific judgment will be rendered in the placement of all sample sites. Alternate sample sites will be randomly selected if the first choice is deemed inappropriate (i.e. a solid clump of saw palmetto, excessive rutting or a stump hole, etc.). Once the sample site has

been chosen, the 1m x 1m square will be subdivided into four quadrats. Each will receive 25 root/rhizome fragments for 100 root-rhizome sections in each 1m x 1m sample site; **see Figure 1.**

III. Baseline Monitoring

Before restorative and translocation activities that disrupt the landscape are begun, the plots to be monitored will be sampled. This data will be used for future comparison and will include the following information for each plot or quadrat.

9. General site conditions on, around and in the vicinity of the plots.
10. Evidence of past land use activities will be noted, especially those that might effect plant distribution, composition and abundance.
11. The proportional distribution of groundcover, shrub and tree species using the protocol of sampling outlined in quantitative plant sampling, below.
12. Presence of invasive exotics in or adjacent to plots.

In addition to the randomly selected sample site, eight, 1m x 1m plots will be configured such that each occupies and surrounds each of the sample sites, **see Figure 2.** Each of these 8 plots will have all vascular plants identified with their density, coverage with notes on non-vegetated areas. The reason for establishing these plots is to be able to measure any ET colonization of the immediate surroundings through the five (5) years of sampling. Thus we will be able to provide information on the progress of the transplantation/translocation project and determine if the project goals have been met. A transplantation/translocation project involving ET should be monitored until it appears mature and self-sustaining, which could take years or decades. Assessment of translocated plants will involve a comparison of adult survival, seed production, germination rates, seed survival, seedling survival, and growth rates between translocated plants and plants similarly measured in the reference sit.

For tree measurements, if the site has not been site prepped for silviculture, a standard 20 meter transect can be used to determine tree density. The placement of this transect can begin at the center of each sample site and extend from the center, northward for 10 meters, southward for 10 meters, basically on either side of the center of the plot in a north/south orientation. The point-quarter method can be used to determine tree density at 0 and 10 and 20 meters, **see Figure 3.** If site is currently a pine plantation or trees are evenly spaced a 10m x10m quadrat can be used to measure all trees within. To place this sample quadrat or plot use the center of the original sample plot and create a 10m x 10m quadrat, **see Figure 4.** In this latter case each pine within the quadrat will be measured at breast height to calculate the tree density based on basal diameter. See monitoring methodology below.

IV. Long Term Monitoring

All monitoring will continue for at least five (5) years. The quantitative sampling sites used for reference sites will be randomly selected from an appropriate landscape using the same methodology as described above from a known area of ET occurrence. Each 1m x 1m plots or square quadrat used as a reference will be georeferenced and marked by insertion of an iron piece at each corner for future location with a metal detector, **see Figure 1.** These representative samples will measure the proportional distribution of groundcover and shrubs. If trees have been planted in rows, simple measurements will determine the planting distances and

density. For additional information about groundcover, shrub and subcanopy monitoring see attachment B.

V. Photography

The photographic specifications used in conjunction with the quantitative plant sampling protocol will include photographing the sampling site by standing over the plot and including the 1mX1m sample area. The photographs will include as much view as is typical for a standard digital camera. Close up photos of important features may also be collected within the quadrats. No editing of photos will be used other than that used to manipulate photos for processing into formats suitable for report writing. All photos will be dated and georeferenced whenever possible. All labeling of photographs in final reports will include the date of photo, photographer, location and figure or photo number. Electronic storage of photographs will be saved for future reference.

VI. Analyzing the Data

The once annual monitoring will provide quantitative and qualitative information that can be objectively analyzed. The results of this analysis will allow for interpretation and conclusions from the data. These results will then be reported and evaluated. If it is determined that the translocation methodology is not producing the appropriate ecological response as this relates to the success of this endeavor, the methodology will be re-evaluated.

Figure 1

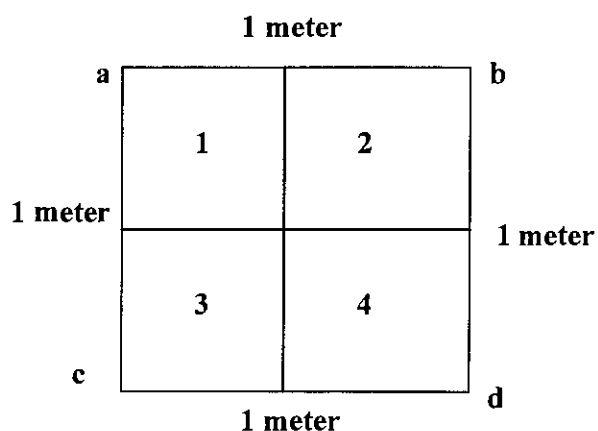


Figure 1. The transplant/recipient site will have the dimensions of 1m x 1m. This is also called a square quadrat. At each corner of the quadrat an iron stake will be inserted to permanently mark the quadrat at points a, b, c and d. The quadrat is divided into four sections labeled 1, 2, 3 and 4. Twenty-five donor plants will be planted in each section for a total of 100 donor plants per quadrat.

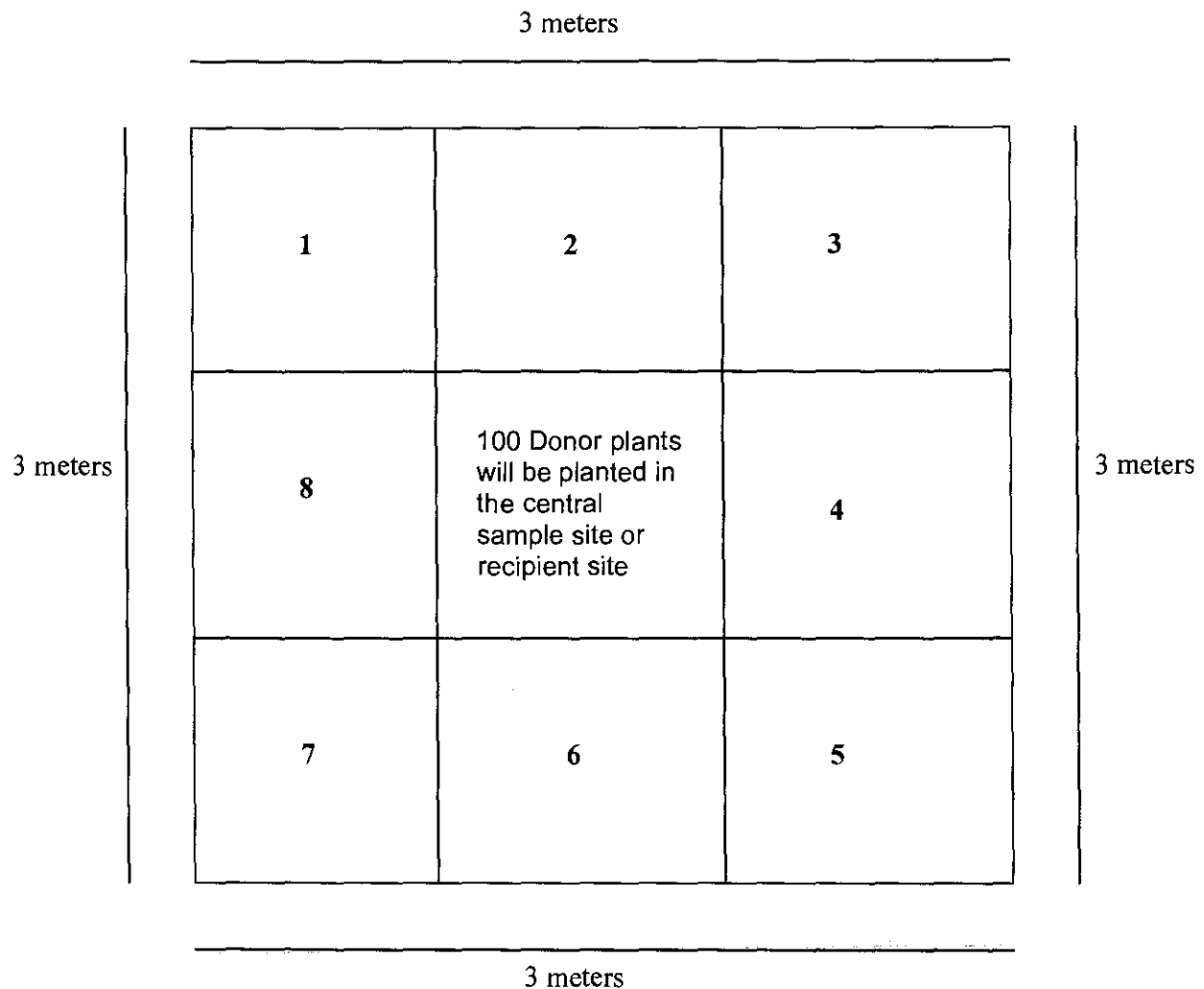
Figure 2

Figure 2. Configuration of eight 1m x 1m plots organized around the central sample site. The central sample site is that depicted in figure 1 it is also called the recipient site. All vascular plants in each of the eight plots will be measured for density and coverage. The central sample site will receive the donor plants. The idea is to measure how successfully the donor plants might move into the surrounding eight plots over time.

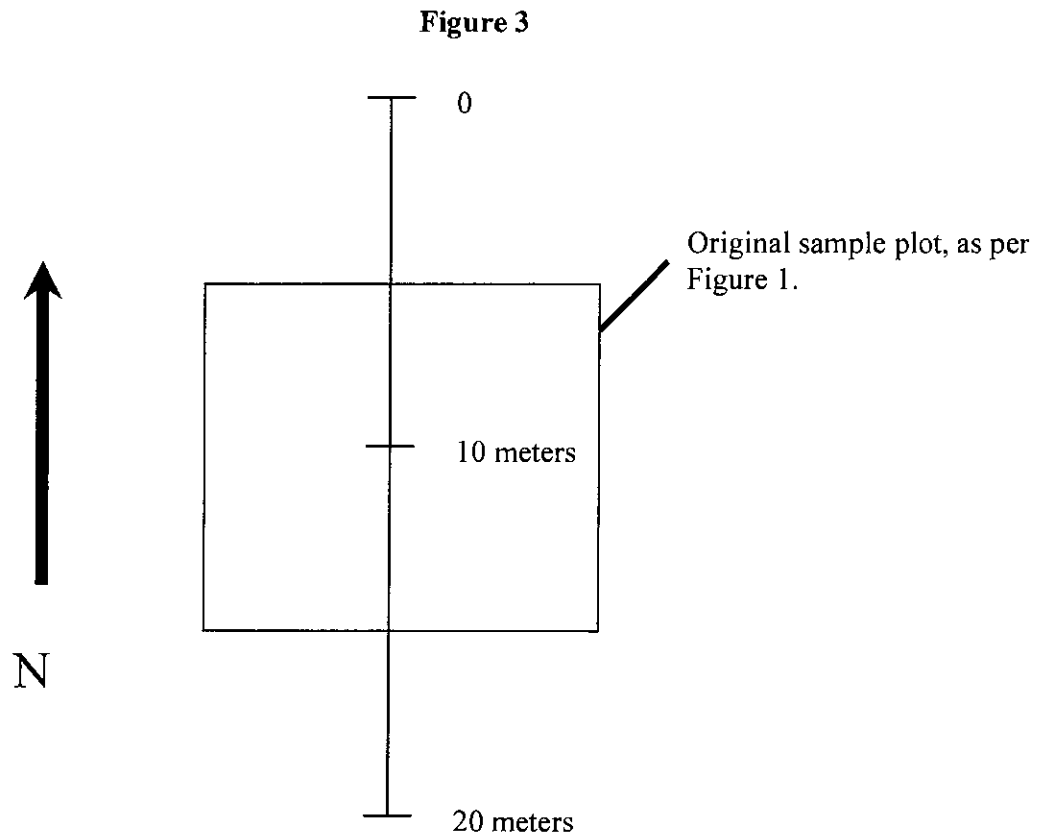


Figure 3. The placement of this transect can begin at the center of each sample site and extend from the center, northward for 10 meters on either side in a north/south orientation. The point-quarter method can be used to determine tree density at 0 and 10 and 20 meters.

Figure 4

10 m x 10 m quadrat arranged
around original sample plot

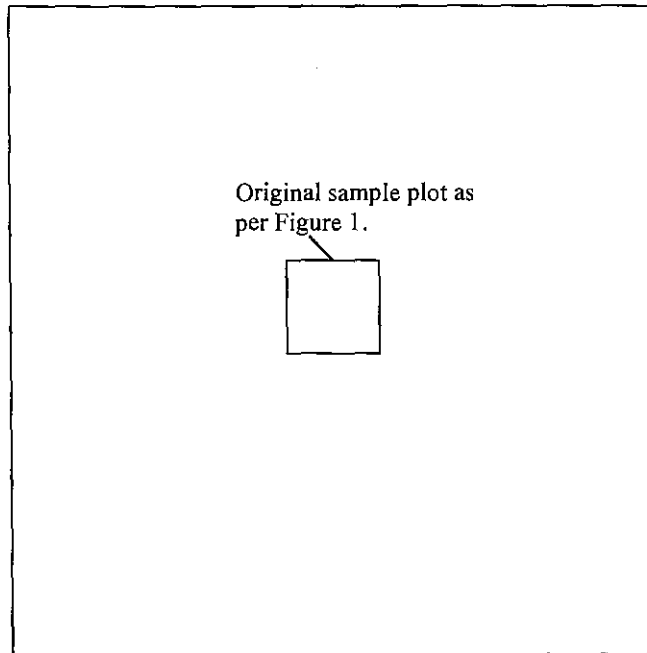


Figure 4. 10m x 10m plot used to sample trees if site is currently a pine plantation or trees are evenly spaced. All trees are measured within this plot. To place this sample plot use the center of the original sample plot and create a 10m x 10m quadrat.

Appendix III

RGP-86 Telephus Spurge Pre-Application Evaluation

Endangered Species Act formal consultation was conducted between the U.S. Fish and Wildlife Service (Service) and the Corps of Engineers as part of the development of the RGP-86. Consultation was based on the presence of telephus spurge (*Euphorbia telephioides*) at three locations in Gulf and Bay counties and the observance of suitable habitat throughout the action area. Best available methods were used to determine potential impacts to telephus spurge that could be expected from implementation of the permit. However, it is reasonable to expect that with a project area covering more than 47,000 acres (about 1/3 of which is potentially developable) undetected habitat could be present. To avoid and minimize potential take of telephus spurge in these situations, the following survey protocol was developed. This evaluation must be completed by all applicants and performed by a qualified plant ecologist/field botanist.

Step 1: Preliminary Project Site Review

Applicants and/or their consultants shall contact the Service for the latest information on the telephus spurge. The proposed project site shall be reviewed to determine if any known occurrences of the telephus spurge are present in the vicinity.

Step 2: Procedures for Reviewing Other Data to Determine Whether Additional Field Surveys Should be Conducted:

The telephus spurge occurs in a variety of soil types and plant communities ranging from sandhill to mesic flatwoods to pine savannahs. Suitable soil types are primarily the drier Leon sand and Pottsburg sand, although the plant is sometimes found in mesic soils, particularly within the ecotone surrounding sandy soils. Most of the known locations have been impacted by silviculture. Telephus spurge has been found in pine plantations with bedding present. Specific project sites must be reviewed using the procedures outlined below to determine the presence or absence of the telephus spurge.

1. Review the project site using NRCS soils data for Bay and Walton Counties, high-resolution infrared and/or true color aerials (scale of 1 inch=400 feet), and historic aerials of your project area.
2. Look for the following positive indicators:
 - Suitable soils. Suitable soil types include Leon sand, Pottsburg sand, and Hurricane sand.
 - Open canopy. Features to look for on the infrared aerials include the absence of a dense, closed canopy cover. Absence is a positive indicator. Dense canopy cover like titi appears dark red and smooth. The absence of a dense canopy shows up lighter often with patchy red areas throughout.
3. The presence of one or more positive indicators means that the site is potential telephus spurge habitat.
 - If yes, then you must conduct field surveys to determine whether telephus spurge is present. **Continue to step 3.**
 - If no, then you are finished with the telephus spurge evaluation. **Go to step 4.**

Step 3: Field Assessment of Potential Telephus Spurge (*Euphorbia telephioides*) Habitat

Before beginning any field work, develop a search pattern recognition of *Euphorbia telephioides* by examining photographs or herbarium species or by visiting field locations. See www.plantatlas.usf.edu for a photo reference collection.

Select potential survey polygons based on presence of Leon sand or Pottsburg sand. After reviewing aerial photography and conducting preliminary site inspections, add those areas that have a relatively open canopy and

remnant native groundcover. Be sure to include roadsides, open trails, utility easements, burned areas, and wetland ecotones. Eliminate areas that are densely vegetated with shrubs and trees or are obviously wet most of the year.

Selected polygons should be field surveyed for presence or absence of telephus spurge using a qualitative transect method. The surveys should be supervised by a qualified botanist. Straight line transects at 20-foot intervals should be laid out to cover the entire polygon. Alternate on each side of the transect with 10-foot square quadrants. (Figure 1) The quadrant boundaries can be estimated and visually scanned for telephus spurge. Areas with extremely dense vegetation can be overlooked.

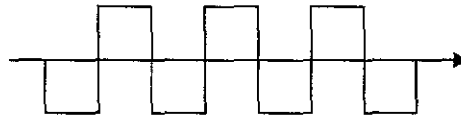


Fig. 1

Surveys can be conducted anytime from April through September. The plant generally dies back at the end of the growing season and does not re-grow to a noticeable height until several weeks after the last frost. Ideal survey months are July through September.

Step 4: Telephus Spurge Findings

1. Positive indicators were detected in Step 2.
2. Field surveys detected presence of telephus spurge.
If yes, re-initiation of consultation is required.
3. Appropriate documentation is included to support these findings. Negative and positive survey data are provided to USFWS in a GIS format.

Yes No

Signature _____
Ecologist/Botanist who
performed the evaluation

Date _____

Appendix IV.

RGP-86 Flatwoods Salamander Pre-Application Evaluation

Endangered Species Act formal consultation was conducted between the U.S. Fish and Wildlife Service and the Corps of Engineers as part of the development of RGP-86. Consultation was based on presumed presence of salamanders due to the proximity of two known locations and the observance of suitable habitat in the action area. Best available methods were used to determine potential impacts to flatwoods salamanders that could be expected from implementation of the permit. However, it is reasonable to expect that with a project area covering more than 47,000 acres (about 1/3 of which is potentially developable) undetected habitat could be present. In order to avoid and minimize potential take of salamanders in these situations, the following habitat evaluation was developed. This evaluation must be completed by all applicants and performed by a qualified ecologist/biologist.

Step 1: Preliminary Project Site Review

1. Applicants and consultants shall obtain and review an informational brochure developed by the Florida Fish and Wildlife Conservation Commission. The brochure is available from Florida Fish and Wildlife Conservation Commission, Bureau of Wildlife Diversity Conservation, 620 South Meridian Street, Tallahassee, Florida 32399-1600.
2. Applicants and/or their consultants shall compare aerial photographs of their project site to Figures 2, 3 and 4 of the Biological Opinion. Note all data points located within the project site and within 450 meters (1,476 feet) of the project site or limits of construction.
3. If any data points of Figure 4 are located within the project site or within 450 meters of the project site or limits of construction, **re-initiation of consultation is required. Continue with Step 2.**
4. Other data points of Figures 2 and 3 that are within the project site action area (including 450 meters) do not need further evaluation. Previous work conducted as part of the biological opinion addressed these sites. **Continue with Step 2.**

Step 2: Procedures for Reviewing Other Data to Determine Whether Additional Field Surveys Should be Conducted (based on Palis 2003)

There is a potential that suitable habitat may have been overlooked during the analysis for the biological opinion. Therefore, specific project sites must be reviewed using the procedures outlined below to determine whether they need to be field surveyed.

1. Review project site using high-resolution recent infrared aeriels (scale of 1 inch = 400 feet), NRCS soils data for Bay and Walton counties, and historical aeriels of your project area that are of as high a resolution as is obtainable. Note any ponds¹ not depicted on Figures 2 or 3 with similarity of appearance to those of Figure 4 in the biological opinion.
2. Features to look for on the infrared aeriels are as follows:
 - Absence of a dense titi cover completely surrounding ponds. Absence is a positive indicator. Dense titi appears relatively dark red and smooth
 - A graminaceous, treeless ecotone along part of the pond edges. Presence is a positive indicator. Wet, herbaceous edges appear as smooth grayish blue, greenish grayish blue, or as a light band along the edge.
 - Absence of deep water. Absence of deep water is a positive indicator. Deep water appears dark blue or almost black.

¹ "Ponds" are not traditional open waterbodies, but are ephemeral wetlands that are ponded for a portion of the year.

3. On historical aerials, look for open savannahs or pine flatwoods around ponds. These are positive indicators and appear as smooth, light-colored areas with scattered-to-no-trees.

4. On soil maps, where ponds occur, look for hydric or mesic soils around pond; hydric or mesic soils are positive indicators of flatwoods salamander use.

5. The presence of all of the above positive indicators means that the pond(s) should be field surveyed.

- If yes, then you must conduct field surveys to determine whether the pond(s) is a potential flatwoods salamander pond. **Continue with Step 3.**
- If no here and no to Step 1. 3., then **you are finished with the flatwoods salamander evaluation - Go to Step 5 (Flatwoods Salamander Findings).**
- If no here and yes to Step 1. 3., then **re-initiation of consultation is required.**

Step 3: Field Assessment of Potential Flatwoods Salamander (*Ambystoma cingulatum*) Ponds

The Description Data Sheet (next page) may be completed at the same time as other fieldwork, such as wetland delineation. The field data sheet that must be completed at the time of the field survey follows. Photographs must also be taken of the ecotone and pond, particularly noting the location of the most graminaceous portion of ecotone and wetland groundcover.

Potential Flatwoods Salamander (*Ambystoma cingulatum*) Pond Description Data Sheet

Instructions: Circle the number of the most appropriate descriptor in each category. If no description option applies, circle "other" and describe. In some categories, such as ECOTONE VEGETATION DESCRIPTION, SPECIES COMPOSITION, and SURROUNDING UPLANDS, circle the number for all appropriate descriptors.

Pond# _____ Date _____ Observer(s) _____

ECOTONE VEGETATION DESCRIPTION

(If more than one descriptor applies, circle and estimate percentage of pond perimeter.

Also circle appropriate grass and shrub species)

- | | |
|--|---------|
| 1) undisturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i>) ¹ , few to no shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 2) disturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i> ; bedded/rutted), few to no shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 3) undisturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i>) under thick <i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 4) weedy graminaceous (<i>Andropogon</i> , <i>Panicum verrucosum</i> , and/or weedy <i>Rhynchospora</i>), few to no shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 5) disturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i> ; bedded/rutted), under thick <i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 8) weedy graminaceous (<i>Andropogon</i> , <i>Panicum verrucosum</i> , weedy <i>Rhynchospora</i>) under thick <i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 9) thick shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) over little to no graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i> , <i>Andropogon</i> , <i>Panicum verrucosum</i> , weedy <i>Rhynchospora</i>) | _____ % |
| 10) no ecotone | _____ % |
| 11) other: _____ | _____ % |

GRAMINACEOUS ECOTONE EXTENT DESCRIPTION

- | | |
|-----------------------------|------------------------------|
| 1) > 75 % of pond perimeter | 3) 26-50 % of pond perimeter |
| 2) 51-75% of pond perimeter | 4) <25% of pond perimeter |

GRAMINACEOUS ECOTONE WIDTH DESCRIPTION

- | | |
|----------------|---------------|
| 1) > 0 m wide | 3) 3-5 m wide |
| 2) 6-10 m wide | 4) 1-2m wide |

¹ "Undisturbed graminaceous" and "disturbed graminaceous" mean that the appropriate ground cover species are present (*Aristida stricta*, *Calamovilfa curtissii*, wiry *Rhynchospora* spp., and *Sporobolus*). However, "disturbed graminaceous" indicates that the soil has been disturbed by human activities such as chopping, bedding, ATV or skidder tracks. "Weedy graminaceous" means that not only are the appropriate ground cover species absent, but that the soil has been disturbed.

POND GRAMINACEOUS GROUNDCOVER SPECIES COMPOSITION
(place asterisk adjacent to visually dominant species)

- | | |
|--|---|
| 1) <i>Aristida affinis</i> | 6) <i>Rhynchospora inundata/corniculata</i> |
| 2) <i>Carex</i> | 7) <i>Rhynchospora</i> _____ |
| 3) <i>Dichanthelium (Panicum) erectifolium</i> | 8) <i>Sphagnum</i> |
| 4) <i>Eriocaulon compressum</i> | 9) <i>Xyris</i> |
| 5) <i>Panicum rigidulum</i> | 10) other: _____ |

POND GRAMINACEOUS VEGETATION COVERAGE

- | | |
|---|--------------------------|
| 1) extensive throughout basin, marsh-like | 4) limited to basin edge |
| 2) over most of basin (> 75 %) | 5) sparse |
| 3) scattered and local in basin (approx 25-74%) | 6) none |

POND CANOPY SPECIES COMPOSITION
(place asterisk adjacent to visually dominant species)

- | | |
|------------------------------|---------------------------|
| 1) <i>Taxodium ascendens</i> | 4) <i>Ilex myrtifolia</i> |
| 2) <i>Nyssa biflora</i> | 5) other: _____ |
| 3) <i>Pinus elliottii</i> | |

POND CANOPY COVERAGE

- | | | | |
|---------|-----------|-----------|---------|
| 1) <25% | 2) 26-50% | 3) 51-75% | 4) >75% |
|---------|-----------|-----------|---------|

POND SUBSTRATE

- 1) relatively firm mud/sand with little to no leaf/needle litter
- 2) relatively firm mud/sand with abundant leaf/needle litter
- 3) soft and peaty (thick leaf/needle litter)

APPROXIMATE WATER DEPTH (_____ m)

If site dry, estimate using high water stains on trees: ____ m

WATER COLOR

- | | | | |
|-------------------------|-----------------------------|------------------------|-------------|
| 1) clear to light stain | 2) moderate stain (ice tea) | 3) dark stain (coffee) | 4) no water |
|-------------------------|-----------------------------|------------------------|-------------|

SURROUNDING UPLANDS

(circle every applicable number and indicate relative percentage of area around pond)

- | | |
|---|---------|
| 1) undisturbed graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) dominated, few to no shrubs | _____ % |
| 2) disturbed graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) dominated, few to no shrubs | _____ % |
| 3) approximately 50/50 undisturbed graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>)/shrubs | _____ % |

- 4) approximately 50/50 disturbed graminaceous (*Aristida stricta*, *Sporobolus*)/shrubs _____ %
 5) disturbed with sparse vegetation (i.e., principally pine straw) _____ %

- 6) shrub dominated (shrubs knee high or less), sparse graminaceous (*Aristida stricta*, *Sporobolus*) _____ %

- 7) shrub dominated (shrubs between knee and head high), sparse graminaceous (*Aristida stricta*, *Sporobolus*) _____ %

- 8) shrub dominated (shrubs head high or more), sparse graminaceous (*Aristida stricta*, *Sporobolus*) _____ %

- 9) weedy graminaceous (e.g., *Andropogon*), few to no shrubs _____ %

- 10) shrub dominated (shrubs knee high or less), sparse weedy graminaceous (*Andropogon*, etc.) _____ %

- 11) shrub dominated (shrubs knee to head high), sparse weedy graminaceous (*Andropogon*, etc.) _____ %

- 12) shrub dominated (shrubs head high or more), sparse weedy graminaceous (*Andropogon*, etc.) _____ %

- 13) other _____ %

UPLANDS SPECIES PRESENT

(circle number and place asterisk by visually dominant species)

- | | |
|-------------------------------|---|
| 1) <i>Andropogon</i> | 8) <i>Lyonia lucida</i> |
| 2) <i>Aristida stricta</i> | 9) <i>Myrica cerifera</i> |
| 3) <i>Conradina canescens</i> | 10) <i>Pteridium aquilinum</i> |
| 4) <i>Cyrilla racemiflora</i> | 11) <i>Quercus minima/pumila</i> |
| 5) <i>Ilex glabra</i> | 12) <i>Serenoa repens</i> |
| 6) <i>Kalmia hirsuta</i> | 13) <i>Vaccinium darrowi/myrsinites</i> |
| 7) <i>Licania michauxii</i> | 14) _____ |

General Notes: _____

SKETCH WETLAND/UPLAND (North ↑)

(delineate locations of vegetational differences in ecotone and in wetland and uplands)
 (photograph the ecotone and pond noting the location of the most graminaceous portion of ecotone and wetland ground cover, note photo points)

Step 4: Expert Review of Field Results

When Steps 2 and 3 have been completed, the completed field data sheets and photographs should be sent to a recognized flatwoods salamander expert. In addition, the current and historical aerals, soil data, and a map of the

project site should also be forwarded to the expert. The expert will review all the information to determine whether the pond might be a potential flatwoods salamander pond.

The field data sheet used in Step 3 has been organized so that the descriptors under each category of interest are ordered from best to worst conditions for flatwoods salamanders. For example, under the category Ecotone Vegetation Description, the first descriptor [1) undisturbed graminaceous... few to no shrubs...] describes the best conditions for flatwoods salamanders and the last two descriptors [9) thick shrubs... and 10) no ecotone] describe the worst conditions.

The expert will evaluate the descriptors selected for each category of interest to determine whether the pond might be a potential flatwoods salamander breeding pond. If mostly low number descriptors were selected on the field data sheet, then the pond is more likely to be considered a potential breeding pond; conversely, if primarily high number descriptors were selected on the field data sheet, then the pond is less likely to be considered a potential breeding pond. However, no formula presently exists that encompasses all the possibilities that might eliminate or elect a pond for further consideration as a potential breeding pond.

If the expert cannot determine whether or not the pond should be considered a potential flatwoods salamander breeding pond, s/he may request additional information from the ecologist/biologist who visited the pond and/or the project applicant. If the request for additional information is not fulfilled within a reasonable time period or the response is not sufficiently helpful, the expert may also elect to visit the pond himself at the expense of the project applicant.

The expert will provide a written determination as to whether the surveyed pond(s) is likely to be a potential flatwoods salamander breeding pond.

Review Time Frames:

- Provide field data sheets to expert;
- Expert reviews field data sheets within 10 working days of receipt, and
 - Requests additional information, or
 - Provides² written determination;
- Project applicant or their consultant provides additional information to expert;
- Expert provides written determination to project applicant within 5 working days of receipt of sufficient additional information;
- Project applicant provides the expert's written determination and background documentation (prepared map of ponds, aerials, soil data, field data sheets, and photographs) to the agencies as part of the pre-application Item #8.

² "Provides" implies postmarked, emailed or faxed.

Step 5: Flatwoods Salamander Findings

- | | Yes | No |
|---|-------|----------|
| 1. The project site contains or is within 450 meters (1,476 feet) one or more of the data points indicated in Figure 4 of the biological opinion. If yes, re-initiation of consultation is required. | _____ | _____ of |
| 2. The project site contains or is within 450 meters of potential habitat not evaluated in the biological opinion. | _____ | _____ |
| 3. Field evaluations and expert review were necessary for additional habitat. | _____ | _____ |
| 4. Expert review indicates that suitable habitat is located within the project action area. Name of flatwoods salamander expert _____ . If yes, re-initiation of consultation is required. | _____ | _____ |
| 5. Appropriate documentation is included to support these findings. | _____ | _____ |

Signature _____
Ecologist/Biologist who Performed
the Evaluation

Date _____

Exhibit 20
(Revised March 3, 2005)

RGP-86 Flatwoods Salamander Pre-Application Evaluation

Endangered Species Act formal consultation was conducted between the U.S. Fish and Wildlife Service and the Corps of Engineers as part of the development of RGP-86. Consultation was based on presumed presence of salamanders due to the proximity of two known locations and the observance of suitable habitat in the action area. Best available methods were used to determine potential impacts to flatwoods salamanders that could be expected from implementation of the permit. However, it is reasonable to expect that with a project area covering more than 47,000 acres (about 1/3 of which is potentially developable) undetected habitat could be present. In order to avoid and minimize potential take of salamanders in these situations, the following habitat evaluation was developed. This evaluation must be completed by all applicants and performed by a qualified ecologist/biologist.

Step 1: Preliminary Project Site Review

- 1.. Applicants and consultants shall obtain and review an informational brochure developed by the Florida Fish and Wildlife Conservation Commission. The brochure is available from Florida Fish and Wildlife Conservation Commission, Bureau of Wildlife Diversity Conservation, 620 South Meridian Street, Tallahassee, Florida 32399-1600..
- 2.. Applicants and/or their consultants shall compare aerial photographs of their project site to Figures 2, 3 and 4 of the Biological Opinion. Note all data points located within the project site and within 450 meters (1,476 feet) of the project site or limits of construction..
3. If any data points of Figure 4 are located within the project site or within 450 meters of the project site or limits of construction, **re-initiation of consultation is required. Continue with Step 2.**
- 4.. Other data points of Figures 2 and 3 that are within the project site action area (including 450 meters) do not need further evaluation. Previous work conducted as part of the biological opinion addressed these sites. **Continue with Step 2.**

Step 2: Procedures for Reviewing Other Data to Determine Whether Additional Field Surveys Should be Conducted (based on Palis 2003)

There is a potential that suitable habitat may have been overlooked during the analysis for the biological opinion. Therefore, specific project sites must be reviewed using the procedures outlined below to determine whether they need to be field surveyed.

- 1.- Review project site using high-resolution recent infrared aerials (scale of 1 inch = 400 feet), NRCS soils data, for Bay and Walton counties, and historical aerials of your project area that are of as high a resolution as is obtainable. Note any ponds¹ not depicted on Figures 2 or 3 with similarity of appearance to those of Figure 4 in the biological opinion.
- 2.. Features to look for on the infrared aerials are as follows:
 - . Absence of a dense titi cover completely surrounding ponds. Absence is a positive indicator. Dense titi appears, relatively dark red and smooth
 - . A graminaceous, treeless ecotone along part of the pond edges. Presence is a positive indicator. Wet, herbaceous edges appear as smooth grayish blue, greenish grayish blue, or as a light band along the edge.
 - . Absence of deep water. Absence of deep water is a positive indicator. Deep water appears dark blue or almost black..

¹"Ponds" are not traditional open waterbodies, but are ephemeral wetlands that are ponded for a portion of the year.

3. On historical aerials, look for open savannahs or pine flatwoods around ponds. These are positive indicators and appear as smooth, light-colored areas with scattered-to-no-trees.
4. On soil maps, where ponds occur, look for hydric or mesic soils around pond: hydric or mesic soils are positive indicators of flatwoods salamander use.
5. The presence of all of the above positive indicators means that the pond(s) should be field surveyed.
 - If yes, then you must conduct field surveys to determine whether the pond(s) is a potential flatwoods salamander pond. **Continue with Step 3.**
 - If no here and no to Step 1. 3., then **you are finished with the flatwoods salamander evaluation - Go to Step 5 (Flatwoods Salamander Findings).**
 - If no here and yes to Step 1. 3., then **re-initiation of consultation is required.**

Step 3: Field Assessment of Potential Flatwoods Salamander (*Ambystoma cingulatum*) Ponds

The Description Data Sheet (next page) may be completed at the same time as other fieldwork, such as wetland delineation. The field data sheet that must be completed at the time of the field survey follows. Photographs must also be taken of the ecotone and pond, particularly noting the location of the most graminaceous portion of ecotone and wetland groundcover.

**Potential Flatwoods Salamander (*Ambystoma cingulatum*) Pond
Description Data Sheet**

Instructions: Circle the number of the most appropriate descriptor in each category. If no description option applies, circle "other" and describe. In some categories, such as ECOTONE VEGETATION DESCRIPTION, SPECIES COMPOSITION, and SURROUNDING UPLANDS, circle the number for all appropriate descriptors.

Pond# _____ Date _____ Observer(s) _____

ECOTONE VEGETATION DESCRIPTION

(If more than one descriptor applies, circle and estimate percentage of pond perimeter.

Also circle appropriate grass and shrub species)

- | | |
|--|---------|
| 1) undisturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i>) ¹ , few to no shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 2) disturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i> ; bedded/rutted), few to no shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 3) undisturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i>) under thick <i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 4) weedy graminaceous (<i>Andropogon</i> , <i>Panicum verrucosum</i> , and/or weedy <i>Rhynchospora</i>), few to no shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) | _____ % |
| 5) disturbed graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i> ; bedded/rutted), under thick <i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i> | _____ % |
| 8) weedy graminaceous (<i>Andropogon</i> , <i>Panicum verrucosum</i> , weedy <i>Rhynchospora</i>) under thick <i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i> | _____ % |
| 9) thick shrubs (<i>Clethra</i> , <i>Cliftonia</i> , <i>Cyrilla</i> , <i>Hypericum</i> , <i>Ilex myrtifolia</i> , <i>Lyonia</i>) over little to no graminaceous (<i>Aristida stricta</i> , <i>Calamovilfa curtissii</i> , <i>Andropogon</i> , <i>Panicum verrucosum</i> , weedy <i>Rhynchospora</i>) | _____ % |
| 10) no ecotone | _____ % |
| 11) other: _____ | _____ % |

GRAMINACEOUS ECOTONE EXTENT DESCRIPTION

- | | |
|-----------------------------|------------------------------|
| 1) > 75 % of pond perimeter | 3) 26-50 % of pond perimeter |
| 2) 51-75% of pond perimeter | 4) <25% of pond perimeter |

GRAMINACEOUS ECOTONE WIDTH DESCRIPTION

- | | |
|----------------|---------------|
| 1) > 0 m wide | 3) 3-5 m wide |
| 2) 6-10 m wide | 4) 1-2m wide |

¹ "Undisturbed graminaceous" and "disturbed graminaceous" mean that the appropriate ground cover species are present (*Aristida stricta*, *Calamovilfa curtissii*, wiry *Rhynchospora* spp., and *Sporobolus*). However, "disturbed graminaceous" indicates that the soil has been disturbed by human activities such as chopping, bedding, ATV or skidder tracks. "Weedy graminaceous" means that not only are the appropriate ground cover species absent, but that the soil has been disturbed.

POND GRAMINACEOUS GROUND COVER SPECIES COMPOSITION
(place asterisk adjacent to visually dominant species)

- | | |
|--|---|
| 1) <i>Aristida affinis</i> | 6) <i>Rhynchospora inundata/corniculata</i> |
| 2) <i>Carex</i> | 7) <i>Rhynchospora</i> _____ |
| 3) <i>Dichanthelium (Panicum) erectifolium</i> | 8) <i>Sphagnum</i> |
| 4) <i>Eriocaulon compressum</i> | 9) <i>Xyris</i> |
| 5) <i>Panicum rigidulum</i> | 10) other: _____ |

POND GRAMINACEOUS VEGETATION COVERAGE

- | | |
|---|--------------------------|
| 1) extensive throughout basin, marsh-like | 4) limited to basin edge |
| 2) over most of basin (> 75 %) | 5) sparse |
| 3) scattered and local in basin (approx 25-74%) | 6) none |

POND CANOPY SPECIES COMPOSITION
(place asterisk adjacent to visually dominant species)

- | | |
|------------------------------|---------------------------|
| 1) <i>Taxodium ascendens</i> | 4) <i>Ilex myrtifolia</i> |
| 2) <i>Nyssa biflora</i> | 5) other: _____ |
| 3) <i>Pinus elliotii</i> | |

POND CANOPY COVERAGE

- | | | | |
|---------|-----------|-----------|---------|
| 1) <25% | 2) 26-50% | 3) 51-75% | 4) >75% |
|---------|-----------|-----------|---------|

POND SUBSTRATE

- 1) relatively firm mud/sand with little to no leaf/needle litter
- 2) relatively firm mud/sand with abundant leaf/needle litter
- 3) soft and peaty (thick leaf/needle litter)

APPROXIMATE WATER DEPTH (_____ m)

If site dry, estimate using high water stains on trees: _____ m

WATER COLOR

- | | | | |
|-------------------------|-----------------------------|------------------------|-------------|
| 1) clear to light stain | 2) moderate stain (ice tea) | 3) dark stain (coffee) | 4) no water |
|-------------------------|-----------------------------|------------------------|-------------|

SURROUNDING UPLANDS

(circle every applicable number and indicate relative percentage of area around pond)

- | | |
|---|---------|
| 1) undisturbed graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) dominated, few to no shrubs | _____ % |
| 2) disturbed graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) dominated, few to no shrubs | _____ % |
| 3) approximately 50/50 undisturbed graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>)/shrubs | _____ % |

- | | |
|---|---------|
| 4) approximately 50/50 disturbed graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) shrubs | _____ % |
| 5) disturbed with sparse vegetation (i.e., principally pine straw) | _____ % |
| | |
| 6) shrub dominated (shrubs knee high or less), sparse graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) | _____ % |
| | |
| 7) shrub dominated (shrubs between knee and head high), sparse graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) | _____ % |
| 8) shrub dominated (shrubs head high or more), sparse graminaceous (<i>Aristida stricta</i> , <i>Sporobolus</i>) | _____ % |
| 9) weedy graminaceous (e.g., <i>Andropogon</i>), few to no shrubs | _____ % |
| 10) shrub dominated (shrubs knee high or less), sparse weedy graminaceous (<i>Andropogon</i> , etc.) | _____ % |
| 11) shrub dominated (shrubs knee to head high), sparse weedy graminaceous (<i>Andropogon</i> , etc.) | _____ % |
| 12) shrub dominated (shrubs head high or more), sparse weedy graminaceous (<i>Andropogon</i> , etc.) | _____ % |
| 13) other _____ | _____ % |

UPLANDS SPECIES PRESENT
(circle number and place asterisk by visually dominant species)

- | | |
|-------------------------------|--|
| 1) <i>Andropogon</i> | 8) <i>Lyonia lucida</i> |
| 2) <i>Aristida stricta</i> | 9) <i>Myrica cerifera</i> |
| 3) <i>Conradina canescens</i> | 10) <i>Pteridium aquilinum</i> |
| 4) <i>Cyrilla racemiflora</i> | 11) <i>Quercus minima/pumila</i> |
| 5) <i>Ilex glabra</i> | 12) <i>Serenoa repens</i> |
| 6) <i>Kalmia hirsuta</i> | 13) <i>Vaccinium darrowii/myrsinites</i> |
| 7) <i>Licania michauxii</i> | 14) _____ |

General Notes: _____

SKETCH WETLAND/UPLAND (North ↑)
 (delineate locations of vegetational differences in ecotone and in wetland and uplands)
 (photograph the ecotone and pond noting the location of the most graminaceous portion of ecotone and wetland ground cover, note photo points)

Step 4: Expert Review of Field Results

When Steps 2 and 3 have been completed, the completed field data sheets and photographs should be sent to a recognized flatwoods salamander expert. In addition, the current and historical aerials, soil data, and a map of the

project site should also be forwarded to the expert. The expert will review all the information to determine whether the pond might be a potential flatwoods salamander pond.

The field data sheet used in Step 3 has been organized so that the descriptors under each category of interest are ordered from best to worst conditions for flatwoods salamanders. For example, under the category Ecotone Vegetation Description, the first descriptor [1) undisturbed graminaceous... few to no shrubs...] describes the best conditions for flatwoods salamanders and the last two descriptors [9) thick shrubs... and 10) no ecotone] describe the worst conditions.

The expert will evaluate the descriptors selected for each category of interest to determine whether the pond might be a potential flatwoods salamander breeding pond. If mostly low number descriptors were selected on the field data sheet, then the pond is more likely to be considered a potential breeding pond; conversely, if primarily high number descriptors were selected on the field data sheet, then the pond is less likely to be considered a potential breeding pond. However, no formula presently exists that encompasses all the possibilities that might eliminate or elect a pond for further consideration as a potential breeding pond.

If the expert cannot determine whether or not the pond should be considered a potential flatwoods salamander breeding pond, s/he may request additional information from the ecologist/biologist who visited the pond and/or the project applicant. If the request for additional information is not fulfilled within a reasonable time period or the response is not sufficiently helpful, the expert may also elect to visit the pond himself at the expense of the project applicant.

The expert will provide a written determination as to whether the surveyed pond(s) is likely to be a potential flatwoods salamander breeding pond.

Review Time Frames:

- Provide field data sheets to expert;
- Expert reviews field data sheets within 10 working days of receipt, and
 - Requests additional information, or
 - Provides² written determination;
- Project applicant or their consultant provides additional information to expert;
- Expert provides written determination to project applicant within 5 working days of receipt of sufficient additional information;
- Project applicant provides the expert's written determination and background documentation (prepared map of ponds, aerials, soil data, field data sheets, and photographs) to the agencies as part of the pre-application Item #8.

2 "Provides" implies postmarked, emailed or faxed.

Step 5: Flatwoods Salamander Findings

	Yes	No
1. The project site contains or is within 450 meters (1,476 feet) of one or more of the data points indicated in Figure 4 of the biological opinion. If yes, re-initiation of consultation is required.	_____	_____
2. The project site contains or is within 450 meters of potential habitat not evaluated in the biological opinion.	_____	_____
3. Field evaluations and expert review were necessary for additional habitat.	_____	_____
4. Expert review indicates that suitable habitat is located within the project action area. Name of flatwoods salamander expert _____ If yes, re-initiation of consultation is required.	_____	_____
5. Appropriate documentation is included to support these findings.	_____	_____

Signature _____
Ecologist/Biologist who Performed
the Evaluation

Date _____

**NATIONAL BALD EAGLE
MANAGEMENT GUIDELINES**

U.S. Fish and Wildlife Service

May 2007

TABLE OF CONTENTS

INTRODUCTION	1
LEGAL PROTECTIONS FOR THE BALD EAGLE	2
The Bald and Golden Eagle Protection Act.....	2
The Migratory Bird Treaty Act	3
State laws and regulations	3
Where do bald eagles nest?	4
When do bald eagles nest?	5
Chronology of typical reproductive activities of bald eagles in the United States.....	6
How many chicks do bald eagles raise?	7
What do bald eagles eat?.....	7
The impact of human activity on nesting bald eagles.....	7
The impact of human activity on foraging and roosting bald eagles	8
RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT NEST SITES.....	9
Existing Uses	10
ACTIVITY-SPECIFIC GUIDELINES.....	10
Alternate nests.....	11
Temporary Impacts	11
RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT FORAGING AREAS AND COMMUNAL ROOST SITES.....	14
ADDITIONAL RECOMMENDATIONS TO BENEFIT BALD EAGLES.....	15
CONTACTS.....	16
GLOSSARY.....	17
RELATED LITERATURE.....	19

INTRODUCTION

The bald eagle (*Haliaeetus leucocephalus*) is protected by the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). The MBTA and the Eagle Act protect bald eagles from a variety of harmful actions and impacts. The U.S. Fish and Wildlife Service (Service) developed these National Bald Eagle Management Guidelines to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the Eagle Act may apply to their activities. A variety of human activities can potentially interfere with bald eagles, affecting their ability to forage, nest, roost, breed, or raise young. The Guidelines are intended to help people minimize such impacts to bald eagles, particularly where they may constitute “disturbance,” which is prohibited by the Eagle Act.

The Guidelines are intended to:

- (1) Publicize the provisions of the Eagle Act that continue to protect bald eagles, in order to reduce the possibility that people will violate the law,
- (2) Advise landowners, land managers and the general public of the potential for various human activities to disturb bald eagles, and
- (3) Encourage additional nonbinding land management practices that benefit bald eagles (see Additional Recommendations section).

While the Guidelines include general recommendations for land management practices that will benefit bald eagles, the document is intended primarily as a tool for landowners and planners who seek information and recommendations regarding how to avoid disturbing bald eagles. Many States and some tribal entities have developed state-specific management plans, regulations, and/or guidance for landowners and land managers to protect and enhance bald eagle habitat, and we encourage the continued development and use of these planning tools to benefit bald eagles.

Adherence to the Guidelines herein will benefit individuals, agencies, organizations, and companies by helping them avoid violations of the law. However, the Guidelines themselves are not law. Rather, they are recommendations based on several decades of behavioral observations, science, and conservation measures to avoid or minimize adverse impacts to bald eagles.

The U.S. Fish and Wildlife Service strongly encourages adherence to these guidelines to ensure that bald and golden eagle populations will continue to be sustained. The Service realizes there may be impacts to some birds even if all reasonable measures are taken to avoid such impacts. Although it is not possible to absolve individuals and entities from liability under the Eagle Act or the MBTA, the Service exercises enforcement discretion to focus on those individuals, companies, or agencies that take migratory birds without regard for the consequences of their actions and the law, especially when conservation measures, such as these Guidelines, are available, but have not been implemented. The Service will prioritize its enforcement efforts to focus on those individuals or entities who take bald eagles or their parts, eggs, or nests without implementing appropriate measures recommended by the Guidelines.

The Service intends to pursue the development of regulations that would authorize, under limited circumstances, the use of permits if “take” of an eagle is anticipated but unavoidable. Additionally, if the bald eagle is delisted, the Service intends to provide a regulatory mechanism to honor existing (take) authorizations under the Endangered Species Act (ESA).

During the interim period until the Service completes a rulemaking for permits under the Eagle Act, the Service does not intend to refer for prosecution the incidental “take” of any bald eagle under the MBTA or Eagle Act, if such take is in full compliance with the terms and conditions of an incidental take statement issued to the action agency or applicant under the authority of section 7(b)(4) of the ESA or a permit issued under the authority of section 10(a)(1)(B) of the ESA.

The Guidelines are applicable throughout the United States, including Alaska. The primary purpose of these Guidelines is to provide information that will minimize or prevent violations only of *Federal* laws governing bald eagles. In addition to Federal laws, many states and some smaller jurisdictions and tribes have additional laws and regulations protecting bald eagles. In some cases those laws and regulations may be more protective (restrictive) than these Federal guidelines. If you are planning activities that may affect bald eagles, we therefore recommend that you contact both your nearest U.S. Fish and Wildlife Service Field Office (see the contact information on p.16) and your state wildlife agency for assistance.

LEGAL PROTECTIONS FOR THE BALD EAGLE

The Bald and Golden Eagle Protection Act

The Eagle Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” The Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” “Disturb” means:

"Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle=s return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

A violation of the Act can result in a criminal fine of \$100,000 (\$200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony.

The Migratory Bird Treaty Act

The MBTA (16 U.S.C. 703-712), prohibits the taking of any migratory bird or any part, nest, or egg, except as permitted by regulation. The MBTA was enacted in 1918; a 1972 agreement supplementing one of the bilateral treaties underlying the MBTA had the effect of expanding the scope of the Act to cover bald eagles and other raptors. Implementing regulations define “take” under the MBTA as “pursue, hunt, shoot, wound, kill, trap, capture, possess, or collect.”

Copies of the Eagle Act and the MBTA are available at: <http://permits.fws.gov/ltr/ltr.shtml>.

State laws and regulations

Most states have their own regulations and/or guidelines for bald eagle management. Some states may continue to list the bald eagle as endangered, threatened, or of special concern. If you plan activities that may affect bald eagles, we urge you to familiarize yourself with the regulations and/or guidelines that apply to bald eagles in your state. Your adherence to the Guidelines herein does not ensure that you are in compliance with state laws and regulations because state regulations can be more specific and/or restrictive than these Guidelines.

NATURAL HISTORY OF THE BALD EAGLE

Bald eagles are a North American species that historically occurred throughout the contiguous United States and Alaska. After severely declining in the lower 48 States between the 1870s and the 1970s, bald eagles have rebounded and re-established breeding territories in each of the lower 48 states. The largest North American breeding populations are in Alaska and Canada, but there are also significant bald eagle populations in Florida, the Pacific Northwest, the Greater Yellowstone area, the Great Lakes states, and the Chesapeake Bay region. Bald eagle distribution varies seasonally. Bald eagles that nest in southern latitudes frequently move northward in late spring and early summer, often summering as far north as Canada. Most eagles that breed at northern latitudes migrate southward during winter, or to coastal areas where waters remain unfrozen. Migrants frequently concentrate in large numbers at sites where food is abundant and they often roost together communally. In some cases, concentration areas are used year-round: in summer by southern eagles and in winter by northern eagles.

Juvenile bald eagles have mottled brown and white plumage, gradually acquiring their dark brown body and distinctive white head and tail as they mature. Bald eagles generally attain adult plumage by 5 years of age. Most are capable of breeding at 4 or 5 years of age, but in healthy populations they may not start breeding until much older. Bald eagles may live 15 to 25 years in the wild. Adults weigh 8 to 14 pounds (occasionally reaching 16 pounds in Alaska) and have wingspans of 5 to 8 feet. Those in the northern range are larger than those in the south, and females are larger than males.

Where do bald eagles nest?

Breeding bald eagles occupy “territories,” areas they will typically defend against intrusion by other eagles. In addition to the active nest, a territory may include one or more alternate nests (nests built or maintained by the eagles but not used for nesting in a given year). The Eagle Act prohibits removal or destruction of both active and alternate bald eagle nests. Bald eagles exhibit high nest site fidelity and nesting territories are often used year after year. Some territories are known to have been used continually for over half a century.

Bald eagles generally nest near coastlines, rivers, large lakes or streams that support an adequate food supply. They often nest in mature or old-growth trees; snags (dead trees); cliffs; rock promontories; rarely on the ground; and with increasing frequency on human-made structures such as power poles and communication towers. In forested areas, bald eagles often select the tallest trees with limbs strong enough to support a nest that can weigh more than 1,000 pounds. Nest sites typically include at least one perch with a clear view of the water where the eagles usually forage. Shoreline trees or snags located in reservoirs provide the visibility and accessibility needed to locate aquatic prey. Eagle nests are constructed with large sticks, and may be lined with moss, grass, plant stalks, lichens, seaweed, or sod. Nests are usually about 4-6 feet in diameter and 3 feet deep, although larger nests exist.



Copyright *Birds of North America*, 2000

The range of breeding bald eagles in 2000 (shaded areas). This map shows only the larger concentrations of nests; eagles have continued to expand into additional nesting territories in many states. The dotted line represents the bald eagle's wintering range.

When do bald eagles nest?

Nesting activity begins several months before egg-laying. Egg-laying dates vary throughout the U.S., ranging from October in Florida, to late April or even early May in the northern United States. Incubation typically lasts 33-35 days, but can be as long as 40 days. Eaglets make their first unsteady flights about 10 to 12 weeks after hatching, and fledge (leave their nests) within a few days after that first flight. However, young birds usually remain in the vicinity of the nest for several weeks after fledging because they are almost completely dependent on their parents for food until they disperse from the nesting territory approximately 6 weeks later.

The bald eagle breeding season tends to be longer in the southern U.S., and re-nesting following an unsuccessful first nesting attempt is more common there as well. The following table shows the timing of bald eagle breeding seasons in different regions of the country. The table represents the range of time within which the majority of nesting activities occur in each region and does not apply to any specific nesting pair. Because the timing of nesting activities may vary within a given region, you should contact the nearest U.S. Fish and Wildlife Service Field Office (see page 16) and/or your state wildlife conservation agency for more specific information on nesting chronology in your area.

Chronology of typical reproductive activities of bald eagles in the United States.

Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.
SOUTHEASTERN U.S. (FL, GA, SC, NC, AL, MS, LA, TN, KY, AR, eastern 2 of TX)											
Nest Building											
		Egg Laying/Incubation									
			Hatching/Rearing Young								
					Fledging Young						
CHESAPEAKE BAY REGION (NC, VA, MD, DE, southern 2 of NJ, eastern 2 of PA, panhandle of WV)											
		Nest Building									
				Egg Laying/Incubation							
					Hatching/Rearing Young						
								Fledging Young			
NORTHERN U.S. (ME, NH, MA, RI, CT, NY, northern 2 of NJ, western 2 of PA, OH, WV exc. panhandle, IN, IL, MI, WI, MN, IA, MO, ND, SD, NB, KS, CO, UT)											
			Nest Building								
					Egg Laying/Incubation						
						Hatching/Rearing Young					
								Fledging Young			
PACIFIC REGION (WA, OR, CA, ID, MT, WY, NV)											
				Nest Building							
					Egg Laying/Incubation						
						Hatching/Rearing Young					
								Fledging Young			
SOUTHWESTERN U.S. (AZ, NM, OK panhandle, western 2 of TX)											
		Nest Building									
				Egg Laying/Incubation							
					Hatching/Rearing Young						
							Fledging Young				
ALASKA											
					Nest Building						
							Egg Laying/Incubation				
							Hatching/Rearing Young				
Ing Young											Fledg-
Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.

How many chicks do bald eagles raise?

The number of eagle eggs laid will vary from 1-3, with 1-2 eggs being the most common. Only one eagle egg is laid per day, although not always on successive days. Hatching of young occurs on different days with the result that chicks in the same nest are sometimes of unequal size. The overall national fledging rate is approximately one chick per nest, annually, which results in a healthy expanding population.

What do bald eagles eat?

Bald eagles are opportunistic feeders. Fish comprise much of their diet, but they also eat waterfowl, shorebirds/colonial waterbirds, small mammals, turtles, and carrion. Because they are visual hunters, eagles typically locate their prey from a conspicuous perch, or soaring flight, then swoop down and strike. Wintering bald eagles often congregate in large numbers along streams to feed on spawning salmon or other fish species, and often gather in large numbers in areas below reservoirs, especially hydropower dams, where fish are abundant. Wintering eagles also take birds from rafts of ducks at reservoirs and rivers, and congregate on melting ice shelves to scavenge dead fish from the current or the soft melting ice. Bald eagles will also feed on carcasses along roads, in landfills, and at feedlots.

During the breeding season, adults carry prey to the nest to feed the young. Adults feed their chicks by tearing off pieces of food and holding them to the beaks of the eaglets. After fledging, immature eagles are slow to develop hunting skills, and must learn to locate reliable food sources and master feeding techniques. Young eagles will congregate together, often feeding upon easily acquired food such as carrion and fish found in abundance at the mouths of streams and shallow bays and at landfills.

The impact of human activity on nesting bald eagles

During the breeding season, bald eagles are sensitive to a variety of human activities. However, not all bald eagle pairs react to human activities in the same way. Some pairs nest successfully just dozens of yards from human activity, while others abandon nest sites in response to activities much farther away. This variability may be related to a number of factors, including visibility, duration, noise levels, extent of the area affected by the activity, prior experiences with humans, and tolerance of the individual nesting pair. The relative sensitivity of bald eagles during various stages of the breeding season is outlined in the following table.

Nesting Bald Eagle Sensitivity to Human Activities

Phase	Activity	Sensitivity to Human Activity	Comments
I	Courtship and Nest Building	Most sensitive period; likely to respond negatively	Most critical time period. Disturbance is manifested in nest abandonment. Bald eagles in newly established territories are more prone to abandon nest sites.
II	Egg laying	Very sensitive period	Human activity of even limited duration may cause nest desertion and abandonment of territory for the breeding season.
III	Incubation and early nestling period (up to 4 weeks)	Very sensitive period	Adults are less likely to abandon the nest near and after hatching. However, flushed adults leave eggs and young unattended; eggs are susceptible to cooling, loss of moisture, overheating, and predation; young are vulnerable to elements.
IV	Nestling period, 4 to 8 weeks	Moderately sensitive period	Likelihood of nest abandonment and vulnerability of the nestlings to elements somewhat decreases. However, nestlings may miss feedings, affecting their survival.
V	Nestlings 8 weeks through fledging	Very sensitive period	Gaining flight capability, nestlings 8 weeks and older may flush from the nest prematurely due to disruption and die.

If agitated by human activities, eagles may inadequately construct or repair their nest, may expend energy defending the nest rather than tending to their young, or may abandon the nest altogether. Activities that cause prolonged absences of adults from their nests can jeopardize eggs or young. Depending on weather conditions, eggs may overheat or cool too much and fail to hatch. Unattended eggs and nestlings are subject to predation. Young nestlings are particularly vulnerable because they rely on their parents to provide warmth or shade, without which they may die as a result of hypothermia or heat stress. If food delivery schedules are interrupted, the young may not develop healthy plumage, which can affect their survival. In addition, adults startled while incubating or brooding young may damage eggs or injure their young as they abruptly leave the nest. Older nestlings no longer require constant attention from the adults, but they may be startled by loud or intrusive human activities and prematurely jump from the nest before they are able to fly or care for themselves. Once fledged, juveniles range up to ¼ mile from the nest site, often to a site with minimal human activity. During this period, until about six weeks after departure from the nest, the juveniles still depend on the adults to feed them.

The impact of human activity on foraging and roosting bald eagles

Disruption, destruction, or obstruction of roosting and foraging areas can also negatively affect bald eagles. Disruptive activities in or near eagle foraging areas can interfere with feeding, reducing chances of survival. Interference with feeding can also result in reduced productivity (number of young successfully fledged). Migrating and wintering bald eagles often congregate at specific sites for purposes of feeding and sheltering. Bald eagles rely on established roost sites because of their proximity to sufficient food sources. Roost sites are usually in mature trees where the eagles are somewhat sheltered from the wind and weather. Human activities near or within communal roost sites may prevent eagles

from feeding or taking shelter, especially if there are not other undisturbed and productive feeding and roosting sites available. Activities that permanently alter communal roost sites and important foraging areas can altogether eliminate the elements that are essential for feeding and sheltering eagles.

Where a human activity agitates or bothers roosting or foraging bald eagles to the degree that causes injury or substantially interferes with breeding, feeding, or sheltering behavior and causes, or is likely to cause, a loss of productivity or nest abandonment, the conduct of the activity constitutes a violation of the Eagle Act's prohibition against disturbing eagles. The circumstances that might result in such an outcome are difficult to predict without detailed site-specific information. If your activities may disturb roosting or foraging bald eagles, you should contact your local Fish and Wildlife Service Field Office (see page 16) for advice and recommendations for how to avoid such disturbance.

RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT NEST SITES

In developing these Guidelines, we relied on existing state and regional bald eagle guidelines, scientific literature on bald eagle disturbance, and recommendations of state and Federal biologists who monitor the impacts of human activity on eagles. Despite these resources, uncertainties remain regarding the effects of many activities on eagles and how eagles in different situations may or may not respond to certain human activities. The Service recognizes this uncertainty and views the collection of better biological data on the response of eagles to disturbance as a high priority. To the extent that resources allow, the Service will continue to collect data on responses of bald eagles to human activities conducted according to the recommendations within these Guidelines to ensure that adequate protection from disturbance is being afforded, and to identify circumstances where the Guidelines might be modified. These data will be used to make future adjustments to the Guidelines.

To avoid disturbing nesting bald eagles, we recommend (1) keeping a distance between the activity and the nest (distance buffers), (2) maintaining preferably forested (or natural) areas between the activity and around nest trees (landscape buffers), and (3) avoiding certain activities during the breeding season. The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest trees and provide for alternative or replacement nest trees.

The size and shape of effective buffers vary depending on the topography and other ecological characteristics surrounding the nest site. In open areas where there are little or no forested or topographical buffers, such as in many western states, distance alone must serve as the buffer. Consequently, in open areas, the distance between the activity and the nest may need to be larger than the distances recommended under Categories A and B of these guidelines (pg. 12) if no landscape buffers are present. The height of the nest above the ground may also ameliorate effects of human activities; eagles at higher nests may be less prone to disturbance.

In addition to the physical features of the landscape and nest site, the appropriate size for the distance buffer may vary according to the historical tolerances of eagles to human activities in particular localities, and may also depend on the location of the nest in relation

to feeding and roosting areas used by the eagles. Increased competition for nest sites may lead bald eagles to nest closer to human activity (and other eagles).

Seasonal restrictions can prevent the potential impacts of many shorter-term, obtrusive activities that do not entail landscape alterations (e.g. fireworks, outdoor concerts). In proximity to the nest, these kinds of activities should be conducted only outside the breeding season. For activities that entail both short-term, obtrusive characteristics and more permanent impacts (e.g., building construction), we recommend a combination of both approaches: retaining a landscape buffer *and* observing seasonal restrictions.

For assistance in determining the appropriate size and configuration of buffers or the timing of activities in the vicinity of a bald eagle nest, we encourage you to contact the nearest U.S. Fish and Wildlife Service Field Office (see page 16).

Existing Uses

Eagles are unlikely to be disturbed by routine use of roads, homes, and other facilities where such use pre-dates the eagles' successful nesting activity in a given area. Therefore, in most cases *ongoing* existing uses may proceed with the same intensity with little risk of disturbing bald eagles. However, some *intermittent, occasional, or irregular* uses that pre-date eagle nesting in an area may disturb bald eagles. For example: a pair of eagles may begin nesting in an area and subsequently be disturbed by activities associated with an annual outdoor flea market, even though the flea market has been held annually at the same location. In such situations, human activity should be adjusted or relocated to minimize potential impacts on the nesting pair.

ACTIVITY-SPECIFIC GUIDELINES

The following section provides the Service's management recommendations for avoiding bald eagle disturbance as a result of new or intermittent activities proposed in the vicinity of bald eagle nests. Activities are separated into 8 categories (A – H) based on the nature and magnitude of impacts to bald eagles that usually result from the type of activity. Activities with similar or comparable impacts are grouped together.

In most cases, impacts will vary based on the visibility of the activity from the eagle nest and the degree to which similar activities are already occurring in proximity to the nest site. Visibility is a factor because, in general, eagles are more prone to disturbance when an activity occurs in full view. For this reason, we recommend that people locate activities farther from the nest structure in areas with open vistas, in contrast to areas where the view is shielded by rolling topography, trees, or other screening factors. The recommendations also take into account the existence of similar activities in the area because the continued presence of nesting bald eagles in the vicinity of the existing activities indicates that the eagles in that area can tolerate a greater degree of human activity than we can generally expect from eagles in areas that experience fewer human impacts. To illustrate how these factors affect the likelihood of disturbing eagles, we have incorporated the recommendations for some activities into a table (categories A and B).

First, determine which category your activity falls into (between categories A – H). If the activity you plan to undertake is not specifically addressed in these guidelines, follow the recommendations for the most similar activity represented.

If your activity is under A or B, our recommendations are in table form. The vertical axis shows the degree of visibility of the activity from the nest. The horizontal axis (header row) represents the degree to which similar activities are ongoing in the vicinity of the nest. Locate the row that best describes how visible your activity will be from the eagle nest. Then, choose the column that best describes the degree to which similar activities are ongoing in the vicinity of the eagle nest. The box where the column and row come together contains our management recommendations for how far you should locate your activity from the nest to avoid disturbing the eagles. The numerical distances shown in the tables are the closest the activity should be conducted relative to the nest. In some cases we have included additional recommendations (other than recommended *distance* from the nest) you should follow to help ensure that your activity will not disturb the eagles.

Alternate nests

For activities that entail permanent landscape alterations that may result in bald eagle disturbance, these recommendations apply to both active and alternate bald eagle nests. Disturbance becomes an issue with regard to alternate nests if eagles return for breeding purposes and react to land use changes that occurred while the nest was inactive. The likelihood that an alternate nest will again become active decreases the longer it goes unused. If you plan activities in the vicinity of an alternate bald eagle nest and have information to show that the nest has not been active during the preceding 5 breeding seasons, the recommendations provided in these guidelines for avoiding disturbance around the nest site may no longer be warranted. The nest itself remains protected by other provisions of the Eagle Act, however, and may not be destroyed.

If special circumstances exist that make it unlikely an inactive nest will be reused before 5 years of disuse have passed, and you believe that the probability of reuse is low enough to warrant disregarding the recommendations for avoiding disturbance, you should be prepared to provide all the reasons for your conclusion, including information regarding past use of the nest site. Without sufficient documentation, you should continue to follow these guidelines when conducting activities around the nest site. If we are able to determine that it is unlikely the nest will be reused, we may advise you that the recommendations provided in these guidelines for avoiding disturbance are no longer necessary around that nest site.

This guidance is intended to minimize disturbance, as defined by Federal regulation. In addition to Federal laws, most states and some tribes and smaller jurisdictions have additional laws and regulations protecting bald eagles. In some cases those laws and regulations may be more protective (restrictive) than these Federal guidelines.

Temporary Impacts

For activities that have temporary impacts, such as the use of loud machinery, fireworks displays, or summer boating activities, we recommend seasonal restrictions. These types of activities can generally be carried out outside of the breeding season without causing disturbance. The recommended restrictions for these types of activities can be lifted for alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched (depending on the distance between the alternate nest and the active nest).

In general, activities should be kept as far away from nest trees as possible; loud and disruptive activities should be conducted when eagles are not nesting; and activity between the nest and the nearest foraging area should be minimized. If the activity you plan to undertake is not specifically addressed in these guidelines, follow the recommendations for the most similar activity addressed, or contact your local U.S. Fish and Wildlife Service Field Office for additional guidance.

If you believe that special circumstances apply to your situation that increase or diminish the likelihood of bald eagle disturbance, or if it is not possible to adhere to the guidelines, you should contact your local Service Field Office for further guidance.

Category A:

Building construction, 1 or 2 story, with project footprint of ½ acre or less.
Construction of roads, trails, canals, power lines, and other linear utilities.
Agriculture and aquaculture – new or expanded operations.
Alteration of shorelines or wetlands.
Installation of docks or moorings.
Water impoundment.

Category B:

Building construction, 3 or more stories.
Building construction, 1 or 2 story, with project footprint of more than ½ acre.
Installation or expansion of marinas with a capacity of 6 or more boats.
Mining and associated activities.
Oil and natural gas drilling and refining and associated activities.

	<i>If there is no similar activity within 1 mile of the nest</i>	<i>If there is similar activity closer than 1 mile from the nest</i>
<i>If the activity will be visible from the nest</i>	660 feet. Landscape buffers are recommended.	660 feet, or as close as existing tolerated activity of similar scope. Landscape buffers are recommended.
<i>If the activity will not be visible from the nest</i>	Category A: 330 feet. Clearing, external construction, and landscaping between 330 feet and 660 feet should be done outside breeding season. Category B: 660 feet.	330 feet, or as close as existing tolerated activity of similar scope. Clearing, external construction and landscaping within 660 feet should be done outside breeding season.

The numerical distances shown in the table are the closest the activity should be conducted relative to the nest.

Category C. Timber Operations and Forestry Practices

- Avoid clear cutting or removal of overstory trees within 330 feet of the nest at any time.
- Avoid timber harvesting operations, including road construction and chain saw and yarding operations, during the breeding season within 660 feet of the nest. The distance may be decreased to 330 feet around alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched.
- Selective thinning and other silviculture management practices designed to conserve or enhance habitat, including prescribed burning close to the nest tree, should be undertaken outside the breeding season. Precautions such as raking leaves and woody debris from around the nest tree should be taken to prevent crown fire or fire climbing the nest tree. If it is determined that a burn during the breeding season would be beneficial, then, to ensure that no take or disturbance will occur, these activities should be conducted only when neither adult eagles nor young are present at the nest tree (i.e., at the beginning of, or end of, the breeding season, either before the particular nest is active or after the young have fledged from that nest). Appropriate Federal and state biologists should be consulted before any prescribed burning is conducted during the breeding season.
- Avoid construction of log transfer facilities and in-water log storage areas within 330 feet of the nest.

Category D. Off-road vehicle use (including snowmobiles). No buffer is necessary around nest sites outside the breeding season. During the breeding season, do not operate off-road vehicles within 330 feet of the nest. In open areas, where there is increased visibility and exposure to noise, this distance should be extended to 660 feet.

Category E. Motorized Watercraft use (including jet skis/personal watercraft). No buffer is necessary around nest sites outside the breeding season. During the breeding season, within 330 feet of the nest, (1) do not operate jet skis (personal watercraft), and (2) avoid concentrations of noisy vessels (e.g., commercial fishing boats and tour boats), except where eagles have demonstrated tolerance for such activity. Other motorized boat traffic passing within 330 feet of the nest should attempt to minimize trips and avoid stopping in the area where feasible, particularly where eagles are unaccustomed to boat traffic. Buffers for airboats should be larger than 330 feet due to the increased noise they generate, combined with their speed, maneuverability, and visibility.

Category F. Non-motorized recreation and human entry (e.g., hiking, camping, fishing, hunting, birdwatching, kayaking, canoeing). No buffer is necessary around nest sites outside the breeding season. If the activity will be visible or highly audible from the nest, maintain a 330-foot buffer during the breeding season, particularly where eagles are unaccustomed to such activity.

Category G. Helicopters and fixed-wing aircraft.

Except for authorized biologists trained in survey techniques, avoid operating aircraft within 1,000 feet of the nest during the breeding season, except where eagles have demonstrated tolerance for such activity.

Category H. Blasting and other loud, intermittent noises.

Avoid blasting and other activities that produce extremely loud noises within 1/2 mile of active nests, unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area. This recommendation applies to the use of fireworks classified by the Federal Department of Transportation as Class B explosives, which includes the larger fireworks that are intended for licensed public display.

RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT FORAGING AREAS AND COMMUNAL ROOST SITES

1. Minimize potentially disruptive activities and development in the eagles' direct flight path between their nest and roost sites and important foraging areas.
2. Locate long-term and permanent water-dependent facilities, such as boat ramps and marinas, away from important eagle foraging areas.
3. Avoid recreational and commercial boating and fishing near critical eagle foraging areas during peak feeding times (usually early to mid-morning and late afternoon), except where eagles have demonstrated tolerance to such activity.
4. Do not use explosives within ½ mile (or within 1 mile in open areas) of communal roosts when eagles are congregating, without prior coordination with the U.S. Fish and Wildlife Service and your state wildlife agency.
5. Locate aircraft corridors no closer than 1,000 feet vertical or horizontal distance from communal roost sites.

ADDITIONAL RECOMMENDATIONS TO BENEFIT BALD EAGLES

The following are additional management practices that landowners and planners can exercise for added benefit to bald eagles.

1. Protect and preserve potential roost and nest sites by retaining mature trees and old growth stands, particularly within ½ mile from water.
2. Where nests are blown from trees during storms or are otherwise destroyed by the elements, continue to protect the site in the absence of the nest for up to three (3) complete breeding seasons. Many eagles will rebuild the nest and reoccupy the site.
3. To avoid collisions, site wind turbines, communication towers, and high voltage transmission power lines away from nests, foraging areas, and communal roost sites.
4. Employ industry-accepted best management practices to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. If possible, bury utility lines in important eagle areas.
5. Where bald eagles are likely to nest in human-made structures (e.g., cell phone towers) and such use could impede operation or maintenance of the structures or jeopardize the safety of the eagles, equip the structures with either (1) devices engineered to discourage bald eagles from building nests, or (2) nesting platforms that will safely accommodate bald eagle nests without interfering with structure performance.
6. Immediately cover carcasses of euthanized animals at landfills to protect eagles from being poisoned.
7. Do not intentionally feed bald eagles. Artificially feeding bald eagles can disrupt their essential behavioral patterns and put them at increased risk from power lines, collision with windows and cars, and other mortality factors.
8. Use pesticides, herbicides, fertilizers, and other chemicals only in accordance with Federal and state laws.
9. Monitor and minimize dispersal of contaminants associated with hazardous waste sites (legal or illegal), permitted releases, and runoff from agricultural areas, especially within watersheds where eagles have shown poor reproduction or where bioaccumulating contaminants have been documented. These factors present a risk of contamination to eagles and their food sources.

CONTACTS

The following U.S. Fish and Wildlife Service Field Offices provide technical assistance on bald eagle management:

<u>Alabama</u>	Daphne	(251) 441-5181	<u>New Hampshire</u>	Concord	(603) 223-2541
<u>Alaska</u>	Anchorage	(907) 271-2888	<u>New Jersey</u>	Pleasantville	(609) 646-9310
	Fairbanks	(907) 456-0203	<u>New Mexico</u>	Albuquerque	(505) 346-2525
	Juneau	(907) 780-1160	<u>New York</u>	Cortland	(607) 753-9334
<u>Arizona</u>	Phoenix	(602) 242-0210		Long Island	(631) 776-1401
<u>Arkansas</u>	Conway	(501) 513-4470	<u>North Carolina</u>	Raleigh	(919) 856-4520
<u>California</u>	Arcata	(707) 822-7201		Asheville	(828) 258-3939
	Barstow	(760) 255-8852	<u>North Dakota</u>	Bismarck	(701) 250-4481
	Carlsbad	(760) 431-9440	<u>Ohio</u>	Reynoldsburg	(614) 469-6923
	Red Bluff	(530) 527-3043	<u>Oklahoma</u>	Tulsa	(918) 581-7458
	Sacramento	(916) 414-6000	<u>Oregon</u>	Bend	(541) 383-7146
	Stockton	(209) 946-6400		Klamath Falls	(541) 885-8481
	Ventura	(805) 644-1766		La Grande	(541) 962-8584
	Yreka	(530) 842-5763		Newport	(541) 867-4558
<u>Colorado</u>	Lakewood	(303) 275-2370		Portland	(503) 231-6179
	Grand Junction	(970) 243-2778		Roseburg	(541) 957-3474
<u>Connecticut</u>	(See New Hampshire)		<u>Pennsylvania</u>	State College	(814) 234-4090
<u>Delaware</u>	(See Maryland)		<u>Rhode Island</u>	(See New Hampshire)	
<u>Florida</u>	Panama City	(850) 769-0552	<u>South Carolina</u>	Charleston	(843) 727-4707
	Vero Beach	(772) 562-3909	<u>South Dakota</u>	Pierre	(605) 224-8693
	Jacksonville	(904) 232-2580	<u>Tennessee</u>	Cookeville	(931) 528-6481
<u>Georgia</u>	Athens	(706) 613-9493	<u>Texas</u>	Clear Lake	(281) 286-8282
	Brunswick	(912) 265-9336	<u>Utah</u>	West Valley City	(801) 975-3330
	Columbus	(706) 544-6428	<u>Vermont</u>	(See New Hampshire)	
<u>Idaho</u>	Boise	(208) 378-5243	<u>Virginia</u>	Gloucester	(804) 693-6694
	Chubbuck	(208) 237-6975	<u>Washington</u>	Lacey	(306) 753-9440
<u>Illinois/Iowa</u>	Rock Island	(309) 757-5800		Spokane	(509) 891-6839
<u>Indiana</u>	Bloomington	(812) 334-4261		Wenatchee	(509) 665-3508
<u>Kansas</u>	Manhattan	(785) 539-3474	<u>West Virginia</u>	Elkins	(304) 636-6586
<u>Kentucky</u>	Frankfort	(502) 695-0468	<u>Wisconsin</u>	New Franken	(920) 866-1725
<u>Louisiana</u>	Lafayette	(337) 291-3100	<u>Wyoming</u>	Cheyenne	(307) 772-2374
<u>Maine</u>	Old Town	(207) 827-5938		Cody	(307) 578-5939
<u>Maryland</u>	Annapolis	(410) 573-4573			
<u>Massachusetts</u>	(See New Hampshire)				
<u>Michigan</u>	East Lansing	(517) 351-2555			
<u>Minnesota</u>	Bloomington	(612) 725-3548			
<u>Mississippi</u>	Jackson	(601) 965-4900			
<u>Missouri</u>	Columbia	(573) 234-2132			
<u>Montana</u>	Helena	(405) 449-5225			
<u>Nebraska</u>	Grand Island	(308) 382-6468			
<u>Nevada</u>	Las Vegas	(702) 515-5230			
	Reno	(775) 861-6300			

National Office
 U.S. Fish and Wildlife Service
 Division of Migratory Bird Management
 4401 North Fairfax Drive, MBSP-4107
 Arlington, VA 22203-1610
 (703) 358-1714
<http://www.fws.gov/migratorybirds>

State Agencies

To contact a state wildlife agency, visit the Association of Fish & Wildlife Agencies' website at http://www.fishwildlife.org/where_us.html

GLOSSARY

The definitions below apply to these National Bald Eagle Management Guidelines:

Communal roost sites – Areas where bald eagles gather and perch overnight – and sometimes during the day in the event of inclement weather. Communal roost sites are usually in large trees (live or dead) that are relatively sheltered from wind and are generally in close proximity to foraging areas. These roosts may also serve a social purpose for pair bond formation and communication among eagles. Many roost sites are used year after year.

Disturb – To agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

In addition to immediate impacts, this definition also covers impacts that result from human-caused alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

Fledge – To leave the nest and begin flying. For bald eagles, this normally occurs at 10-12 weeks of age.

Fledgling – A juvenile bald eagle that has taken the first flight from the nest but is not yet independent.

Foraging area – An area where eagles feed, typically near open water such as rivers, lakes, reservoirs, and bays where fish and waterfowl are abundant, or in areas with little or no water (i.e., rangelands, barren land, tundra, suburban areas, etc.) where other prey species (e.g., rabbit, rodents) or carrion (such as at landfills) are abundant.

Landscape buffer – A natural or human-made landscape feature that screens eagles from human activity (e.g., strip of trees, hill, cliff, berm, sound wall).

Nest – A structure built, maintained, or used by bald eagles for the purpose of reproduction. An **active** nest is a nest that is attended (built, maintained or used) by a pair of bald eagles during a given breeding season, whether or not eggs are laid. An **alternate** nest is a nest that is not used for breeding by eagles during a given breeding season.

Nest abandonment – Nest abandonment occurs when adult eagles desert or stop attending a nest and do not subsequently return and successfully raise young in that nest for the duration of a breeding season. Nest abandonment can be caused by altering habitat near a nest, even if the alteration occurs prior to the breeding season. Whether the eagles migrate during the non-breeding season, or remain in the area throughout the non-breeding season, nest abandonment can occur at any point between the time the eagles return to the nesting site for the breeding season and the time when all progeny from the breeding season have

dispersed.

Project footprint – The area of land (and water) that will be permanently altered for a development project, including access roads.

Similar scope – In the vicinity of a bald eagle nest, an existing activity is of similar scope to a new activity where the types of impacts to bald eagles are similar in nature, and the impacts of the existing activity are of the same or greater magnitude than the impacts of the potential new activity. Examples: (1) An existing single-story home 200 feet from a nest is similar in scope to an additional single-story home 200 feet from the nest; (2) An existing multi-story, multi-family dwelling 150 feet from a nest has impacts of a greater magnitude than a potential new single-family home 200 feet from the nest; (3) One existing single-family home 200 feet from the nest has impacts of a lesser magnitude than three single-family homes 200 feet from the nest; (4) an existing single-family home 200 feet from a communal roost has impacts of a lesser magnitude than a single-family home 300 feet from the roost but 40 feet from the eagles' foraging area. The existing activities in examples (1) and (2) are of similar scope, while the existing activities in example (3) and (4) are not.

Vegetative buffer – An area surrounding a bald eagle nest that is wholly or largely covered by forest, vegetation, or other natural ecological characteristics, and separates the nest from human activities.

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FWC Bald Eagle (*Haliaeetus leucocephalus*) Management Plan Handbook

June 2010



**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
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Table of Contents

FWC MANAGEMENT PLAN DEFINITIONS	2
BALD EAGLE (<i>HALIAEETUS LEUCOCEPHALUS</i>) BIOLOGY	2
EFFECTS OF DEVELOPMENT ON EAGLES	6
BALD EAGLE RECOVERY STATUS.....	7
BALD EAGLE RULES AND REGULATIONS.....	8
FWC BALD EAGLE MANAGEMENT PLAN GUIDELINES	10
PERMITTING OPTIONS	10
PERMITTING PROCESS MAP	10
ACTIONS THAT DO NOT REQUIRE A FWC EAGLE PERMIT:	10
ACTIONS THAT DO NOT REQUIRE A FWC EAGLE PERMIT (IF FEDERALLY AUTHORIZED):	11
ACTIVITIES THAT MAY REQUIRE A FWC EAGLE PERMIT	12
ACTIONS THAT REQUIRE A FWC EAGLE PERMIT	17
MINIMIZATION AND CONSERVATION MEASURES.....	20
MINIMIZATION MEASURES FOR ACTIONS REQUIRING A PERMIT:	20
CONSERVATION MEASURES FOR ACTIONS REQUIRING A PERMIT:	21
CONSERVATION MEASURE GUIDELINES:	22
LANDOWNER STEWARDSHIP INCENTIVES.....	24
LITERATURE CITED	25

LIST OF FIGURES

THE DISTRIBUTION OF ACTIVE BALD EAGLE NESTING TERRITORIES IN FLORIDA, 2008-2009.....	4
LOCATION OF BALD EAGLE CORE NESTING AREAS IN FLORIDA, 2005–2006.	5
PROCESS MAP FOR DETERMINING WHETHER OR NOT A FWC EAGLE PERMIT WOULD BE RECOMMENDED FOR A PROPOSED ACTIVITY NEAR A BALD EAGLE NEST.....	10

FWC Management Plan Definitions

For more definitions please see the FWC Bald Eagle Management Plan (2008). Visit [FWC's bald eagle Web site](#) to obtain a copy of the management plan.

Active nest- a nest that shows or showed evidence of breeding by bald eagles, such as an adult attending the nest or in incubating position, a clutch of eggs, or a brood of nestlings, at any time during the current or most recent nesting season.

Alternate Nest: a bald eagle nest that is intact or partially intact and has been used by bald eagles at any time during the past five nesting seasons, but was not used during the current or most recent nesting season.

Abandoned Nest: a bald eagle nest that is intact or partially intact, but it has been inactive through six or more consecutive nesting seasons. While the buffer zone surrounding the nest is no longer protected, the nest itself may not be altered.

Lost Nest: a nest that is no longer present or intact due to natural causes (*e.g.*, fell apart or was blown out of a tree). In some cases, the nest tree itself may be lost. The FWC recommendations in the section entitled Permitting Framework April 2008 apply to lost nests through two complete, consecutive nesting seasons.

*Nesting Season: 1 Oct- 15 May

*Non-nesting Season 16 May- 30 Sep

***Eagles may begin nesting prior to 1 Oct or may nest after 15 May. It is the responsibility of the interested party to determine if eagles are present.**

Bald Eagle (*Haliaeetus leucocephalus*) Biology

BIOLOGICAL BACKGROUND

The bald eagle (*Haliaeetus leucocephalus*) is the symbol of the United States and one of North America's most spectacular birds. It is also one of the most thoroughly studied birds, with perhaps 2,500 articles published on its biology or management (Buehler 2000). Detailed information on the biology of bald eagles throughout their range is found in Stalmaster (1987), Gerrard and Bortolotti (1988), and Buehler (2000). For more information regarding bald eagle biology visit [FWC's bald eagle Web site](#).

Life History and Habitat

Breeding Behavior

Bald eagles in Florida begin nest building or nest maintenance activities in late September or early October. The nesting season is prolonged, with egg-laying beginning as early as October or as late as April (later nests are mostly renesting attempts; Millsap *et al.* 2004). For purposes of the FWC management plan (2008), the bald eagle nesting season is defined as the period 1 October–15 May. Nest sites tend to be built near habitat edges (McEwan and Hirth 1980) in a living tree that offers a view of the surrounding area and that can support the eagle's often sizeable nest. Substrates used in Florida vary according to local conditions, and include pines (*Pinus palustris* and *P. elliotii*), cypress (*Taxodium* spp.), mangroves (*Avicennia germinans* and *Rhizophora mangle*), great blue heron (*Ardea herodias*) nests, artificial structures such as communication towers, transmission towers, and raptor nesting platforms, and even—very rarely—on the ground (Broley 1947, Shea *et al.* 1979, Curnutt and Robertson 1994, Curnutt 1996, Millsap *et al.* 2004). However, bald eagles in Florida strongly prefer living native pines to all other substrates; 75% of all eagle nests surveyed during 2006 were built in living native pines (FWC unpublished data).

Eagle pairs often build more than one nest, which allows them to move to an alternate nest while remaining in their territory. Throughout their range, eagles maintain an average of 1.5 nests per territory, ranging from one nest to five nests (Stalmaster 1987, Buehler 2000).

Most clutches of eggs in Florida are laid between December and early January. Mean clutch size throughout the bald eagle's range is 1.87 eggs, with most nests containing two eggs. Incubation lasts about 35 days. Average brood size in Florida is 1.56 nestlings per nest (FWC unpublished data). Nestlings in Florida fledge at around 11 weeks of age and remain with their parents near the nest for an additional 4–11 weeks (Wood 1992, Wood *et al.* 1998). Fledglings begin widespread local movements before initial dispersal, which occurs from April to July (Millsap *et al.* 2004).

Habitat

The quality of foraging habitat is characterized by the diversity, abundance, and vulnerability of eagle prey, the structure of the aquatic habitat (*e.g.*, presence of shallow water), and the extent of human disturbance (Buehler 2000). Bald eagle nesting habitats are protected by law, but little or no emphasis has yet been placed on the preservation of roosting or foraging habitats (Mojica 2006). The greatest numbers of bald eagle nesting territories in Florida are found along the Gulf coast and around some of the larger inland lakes and river systems in the peninsula (Figure 1).

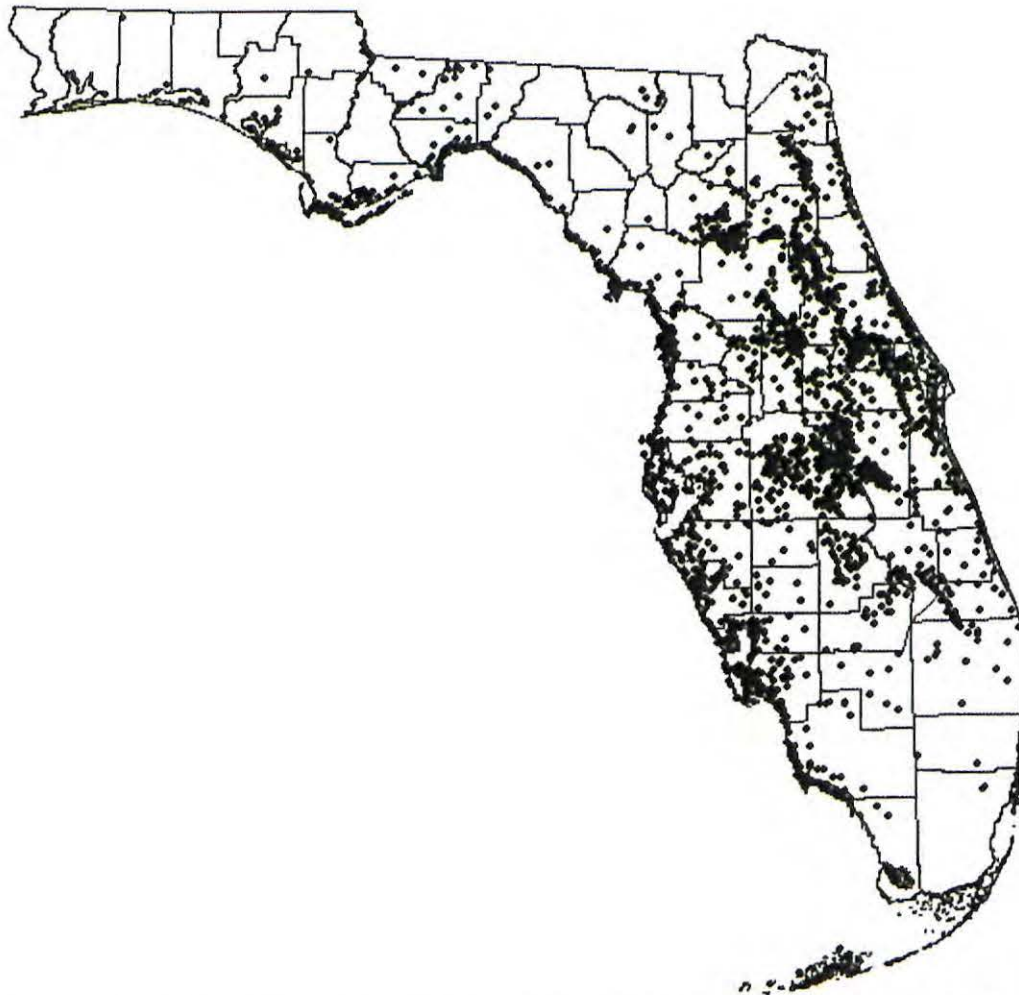


Figure 1. The Distribution of active bald eagle nesting territories in Florida, 2008-2009.

Distribution and Population Status

Current Distribution

Bald eagles reclaimed their entire historic range by the late 1990s (Buehler 2000). Recovery in the Lower 48 states has been dramatic, increasing from an estimated 417 pairs in 1963 to an estimated 9,789 pairs by 2007 (USFWS 2007a). Bald eagles have met or exceeded the population goals established in all five regional recovery plans, and on 8 August 2007, the USFWS removed the species from the list of federally endangered and threatened species.

Bald eagles were known to breed in 59 of Florida's 67 counties by 2005, the exceptions being Baker, Broward, Calhoun, Gilchrist, Holmes, Lafayette, Madison, and Nassau (Nesbitt 2005; Figure 1). Most nests are found on privately-owned lands (67% in 2003;

Nesbitt *et al.* in review; unpublished GIS data), underscoring the importance of private lands in the conservation of eagles in Florida.

Concentrations of nesting territories are clustered around several significant wetland systems. The FWC has identified 16 areas of concentrated bald eagle nesting activity that contain a majority of the known nesting territories in Florida (Figure 2). Many of these “core nesting areas” have persisted for decades, suggesting the presence of high-quality breeding and foraging habitats (Nesbitt *et al.* in review). These core nesting areas are located along the Gulf coast from St. Vincent Island to Lee County, and inland from the lower St. Johns River to Lake Okeechobee (Figure 2). Changes in the size, configuration, and location of these core nesting areas are monitored, and their importance to the overall population of bald eagles in Florida will be determined as new data become available. The most current list of active territories by county is available below (Table 1).

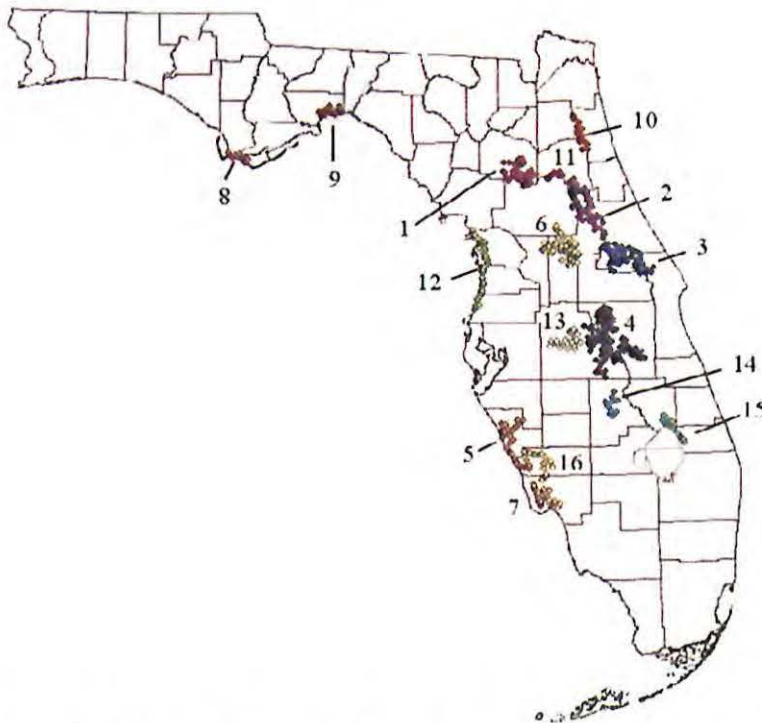


Figure 2. Location of bald eagle core nesting areas in Florida, 2005–2006. These core nesting areas, which are numbered chronologically from their discovery, are found in the following sites: (1) lakes Lochloosa, Newnans, and Orange; (2) Lake George; (3) the middle St. Johns River; (4) the Kissimmee chain of lakes; (5) the Placida Peninsula; (6) the Harris chain of lakes; (7) the Lee County coast; (8) St. Vincent National Wildlife Refuge; (9) St. Marks National Wildlife Refuge; (10) the lower St. Johns River; (11) Rodman Reservoir; (12) the central Gulf coast; (13) central Polk County; (14) Lake Istokpoga; (15) northeast Lake Okeechobee; and (16) coastal Charlotte County.

Table 1. Partial list of active territories by county, 2004-2009. Data source is Brush and Nesbitt (2009).

COUNTY	YEAR						
	2009	2008	2007	2006	2005	2004	Average
Polk	116*	119	113	121	122	118	118
Osceola	125	116	112	107	118	116	116
Lake	66*	70	69	75	65	68	69
Volusia	70	73	60	66	70	67	68
Putnam	77*	67	50	41	57	46	56
Seminole	49*	49	51	52	47	46	49
Lee	47	51	50	47	42	43	47
Marion	58*	51	46	38	36	34	44
Alachua	53*	51	42	43	40	33	44
Brevard	30	39	42	43	42	41	40
Sarasota	45*	41	37	33	34	31	37
Orange	40*	38	35	34	29	30	34
Highlands	35*	37	32	37	30	25	33
Charlotte	43*	38	29	26	26	25	31
Franklin	33*	28	40	25	34	20	30

* Designates estimates based on statistical analyses

Effects of Development on Eagles

Some bald eagle pairs in Florida tolerate disturbance much closer than 660 feet from the nest, and the behavior of eagles nesting close to or within developed areas seems to be increasing in Florida. Bald eagle use of urban areas is a relatively new event, and the long-term stability of urban eagle territories has not been documented fully. Although some eagles have demonstrated tolerance for intensive human activity, this does not mean that all eagles will do so (Millsap *et al.* 2004). A minimum of five years of post-impact data is needed to study the long-term effects of development within regulated nest buffer zones (Nesbitt *et al.* 1993). Both studies described above (Nesbitt *et al.* 1993, Millsap *et al.* 2004) recommended retaining buffer zones around bald eagle nests. Therefore, the conservation of active or alternate bald eagle nests and the retention of

recommended buffer zones (USFWS 2007b) are recommended to sustain the bald eagle population in Florida at or above its current level.

Bald Eagle Recovery Status

Historic and Ongoing Conservation Efforts

Substantial monitoring, management, and research activities have been conducted on Florida's bald eagles for more than 60 years, and many journal articles and reports have been produced. Since the 1972–1973 nesting season, all known nesting territories were monitored annually by use of aircraft to determine reproductive parameters such as territory occupancy, brood size, breeding productivity, and reproductive success. Beginning in the 2008–2009 breeding season, the FWC began using a new survey protocol based on a stratified sampling method with coverage of 1/3 of the known nests each year. A subset of the known active nests was revisited to get a statewide production estimate. Using these data, an extrapolated population estimate was derived with the use of an algorithm based on data collected during the preceding 35 years of activity and production surveys (Brush and Nesbitt 2009; Appendix 1).

Several federal and state laws have directly or indirectly protected bald eagles. The most important laws include the federal Migratory Bird Treaty Act, the federal Bald and Golden Eagle Protection Act, and the federal Endangered Species Act, as well as state regulations noted in this document. The bald eagle was first protected nationally in 1918 under the Migratory Bird Treaty Act (16 U.S.C. 703–711), which protected nearly all native birds and their nests. The Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668a–668c) offered additional protection against take and disturbance of bald eagles and their nests. In 1972, the U.S. Environmental Protection Agency banned all domestic use of DDT, and this prohibition allowed bald eagle populations to recover from pesticide poisoning. The following year, the Endangered Species Act of 1973 (16 U.S.C. 1531–1544) was passed, and the bald eagle was added to the list of federally endangered and threatened species in 1978.

Bald eagle nesting habitats in Florida have been protected primarily through the Endangered Species Act in accordance with habitat management guidelines in the southeastern United States (USFWS 1987). These federal guidelines created buffers around eagle nests in which activities such as development or logging were restricted. Two buffer zones were recommended: a primary zone (0 to 750–1500 feet from the nest) and a secondary zone (1,500 feet to one mile beyond the end of the primary zone). The USFWS (2007b) published federal guidelines that recommend a buffer zone that extends up to 660 feet from the nest depending upon whether a visual screen of vegetation exists around the nest, and the presence of existing activities in the vicinity of the nest, with additional recommendations for proposed activities occurring during the nesting season.

Florida also had state regulations that protected the bald eagle. The eagle was listed as threatened and therefore received protections afforded it by Rule 68A-27.004 of the Florida Administrative Code (F.A.C.), which prohibited the non-permitted take or harassment of eagles or their nests. There are local and state regulations tied to the listing

category of a species. The Florida Land and Water Management Act of 1972 indirectly protected some eagle habitats by establishing two state programs: Development of Regional Impact and Area of Critical State Concern. The Area of Critical State Concern Program regulates development in areas of regional or statewide natural significance, such as Apalachicola Bay, the Green Swamp, Big Cypress Swamp, and the Florida Keys. The bald eagle is listed as a species of “greatest conservation need” in the Florida Comprehensive Wildlife Conservation Strategy (FWC 2005). This is not a legal designation but rather makes conservation work on the bald eagle eligible to receive State Wildlife Grant funds to address the need for continued management and monitoring activities.

State water management districts and local governments provided additional layers of protection for bald eagles. Local regulations emphasize listed species (endangered, threatened, or species of special concern) and their habitats when considering comprehensive planning, zoning, development review, and permitting activities. Prioritization of listed species, requirements for surveys and documentation, increased buffer zones, protection of upland habitats, additional mitigation requirements, more intensive levels of review, and coordination and compliance with appropriate federal and state wildlife agencies are some of the procedures that local governments and state wildlife agencies apply to listed species.

Bald Eagle Rules and Regulations

During 2006, the USFWS proposed removing the bald eagle from the list of federally endangered and threatened species, and this action was finalized in August 2007. Although the bald eagle is no longer protected under the Endangered Species Act, it is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The USFWS (2007b) has redefined some of the terminology included in the Bald and Golden Eagle Protection Act, which prohibits the unpermitted “take” of bald eagles, including their nests or eggs. The act defines “take” to mean to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” an eagle. The new definition of “disturb” is to “agitate or bother a bald or golden eagle to the degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (USFWS 2007b). The FWC management plan (2008) adopted the federal definition of “disturb” in 50 C.F.R. § part 22.3 and Florida’s definition of “take” in Rule 68A-1.004, F.A.C.

To better organize existing rules and to provide a location for eagle-specific rules, the FWC proposed to establish a new section within F.A.C. Chapter 68A for nongame birds (Rules Relating to Birds. F.A.C. 68A-16). Currently there are specific sections of Chapter 68A that regulate the “take” of game species, freshwater fish, fur-bearing animals, reptiles, amphibians, and many saltwater species. F.A.C. 68A-16 will create one location for existing rules pertaining to all non-listed, nongame birds. The FWC proposed moving F.A.C. 68A-13.002, “Migratory Birds; Adoption of Federal Statutes and Regulations,” to this new section (Rules Relating to Birds. F.A.C. 68A-16.001). A review of current FWC

rules will likely identify other rules that should be moved to this new section. Other than the eagle specific rule proposed below, the FWC is not proposing any new rules, only the reorganization of existing rules.

One rule change was necessary to implement the removal of the bald eagle from the list of threatened species (68A-27.004 F.A.C.). The FWC management plan (2008) recommended that 68A-27.004 F.A.C. be amended by removing the bald eagle from the list simultaneously with the addition of the bald eagle rule language proposed below.

F.A.C. 68A-16.002 Bald Eagle (*Haliaeetus leucocephalus*).

(1) No person shall take, feed, disturb, possess, sell, purchase or barter, or attempt to engage in any such conduct, any bald eagle or parts thereof, or their nests or eggs, except:

(a) As authorized from the executive director by specific permit, which will be issued based upon whether the permit would advance the management plan goal and objectives;

(b) When such conduct is consistent with the FWC Eagle Management Guidelines;

(c) When such conduct is consistent with a previously issued permit, exemption, or authorization issued by the FWC under imperiled species regulations (Chapter 68A-27, F.A.C.) or by the USFWS under the Endangered Species Act (U.S.C. 1531 et seq.)

(2) For purposes of this section, the term ~~“disturb”~~ is defined as, ~~“to agitate or bother~~ a bald eagle to the degree that causes, or is likely to cause (a) injury to an eagle, (b) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (c) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

(3) On public land, it is unlawful for any person to knowingly enter any area posted as closed for the protection of bald eagles, their nests, or their nest trees, except the staff or authorized agents of the managing public entity for that area, or as authorized pursuant to subsection 1.

(4) The section of the Bald Eagle Management Plan (2008) entitled ~~“Permitting Framework April 2008,”~~ which includes the FWC Eagle Management Guidelines, is incorporated herein by reference.

FWC Bald Eagle Management Plan Guidelines

Permitting Options

Permitting Process Map

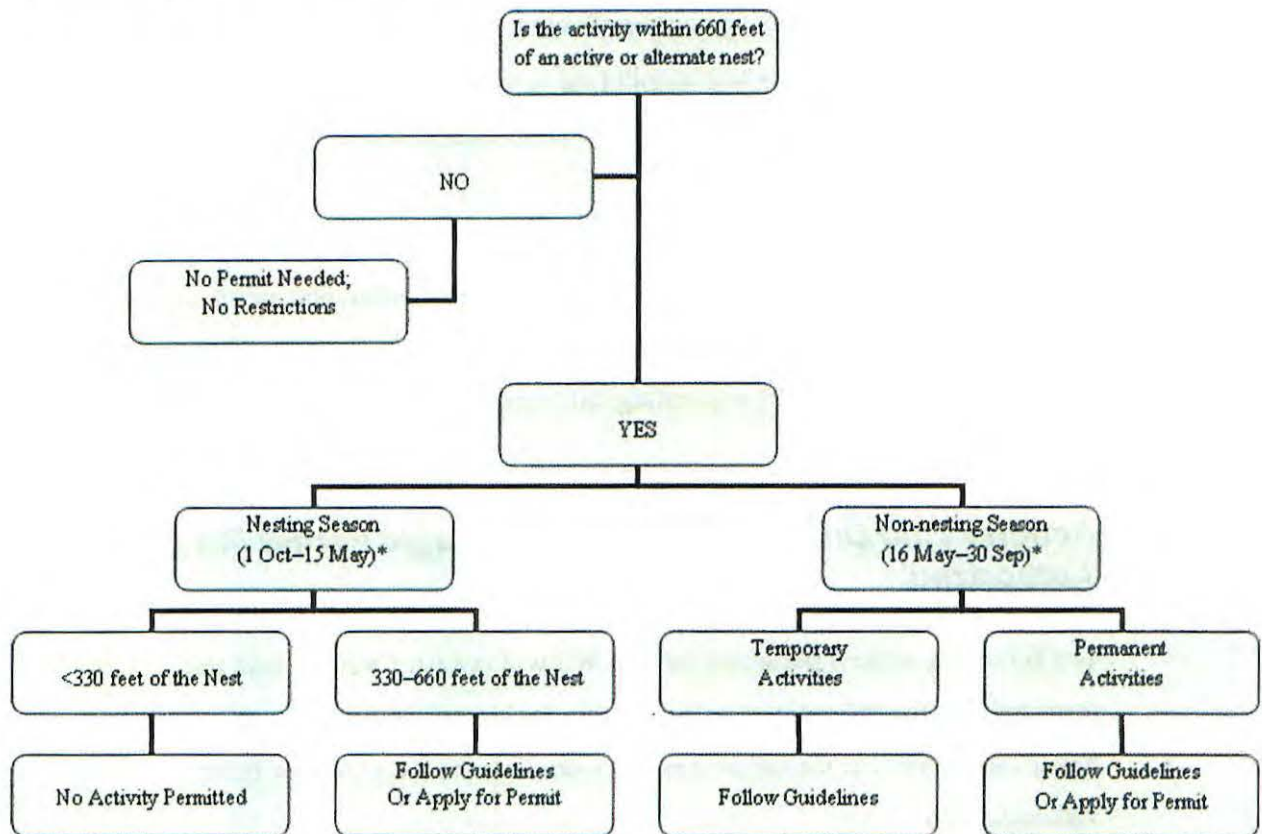


Figure 3. Process map for determining whether or not a FWC Eagle Permit would be recommended for a proposed activity near a bald eagle nest. For ongoing activities that are conducted at a historic rate, or for activities that may fall under similar scope to existing activities, refer to the FWC Eagle Management Plan (2008) guidelines for more detail.

* Unless nestlings fledged before or after these dates.

Actions That Do Not Require a FWC Eagle Permit:

No Permit is Recommended/Required for Activities:

- 1) Outside of the 660' nest tree buffer
- 2) Any temporary activity outside of the nesting season (see guidelines definition of temporary)

- 3) Any activity that complies with the guidelines
- Maintenance of artificial structures with no substantial impacts to the nest—Any artificial structure that contains a bald eagle nest may be maintained, repaired, or upgraded if: (1) the work will not remove or substantially alter the nest to the extent that further use for nesting may be affected; and (2) the work is conducted outside the nesting season or when nest monitoring in accordance with the USFWS Nest Monitoring Guidelines (2007c) documents that the nest is not being used by eagles when the work occurs.
 - Existing activities of similar scope (see definition) within 660' of an eagle nest—**In most cases**, existing activities of the same degree (~~similar scope~~) may continue with little risk of disturbing nesting bald eagles. See [the FWC eagle plan](#) for further details.

Actions That Do Not Require a FWC Eagle Permit (if Federally Authorized):

The following actions permitted by USFWS will not need a FWC bald eagle permit provided that the federal permit is available for inspection while the permitted activity is being conducted (i.e. the authorized individual carries a copy of the federal authorization).

- Modifications within the buffer zone of a lost nest—The FWC eagle guidelines prescribe protection buffers for lost nests for two consecutive nesting seasons. If federal authorization in the form of a ~~take~~ permit/statement or a formal technical assistance letter is obtained to perform an activity within the recommended buffer of a naturally-destroyed bald eagle nest prior to the nest being declared lost (*i.e.*, prior to two nesting seasons post-destruction), then no state permit will be required. Once a nest meets the definition of lost (*i.e.*, has been missing for >2 consecutive nesting seasons), then the buffer zone no longer applies, and therefore no eagle permit is necessary.

- Destruction of an abandoned bald eagle nest—No state permit is needed if a federal ~~take~~ permit is obtained to destroy an abandoned nest.
- Previously permitted project—The FWC will not refer the ~~take~~ of a bald eagle or parts thereof, or its nests or eggs, for prosecution if such ~~take~~ is in compliance with the terms and conditions of a USFWS bald eagle Technical Assistance Letter or any Biological Opinion or Incidental Take Permit issued under Sections 7 or 10 of the E.S.A as amended. Such letters and permits shall serve as state authorization provided that the authorizations are issued prior to the effective date of the proposed state bald eagle rule, and that the FWC is provided with a copy of the federal authorization.
- Salvage—Federal authorization to handle bald eagle carcasses or parts for salvage purposes functions as state authorization.
- Possession for religious or cultural purposes—Federal authorization for the possession of bald eagles or their parts for religious or cultural purposes functions as state authorization.
- Possession of eagle parts for educational purpose—Federal authorization for the possession of bald eagle parts, nests, or eggs for educational purposes functions as state authorization.

Activities That May Require a FWC Eagle Permit

- The USFWS Bald Eagle Monitoring Guidelines should be followed if any activities, other than those of similar scope, are conducted <660' from the nest tree during the nesting season.

The USFWS and FWC **recommend** biological monitoring of the nesting territory if new activities which include construction of buildings, roads, trails, canals, power lines, and other linear utilities; new or expanded operations of agriculture and aquaculture,

alteration of shorelines or wetlands, installation of docks or moorings, marinas, water impoundment, and mining and associated activities is proposed to occur within 660' of the nest tree during the nesting season (October 1 - May 15), or when nesting eagles are present. The USFWS also recommends that monitoring be conducted where an eagle's nest is located on or adjacent to, or in close proximity of, electrical transmission towers, communication towers, airport runways, or other locations where they may create hazards to themselves or humans.

- New activities proposed within 660' of an eagle nest— see the permitting process map or the [web-based technical assistance section](#).
- Intermittent, occasional or irregular activities- activities associated with auctions, field dog trials, or other sporting events may disturb a pair of bald eagles. In such situations, the activity should be adjusted or relocated to minimize potential disturbance to the eagles.
- The activities that may disturb eagles are divided into nine categories based on their nature and magnitude of potential disturbance (A-I).
 - Category A
 - i. Building construction of one or two stories, and with a project footprint of ≤ 0.5 acre;
 - ii. Construction of roads, trails, canals, power lines, or other linear utilities;
 - iii. New or expanded agriculture or aquaculture operations;
 - iv. Alteration of shorelines, aquatic habitat, or other wetlands;
 - v. Installation of docks or moorings;
 - vi. Water impoundment.
 - Category B
 - i. Building construction of one or two stories, and with a project footprint of > 0.5 acre;

- ii. Building construction of three or more stories,
- iii. Installation or expansion of marinas with a capacity of six or more boats;
- iv. Mining;
- v. Oil or natural gas drilling or refining.

The minimum allowed distances from an active or alternate bald eagle nest that a Category A or Category B activity can occur *without* the need for a FWC bald eagle permit. Activities proposed to occur closer to an eagle nest than the distances designated here should apply for a FWC Eagle Permit.

	<i>No similar activity within 1,500 feet of the nest</i>	<i>Similar activity closer than 1,500 feet from the nest</i>
<i>There is no visual buffer between the nest and the activity</i>	Categories A and B: 660 feet.	Categories A and B: 660 feet, or as close as existing activities of similar scope.
<i>There is a visual buffer between the nest and the activity</i>	Category A: 300 feet. Site work and exterior construction between 330-660 feet should be conducted outside the nesting season unless the Bald Eagle Monitoring Guidelines (USFWS 2007d) are followed. Category B: 660 feet.	Categories A and B: 330 feet, or as close as existing activity of similar scope. Site work and exterior construction between 330-660 feet should be performed outside the nesting season.

The use of dump trucks within 660' of an eagle nest should occur only when the USFWS Nest Monitoring Guidelines (2007c) are followed. Minimize noise and human activity associated with interior construction during the nesting season.

Construction activities may occur during the nesting season (1 Oct-15 May) if nest monitoring, following the USFWS Nest Monitoring Guidelines (2007c) confirms that eagles have not returned to the nest by 1 October, or that nestlings have fledged before 15 May. In either situation, the regional FWC nongame biologist should be notified.

Any project that follows these guidelines and uses nest monitoring to allow construction within 660' during the nest season must provide monitoring reports to the permitting staff of FWC (Attn: Bald Eagle Plan Coordinator 1239 SW 10th Street, Ocala, FL 34471). This

requirement will allow for data to be collected that can be analyzed to evaluate the appropriateness of the protective measures.

- Category C- Land Management Practices, including Forestry
 - i. Avoid clear-cutting within 330' of the nest at any time. Restrictions may be lifted under emergency circumstances- contact the Avian Coordinator;
 - ii. Avoid construction of log transfer facilities and in-water log storage areas within 330' of the nest. Avoid routing logging traffic within 330' of any active nest during the nesting season;
 - iii. Avoid timber harvesting, replanting, or other silvicultural operations, including road construction, chain saw and yarding operations, within 660' of the nest during nesting season- if the USFWS nest monitoring guidelines are applied then activities between 330' and 660' may be allowed during the nesting season. If nest monitoring confirms the nest is inactive then seasonal restrictions would not apply;
 - iv. Selectively thin to retain at least 50% of the total canopy and the largest native pines within 660' of the nest and take precautions to protect the nest tree;
 - v. Prescribed burning (*outside of the nesting season*) - prescribed burning is permitted within 330' of the nest tree and fireline installation or maintenance is permitted within 660' of the nest tree. Protect the nest tree by raking around the trunk's perimeter- only when eagles are not present. Burning is permitted during the nesting season only if the eagles are not present at the nest. Mechanical treatments outside of the nesting season are permitted within 330'. Avoid smoking out the nest.
- Category D- Agricultural and Linear Utilities (Existing Operations)
 - i. No buffer necessary outside of the nesting season. If the activities are consistent with the guidelines then routine vegetation management

during the nesting season within the 660' buffer does not necessitate a permit. New or expanded operations see category A above.

- Category E- Off-road Vehicles
 - i. No buffer necessary outside of the nesting season. During the nesting season- vehicles should not be operated within 330' or within 660' if noise and visibility from the tree are increased (open area).
- Category F- Motorized Watercraft
 - i. No buffer necessary outside of the nesting season. During the nesting season- load vessels or concentrations of vessels are not permitted within 660'. Minimize other motorized boat traffic and avoid stopping within 330'.
- Category G- Non-motorized Recreation (hiking, camping, birding, fishing, hunting or canoeing)
 - i. No buffer necessary outside of the nesting season. During the nesting season- activities that are highly visible or audible should be avoided within 330'.
- Category H- Aircraft (Including Helicopters)
 - i. No buffer necessary outside of the nesting season. During the nesting season- aircraft should not be operated within 1,000' (vertical or horizontal) of the nest, unless there are trained biologists conducting a survey or the eagles have demonstrated a tolerance for such activity.
- Category I- Blasting or Other Loud, Intermittent Noises
 - i. No buffer necessary outside of the nesting season for blasting activities that do not alter the landscape. During the nesting season- no blasting within 660' of an active nest. No loud noises (including class B fireworks) or blasting activities that alter the landscape within 660' of

the nest, unless the eagles have demonstrated a tolerance. Any new land-altering activity- follow distance rules in the above table (category B).

Actions That Require a FWC Eagle Permit

Except for the federally-authorized actions listed above, any action that cannot be undertaken consistent with the FWC Eagle Management Plan (2008) guidelines may require a FWC Eagle Permit to avoid a violation. As such, any action that results in the taking, feeding, disturbing, possessing, selling, purchasing, or bartering of eagles or eagle parts requires a permit (see the [FWC eagle plan](#) definitions for take and disturb). Under the appropriate conditions the FWC will issue the following types of permits for bald eagles: disturbance, scientific collection, and nest removal. Other, more general permits may be issued for certain activities listed below. The FWC will issue an eagle permit where the applicant provides minimization and/or conservation measures that will advance the goal and objectives of the management plan. See minimization measures below.

- Eagle Depredation at Agricultural or Aquacultural Facilities—any non-injurious disturbance of bald eagles that are depredating agricultural or aquacultural resources requires a FWC Eagle Permit. These permits will be issued solely in accordance with appropriate federal law. No conservation measures are required, as these permits authorize solely non-injurious harassment. Permits should be issued solely for persistent depredations rather than occasional events. See [the FWC eagle plan](#) for further details.

- Activities That Involve Possession

Federal permits for these actions are required unless federal rules or a FWC/USFWS agreement defers the need for a federal permit when the action is authorized by the state. No conservation measures are necessary for educational display, rehabilitation, or scientific collection because these activities provide a conservation benefit to eagles

- i. Educational Display—Any facility that wishes to possess live bald eagles for educational purposes must abide by caging requirements (Rule 68A-6, F.A.C.) and obtain a license for exhibition/public sale (372.921 Florida Statutes). Federal authorization for the possession of bald eagle parts, nests, or eggs for educational purposes functions as state authorization, provided that the authorized individual carries a copy of the federal authorization, and that all requirements of the federal authorization are met.
- ii. Rehabilitation—Wildlife rehabilitators who possess a FWC Wildlife Rehabilitation permit (Rules 68-A-6 and 68A-9, F.A.C.) and federal authorization to possess migratory birds may possess bald eagles for rehabilitation purposes. No eagle nestling or fledgling that is attended by adult eagles should be handled for rehabilitation without first consulting the [FWC regional nongame biologist](#).
- iii. Scientific Collection—Research that might result in disturbance to bald eagles requires a Scientific Collection permit (Rule 68A-9.002, F.A.C.). [Scientific Collection permits](#) will be issued solely for projects with a sound scientific design and those that demonstrate scientific or educational benefits to the bald eagle.
- iv. Falconry—Rules pertaining to the use of birds of prey in Florida for falconry purposes are found in 68A-9, F.A.C. While the bald eagle currently may not be used in falconry, its status in falconry may change upon delisting. Please see the [FWC eagle plan guidelines](#) for further details.

- Activities That Require Emergency Authorization

Declared emergency—Emergency activities associated with recovery from a federal- or state-declared disaster will require an after-the-fact FWC Eagle Permit if the activities cannot be undertaken consistent with the FWC Eagle Management Guidelines. See the [FWC eagle plan guidelines](#) for further details.

- Activities That Require Nest Removal

Except for the federally-authorized activities listed above, a [FWC nest removal permit](#) is required to remove or destroy any bald eagle nest, even when eagles are not present.

Minimization and conservation measures for these permits will be based on the extent of the emergency and the impacts to eagles. See the guidelines for further details.

An abandoned nest as defined in the [FWC eagle plan guidelines](#) is still considered a nest by FWC for the purposes of state rule and it also remains protected under the Bald and Golden Eagle Protection Act.

- Airports—Bald eagle nests on or adjacent to airports could increase the risk of an aircraft/avian strike, and are therefore considered hazardous to human safety and to nesting bald eagles and their young. Federal law requires airports to develop and implement a Wildlife Hazard Management Plan (WHMP) to manage and control wildlife that presents a risk to public safety from aircraft collisions. Both a [FWC nest removal permit](#) and federal authorization are required for the removal of eagle nests on or adjacent to airports.

Nest removal from artificial structures—when maintenance of an artificial structure requires the removal of an active or alternate bald eagle nest that is not an immediate threat to human safety, then the nest may be removed only outside the nesting season and only after a [FWC nest removal permit](#) has been issued. Federal authorization may also be required. Minimization and conservation measures will be assessed on a project-by-project basis, but in general, activities that take place outside the bald eagle nesting season may not require conservation measures.

Minimization and Conservation Measures

Minimization Measures for Actions Requiring a Permit:

The following minimization measures are intended to reduce the potential for disturbing eagles, and may be required as part of a FWC Eagle Permit. These actions are recommended, regardless of whether or not a permit is obtained.

- **Construction-related Activities Within 660' of an Eagle Nest**

For projects that receive a FWC Eagle Permit, the following minimization efforts may be required:

- i. Implement the USFWS Nest Monitoring Guidelines (2007c) for all site work or exterior construction activities. Avoid exterior construction activities within 330' of the nest during the nesting season.
- ii. Avoid construction activity (except those related to emergencies) within 100' of an eagle nest during any time of the year except for nests built on artificial structures, or when similar scope may allow construction activities to occur closer than 100'.
- iii. Avoid the use or placement of heavy equipment within 50' of the nest tree at any time to avoid potential impacts to the tree roots. This minimization does not apply to existing roads, trails, or other linear facilities near an eagle nest or to nests built on artificial structures.
- iv. Schedule construction activities so that construction farther from the nest occurs before construction closer to the nest.
- v. Shield new exterior lighting so that lights do not shine directly onto the nest.
- vi. Create, enhance, or expand the vegetative buffer between construction activities and the nest by planting appropriate native pines or hardwoods.
- vii. Site stormwater ponds no closer than 100' from the eagle nest, and construct them outside the nesting season. Consider planting native

pinus or hardwoods around the pond to create, enhance, or expand the visual buffer.

- viii. Incorporate industry-approved avian-safe features for all new utility construction- [see the web site for further details](#).
- ix. Retain the largest native pinus for use as potential roost or nest sites.

- **Land-Management Activities Within 660' of an Eagle Nest**

For land management activities that receive a FWC Eagle Permit, the following minimization efforts are recommended:

- i. Avoid the use or placement of heavy equipment within 50' of the nest tree to avoid potential impacts to tree roots. Equipment such as mowers may be used so long as they are not heavy enough to cause root damage. This minimization does not apply to existing roads, trails, or other linear facilities near an eagle nest or to nests built on artificial structures.
- ii. Plan the activity to avoid the nesting season to the greatest extent possible. Avoid disruptive activities when eagles are incubating eggs or when nestlings are close to fledging.
- iii. Schedule activities so that activities farther from the nest occur before activities closer to the nest.
- iv. Maintain the greatest possible vegetative buffer between land management activities and the nest to provide a visual buffer between the activity and the nest tree.
- v. Retain the largest native pinus for use as potential roost or nest trees.

Conservation Measures for Actions Requiring a Permit:

When an activity cannot be undertaken consistent with the [FWC Eagle Management Guidelines](#) (e.g., when disturbance or take may occur), then a [FWC Eagle Permit](#) is recommended to avoid a violation of the FWC eagle rule.

When construction activities are planned inside the recommended buffer zone of an active or alternate bald eagle nest, then issuance of a FWC Eagle Permit **may** require

one or more of the following conservation measures. The number of conservation measures will depend upon the distance that the activity will occur from a bald eagle nest. For activities between 330' and 660', only one conservation measure should be provided. For activities within 330' of a nest, two conservation measures should be provided; a \$35,000* contribution to the Bald Eagle Management Fund (#iii below) and any other additional conservation measure. When activities would likely cause disturbance during only one nesting season (temporary activities), conservation measures need not be provided if they would only affect an alternate nest, but should be provided if they will affect an active nest.

- i. Grant a conservation easement over the 330' foot buffer zone of an active or alternate bald eagle nest within the same or an adjacent county, or within the same core nesting area (see figure 3 in the FWC eagle guidelines). When the buffer is only partially owned by the applicant: contribute an onsite easement over the portion of the 330-foot buffer zone to which the applicant holds title;
- ii. Grant a conservation easement over suitable bald eagle nesting habitat onsite or offsite;
- iii. Contribute \$35,000 to the Bald Eagle Conservation Fund to support bald eagle monitoring and research;
- iv. Provide a financial assurance (such as a surety bond) in the amount of \$50,000. The FWC is not currently accepting letters of credit;
- v. Propose an alternate conservation measure that provides conservation value similar to the options listed above, unless unusual circumstances preclude such measures.

* The monetary contribution to the Bald Eagle Management Fund will be updated annually (March 1st) based on the All-Urban Consumer Price Index (CPI-U). Please see the [FWC eagle Web site](#) for the latest donation total.

Conservation Measure Guidelines:

- i. Conservation easements and financial assurances will be terminated, released, or returned if the nest for which an activity is permitted is active for at least one of the three years after the permitted activity is completed; the burden of proof is upon the applicant. Financial assurances not terminated or returned will be provided to the Bald Eagle Management Fund.
- ii. Fee structure is based on the likelihood of disturbance to eagles; activities closer to a nest provide more conservation measures than activities farther away. Activities permitted within 330' of an active or alternate bald eagle nest should contribute \$35,000 to the Bald Eagle Conservation Fund **and** provide an additional conservation measure.
- iii. The amounts of fees paid outright are lower than fees paid as a bond because costs for FWC administration (including site visits) are less.
- iv. The fee amount is for calendar year 2010; the fee will be adjusted in subsequent years as specified below in the Monetary Contribution section. The donation total will be updated and posted to the [FWC eagle Web site](#) every March.
- v. Suitable habitat for bald eagles will be evaluated based upon the following characteristics: within 3 km of a permanent water body ≥ 0.2 square miles in size; contain a canopy of mature native pines or cypresses with several perch trees and an unimpaired line of sight (habitat in southern Florida may include mangrove or other native species); few land-use features (low density housing, industrial, etc.) and linear and point features (roads, powerlines, railroads, etc.) within $\frac{1}{2}$ mile; ideally should be located in a previously identified bald eagle core nesting area.

- vi. Conservation easements must include at least the 330' buffer around an active or alternate eagle nest. Where the buffer is only partially owned by the applicant, an onsite easement may be placed over that portion of the property to which the applicant holds title. Easements may be placed only around nests that are in suitable habitat as described above.
- vii. Conservation easements must include provision of funds for management practices for the life of the easement. Management practices should include all activities listed under "Category C: Land Management Practices, including Forestry" and must be conducted by the landowner or other entity. The FWC will hold all easements and will ensure compliance with minimization and conservation measures.
- viii. Bald eagles often build multiple nests that are used alternately. Projects that either avoid potential take by avoiding impacts within the buffer zone or that receive a permit to conduct activities within the buffer zone may later be affected if an eagle pair initiates construction of a new nest within the project boundary. Projects that follow proper procedures for bald eagles should not have to provide additional conservation measures for any new eagle nest built on the site after the planning and permitting procedures have been completed. Such projects will not be expected to provide further conservation measures if bald eagles choose to move their nest location within the project site. The nest itself cannot be destroyed at any time unless authorized.

Landowner Stewardship Incentives

Landowners seeking assistance with habitat management will likely find it offered within FWC's Landowner Assistance Program (LAP). There are many forms of assistance that include technical, financial, educational, and various forms of recognition that seek to award landowners who manage their habitat properly for wildlife. Please visit the [FWC LAP Web site](#) for more information.

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BO Appendix III

RGP-86 Telephus Spurge Pre-Application Evaluation

Endangered Species Act formal consultation was conducted between the U.S. Fish and Wildlife Service (Service) and the Corps of Engineers as part of the development of the RGP-86. Consultation was based on the presence of telephus spurge (*Euphorbia telephioides*) at three locations in Gulf and Bay counties and the observance of suitable habitat throughout the action area. Best available methods were used to determine potential impacts to telephus spurge that could be expected from implementation of the permit. However, it is reasonable to expect that with a project area covering more than 47,000 acres (about 1/3 of which is potentially developable) undetected habitat could be present. To avoid and minimize potential take of telephus spurge in these situations, the following survey protocol was developed. This evaluation must be completed by all applicants and performed by a qualified plant ecologist/field botanist.

Step 1: Preliminary Project Site Review

Applicants and/or their consultants shall contact the Service for the latest information on the telephus spurge. The proposed project site shall be reviewed to determine if any known occurrences of the telephus spurge are present in the vicinity.

Step 2: Procedures for Reviewing Other Data to Determine Whether Additional Field Surveys Should be Conducted:

The telephus spurge occurs in a variety of soil types and plant communities ranging from sandhill to mesic flatwoods to pine savannahs. Suitable soil types are primarily the drier Leon sand and Pottsburg sand, although the plant is sometimes found in mesic soils, particularly within the ecotone surrounding sandy soils. Most of the known locations have been impacted by silviculture. Telephus spurge has been found in pine plantations with bedding present. Specific project sites must be reviewed using the procedures outlined below to determine the presence or absence of the telephus spurge.

1. Review the project site using NRCS soils data for Bay and Walton Counties, high-resolution infrared and/or true color aerials (scale of 1 inch=400 feet), and historic aerials of your project area.
2. Look for the following positive indicators:
 - Suitable soils. Suitable soil types include Leon sand, Pottsburg sand, and Hurricane sand.
 - Open canopy. Features to look for on the infrared aerials include the absence of a dense, closed canopy cover. Absence is a positive indicator. Dense canopy cover like tift appears dark red and smooth. The absence of a dense canopy shows up lighter often with patchy red areas throughout.
3. The presence of one or more positive indicators means that the site is potential telephus spurge habitat.
 - If yes, then you must conduct field surveys to determine whether telephus spurge is present. Continue to step 3.
 - If no, then you are finished with the telephus spurge evaluation. Go to step 4.

Step 3: Field Assessment of Potential Telephus Spurge (*Euphorbia telephioides*) Habitat

Before beginning any field work, develop search pattern recognition of *Euphorbia telephioides* by examining photographs or herbarium species or by visiting field locations. See: www.plantatlas.usf.edu and www.fws.gov/namamacity/species/plants.html for a photo reference collection.

Select potential survey polygons based on presence of Leon sand or Pottsburg sand. After reviewing aerial photography and conducting preliminary site inspections, add those areas that have a relatively open canopy and remnant native groundcover. Be sure to include roadsides, open trails, utility easements, burned areas, and wetland ecotones. Eliminate areas that are densely vegetated with shrubs and trees or are obviously wet most of the year.

Selected polygons should be field surveyed for presence or absence of telephus spurge using a qualitative transect method. The surveys should be supervised by a qualified botanist. Straight line transects at 20-foot intervals should be laid out to cover the entire polygon. Alternate on each side of the transect with 10-foot square quadrants. (Figure 1) The quadrant boundaries can be estimated and visually scanned for telephus spurge. Areas with extremely dense vegetation can be overlooked.

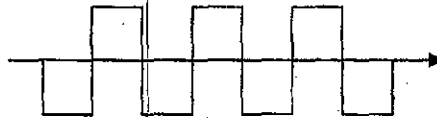


Fig. 1

Surveys can be conducted anytime from April through September. The plant generally dies back at the end of the growing season and does not re-grow to a noticeable height until several weeks after the last frost. Ideal survey months are May through August.

Step 4: Telephus Spurge Findings

- | | Yes | No |
|--|-------|-------|
| 1. Positive indicators were detected in Step 2. | _____ | _____ |
| 2. Field surveys detected presence of telephus spurge.
If yes, re-initiation of consultation is required. | _____ | _____ |
| 3. Appropriate documentation is included to support these findings. Negative and positive survey data are provided to USFWS in a GIS format. | _____ | _____ |

Signature _____
Ecologist/Botanist who
performed the evaluation

Date _____

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or "approval" from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or "approval" from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11" x 17" or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blueblack color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and **WILL BITE** if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of \$25,000 for civil violations and up to \$50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

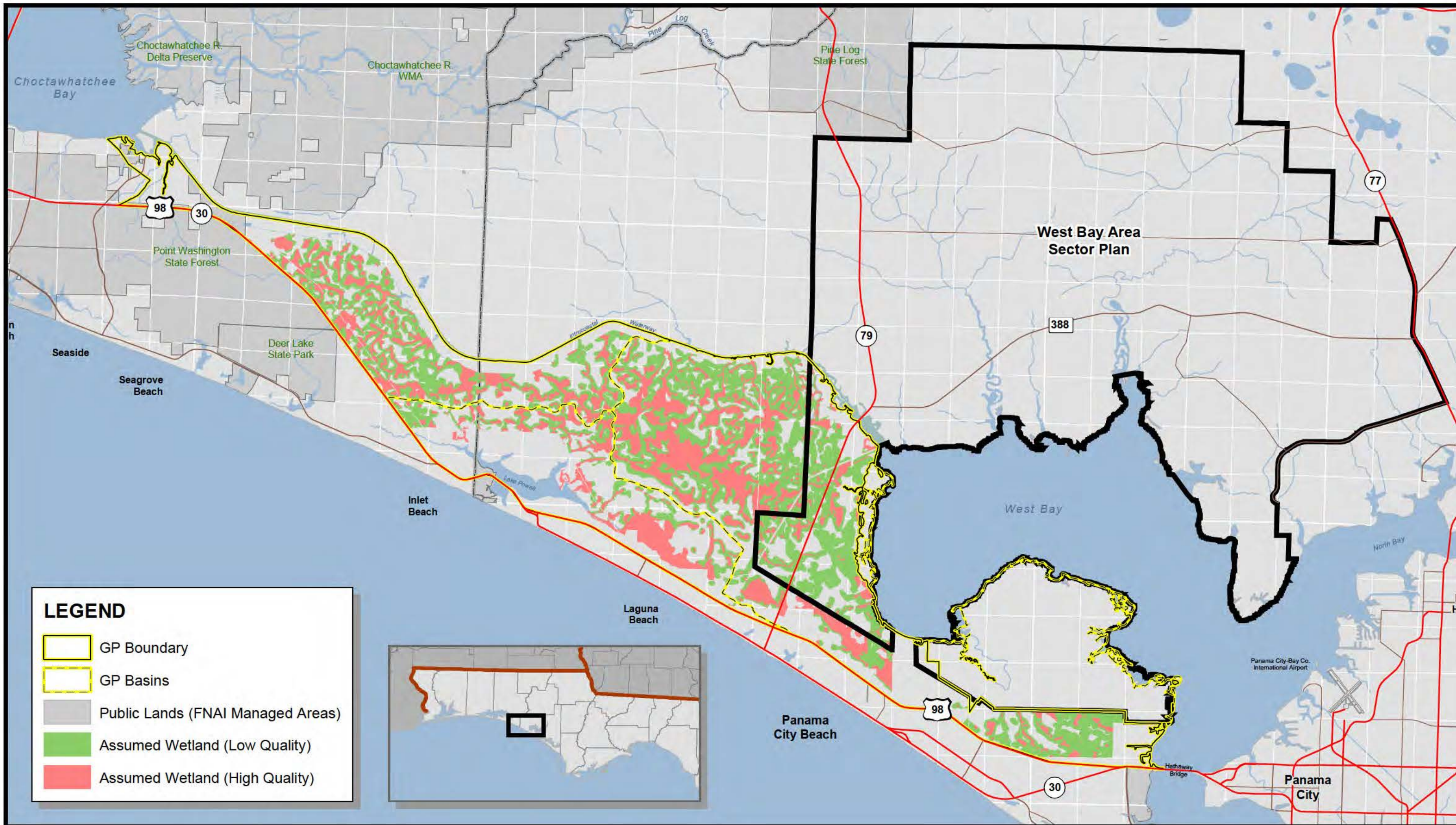
1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.
2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.
3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.
3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.



**Checklist for Department of the Army
Regional General Permit SAJ-86 (2020 Reissuance Version)
for
Residential, Commercial, Recreational, and Institutional Fill in the
Choctawhatchee Bay, Lake Powell, and West Bay Basins
Bay and Walton Counties, Florida**

Check appropriate response as to whether the proposed project complies with requirements of RGP SAJ-86. If the question is not applicable, write "N/A" in the box. In order for the proposed project to qualify for RGP SAJ-86, all responses must be in a box.

Yes No

1. ☐ _____ Was a pre-application meeting held pursuant to the requirements of this RGP?
(Date of pre-application meeting: _____)
2. ☐ _____ Was an application to the Corps for this project made using the form *U.S. Army Corps of Engineers ENG Form 4345*?
3. ☐ _____ Were exhibits provided which show the specific location of the proposed project and confirm that the proposed project is located within the RGP area boundaries (1"=200' or other appropriate scale)?
4. ☐ _____ RGP SAJ-86 only authorizes Section 404 activities. Are all regulated activities associated with the proposed project located: (1) in Section 404 waters only, or (2) if there are associated Section 10 activities, will these Section 10 activities be evaluated separately as a NWP, GP, LOP or IP?
5. ☐ _____ Does the application include a written scope of the project, which describes the type of project and confirms that it comports with activities authorized by the RGP (i.e. the proposed project is a type of residential, commercial, recreational, or institutional development)?

6. ☐ _____ Are project wetland delineations in accordance with the with the most recent guidance and wetland delineation manual or manual supplement issued by the Corps. As of the date of reissuance of this RGP, applicants should use the *Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010)*. (Wetlands may be delineated using aerial photo-interpretation (API) and ground-truthing, and, if necessary, mapped using the Global Positioning System (GPS) and other Geographical Information System (GIS) mapping techniques. In much of the project area, historical aerial photography will be used to obtain pre-pine plantation wetland community signatures)?
7. ☐ _____ In all instances where a construction line falls within 250 feet of a wetland boundary estimated using the method described in 5. above, was a documented field wetland jurisdictional determination (i.e. flagged and flags located either by GPS or survey) performed for that segment of the proposed project?
8. ☐ _____ Have all wetlands on the project site been identified as either altered or high quality wetlands? (NOTE: For sites within the EMA area, the existing high quality/altered wetland map shall be used as a starting point for delineation of onsite wetlands (Exhibit 27). During or after wetland boundaries have been established, the resulting wetland areas will be classified and mapped by quality, and will use a combination of GPS technology, visual inspection of photography, and ground-truthing. Additional data may be used including overlays involving timber stand data.)
9. ☐ _____ Are all wetlands identified as altered wetlands on the proposed project site planted in pines (i.e. hydric pine plantation, pines in rows) or non-Section 10 ditches?
10. ☐ _____ Do proposed direct impacts to altered wetlands comply with the 20% limit as specified in special conditions #5a and #5b of the SAJ-86?

11.

☐

_____ Are high quality wetland impacts limited to road crossings only and meet the following criteria?

☐

_____ a. Were impacts to high quality wetlands limited to road and bridge crossings necessary to support the associated development, and do not exceed a width of 160 feet of combined filling or clearing at each crossing?

☐

_____ b. For fill road crossings through high quality wetlands, was bridging for each individual high quality wetland road crossing judged to be impracticable pursuant to consideration of the following: 1) the degree of water flow within the wetland, 2) the length of the wetland crossing, 3) the topography of the wetland and associated upland, and 4) the degree to which a roadway would adversely affect the movement of wildlife expected to use the wetland?

☐

_____ c. Was first preference for each new high quality wetland road crossing given for existing silviculture road crossings?

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_____ d. If road crossings at locations other than existing silviculture road crossings are proposed, was the crossing designed and constructed to minimize wetland impacts?

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_____ e. For each road crossing proposed at a point where no previous silviculture road crossing existed, will an existing silviculture road crossing within the same sub-basin be removed and the wetland connection restored? If there are no existing silviculture road crossings through wetlands within the sub-basin, will high quality wetlands be preserved, either onsite or offsite, to compensate for high quality impacts?

12.

☐

_____ Overall, do the application's drawings and other exhibits that document and show the number, type, location, and acreage of all

wetland impacts sufficiently confirm that the proposed project fully complies with this RGP?

13. ☐ Will fill material be placed in wetlands for septic tanks or drainfields?
14. ☐ Will only clean fill and rock material compatible with existing soils (e.g., soil, rock, sand, marl, clay, stone, and/or concrete rubble) be used for wetland fills?
15. ☐ Will wetland fill sever a jurisdictional connection or isolate a jurisdictional area?
16. If the project site borders Lake Powell:
- ☐ a. Are buffers required and do the buffers meet the following criteria?
A 100-foot buffer between the lake from the ordinary high water line (OHWL) and development in Walton County. A 30-foot buffer between the lake from the OHWL and development in Bay County.
- ☐ b. Will the buffers, whether upland or wetland, be preserved and maintained in a natural condition, except boardwalks for dock access and on-grade trails (buffers may be enhanced or restored to a more natural condition)?
- ☐ c. Will the application of fertilizers, herbicides, or pesticides be prohibited in the buffers?
17. If the site includes/abuts high quality wetlands:
- ☐ a. Will all high quality wetlands within the project site, have buffers (except at road crossings), which on an individual impact site basis, are comprised of uplands and/or altered wetlands and are on average 50 feet wide, with a minimum 30-foot width?

☐ _____ b. Will all of the buffers, whether upland or wetland, be preserved, and included under a conservation easement with adjacent high quality wetlands and maintained in a natural condition, except for the construction of boardwalks for dock access and on-grade trails (buffers may be enhanced or restored to a more natural condition)?

☐ _____ c. Will the application of fertilizers, herbicides, or pesticides be prohibited in all buffers?

18. Compensatory Mitigation:

☐ _____ a. Will compensatory mitigation for individual project wetland impacts be satisfied within: 1) the two mitigation banks, 2) Conservation Units, or 3) within the project site. (NOTE: For individual projects, which utilize a mitigation bank, the sum of impact Functional Units (FUs) shall be debited from the appropriate mitigation bank within 30 days of individual project approval under this RGP.)

☐ _____ b. Is all proposed compensatory mitigation located within the same permitting basin (i.e., Breakfast Point, Devils Swamp or Lake Powell basins), as the proposed wetland impacts, for which the compensatory mitigation is offsetting?

☐ _____ c. If the project includes compensatory mitigation located within the conservation units or on individual project sites, does the proposed compensatory mitigation plan comply with the requirements of 33 CFR Part 332, "Compensatory Mitigation for Losses of Aquatic Resources"?

☐ _____ d. Were direct wetland impacts associated with the proposed project and the compensatory mitigation to offset those direct wetland impacts calculated in terms of functional units (FU), as determined using the *Uniform Mitigation Assessment Method (UMAM)* as set forth in Chapter 62-345, Florida Administrative Code, with each acre of impact to

altered wetlands assessed at 0.53 FU and each area of impact to high quality wetlands assessed at 0.87 FU? If a bank does not have a UMAM credit ledger approved by the Corps, was the mitigation determined using *Wetland Rapid Assessment Procedure (WRAP)*, *Technical Publication REG-001, September 1997* with each acre of impact to altered wetlands assessed at 0.65 FU, and each acre of impact to high quality wetlands assessed at 0.92 FU?

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_____ e. Will the compensatory mitigation be implemented concurrent with or before proposed project impacts?

19.

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_____ Conservation Units (CUs): If the proposed project or a portion of the project is located within the EMA area, and in a sub-basin in which one of the ten CUs is located, will The St. Joe Company place perpetual conservation easements with the DEP as the grantee on portions of CUs equal to the percentage of the total acreage of approved projects in the affected sub-basin per the following calculation: Using the EMA area only, divide the total acreage within an approved project boundary in a sub-basin (including impact and preserved area) by the total acreage of land within the sub-basin minus the area of any conservation units with the same sub-basin?

20. Conservation Easements:

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_____ a. Will perpetual conservation easements with the DEP as the grantee, be placed on wetlands not authorized for impact on each project site (including offsite preservation areas to meet the 20% altered wetland requirement) following individual project approval, but prior to commencing any activities authorized by this RGP (or according to the timeframe specified as a special condition in the project specific approval); and does the proposed conservation easement comport with Exhibit 21 of the RGP?

☐

_____ b. For projects that include off-site preservation of altered wetlands, are the boundaries of the off-site preservation area reasonable and include intermixed and adjacent altered and high quality wetlands?

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- _____ c. For compensatory mitigation conducted outside of a mitigation bank, will a perpetual conservation easement with the DEP as the grantee, be placed on the mitigation area prior to commencing any activities authorized by this RGP on the individual project for which the mitigation is approved (or according to the timeframe specified as a special condition in the project specific approval); and does the proposed conservation easement comport with Exhibit 20 of the RGP?

21. Stormwater management:

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- _____ a. Has a set of sealed stormwater management system plans been submitted to the DEP for review?

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- _____ b. Does the application include a signed statement by a Florida licensed engineer that verifies that the project conforms to the *Stormwater System Design and Review Criteria Manual, February 2004* (Exhibit 2)?

22. State Historic Preservation Officer (SHPO):

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- _____ a. Was documentation for coordination with SHPO provided?

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- _____ b. If required by the SHPO, THPO(s), or the Corps, did the applicant conduct an archeological and historical survey on the proposed project site?

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- _____ c. If required, will measures identified to avoid, minimize or mitigate adverse impacts to historic properties listed, or eligible for listing in the *National Register of Historic Places*, or otherwise of archeological or historical, be made special conditions of the RGP authorization for the proposed project?

23. Reticulated Flatwoods salamander (*Ambystoma bishopi*):

- ☐ _____ a. Was the *RGP-86 Flatwoods Salamander Pre-application Evaluation* (Exhibit 22) provided and completed?
- _____ ☐ b. Is re-initiation of consultation for *Ambystoma bishopi* required?

24. Bald Eagle (*Haliaeetus leucocephalus*):

- ☐ _____ a. Was documentation provided that states whether or not an eagle nest is located on or in the vicinity of the project site.
- ☐ _____ b. If a bald eagle's nest occurs within 660 feet of a project, has the applicant followed the U.S. Fish and Wildlife Service's May 2007 National Bald Eagle Management Guidelines? Has the applicant contacted the Florida Fish and Wildlife Conservation Commission for recommendations relative to Florida's Bald Eagle Management Plan and Permitting Guidelines to ensure the project is consistent with the provisions of Rule 68A-16.002, Florida Administration Rule? Have appropriate protections been incorporated in the project and documentation provided showing how the appropriate protections will be implemented?

25. Telephus Spurge (*Euphorbia telephioides*):

- ☐ _____ a. Was the *RGP-86 Telephus Spurge Pre-application Evaluation* (Exhibit 25) provided and completed?
- _____ ☐ b. Is re-initiation of consultation for *Euphorbia telephioides* required?