Florida Department of
Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
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Lt. Governor

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Secretary

WETLAND RESOURCE/MITIGATION BANK PERMIT

PERMITTEE:
Westervelt Ecological Services
c/o Bosso, Dentzau & Imhof, Inc.
Michael Dentzau
1882 Log Ridge Trail
Tallahassee, FL 32312

PROJECT:
Pensacola Bay Mitigation Bank
Permit Number: 0284438-001
Date of Issue: March 26, 2009
Expiration Date: Perpetual
County: Santa Rosa

This permit is issued under the authority of Part IV of Chapter 373, F.S., and Chapter 62-342, Florida Administrative Code (F.A.C.). The activity is not exempt from the requirement to obtain this mitigation bank/wetland resource permit. Pursuant to operating agreements executed between the Department and the Water Management Districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing and taking final agency action on this activity.

This permit also constitutes certification of compliance with water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341, and a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Management Act.

A copy of this authorization also has been sent to the U.S. Army Corps of Engineers (USACOE) for review. The USACOE may require a separate permit. Failure to obtain this authorization prior to construction could subject you to enforcement action by that agency. You are hereby advised that authorizations also may be required by other federal, state, and local entities. This authorization does not relieve you from the requirements to obtain all other required permits and authorizations.

The above named permittee is hereby authorized to construct the work shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof. This permit is subject to the limits, conditions, and locations of work shown in the attached drawings, and is also subject to the attached General Conditions and Specific Conditions, which are a binding part of this permit. You are advised to read and understand these drawings and conditions prior to commencing the authorized activities, and to ensure the work is conducted in conformance with all the terms, conditions, and drawings. If you are utilizing a

contractor, the contractor also should read and understand these drawings and conditions prior to commencing the authorized activities. Failure to comply with all drawings and conditions shall constitute grounds for revocation of the permit and appropriate enforcement action. Operation of the facility is not authorized except when determined to be in conformance with all applicable rules and with the general and specific conditions of this permit, as specifically described below.

PROJECT DESCRIPTION:

On November 30, 2007, the Department of Environmental Protection (DEP) received an application to establish the Pensacola Bay Mitigation Bank (PBMB) on a 1,188 acre site. The mitigation bank includes a 105 acre parcel previously preserved as mitigation for DEP Permit 274773-001 (Figure 1). It is included for the purposes of treatment and long-term management, but not for credit generation. The mitigation bank project includes the preservation of the site and the restoration or enhancement of a mosaic of habitats including hydric flatwoods, wet prairie, cypress-gum depressions and drainage systems, and baygall communities, and is intended to be used as mitigation for future unavoidable impacts to wetlands typical of these historic or disturbed systems within the service area. Enhancement will be accomplished by the reduction of woody shrubs and slash pine with fire, mechanical and chemical treatments, planting of longleaf pine, hardwoods and wiregrass in appropriate habitats, establishment of low-water crossings and ditch plugs, excavation of fill to restore native communities, and repair of rutting from off-road vehicle (ORV) use. Management of the site includes a controlled access security program, frequent prescribed burning and control of exotic or nuisance species. The mitigation was assessed by the Uniform Mitigation Assessment Method (UMAM) (Chapter 62-345, F.A.C.) as having a potential of 197.54 freshwater credits (159.83 as hydric flatwoods/prairie credits and 37.7 as mixed hardwood credits).

PROJECT LOCATION:

The proposed bank site is in Sections 32, 37 and 42, Township 1 North, Range 28 West, and Section 03, Township 1 South, Range 28 West, Santa Rosa County east of Avalon Boulevard and both north and south of I-10 Walton County (Figure 1), Class III waters, and has a service area that includes portions of Santa Rosa, Okaloosa and Escambia Counties (Figure 2). The PBMB is bordered by conservation properties along the south and portions of the eastern boundary and forms a linkage in the Garcon Ecosystem Florida Forever Project (Figure 3).

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under conditions of the permit;
b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
c. Sample or monitor any substances or parameters at any location reasonable necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and
b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

11. This permit is transferable only upon Department approval in accordance with rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any

non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500).

14. The permittee shall comply with the following:
    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
    c. Records of monitoring information shall include:
        1. the date, exact place, and time of sampling or measurements;
        2. the person responsible for performing the sampling or measurements;
        3. the dates analyses were performed;
        4. the person responsible for performing the analyses;
        5. the analytical techniques or methods used; and
        6. the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS: Please note that some specific conditions may further define or substitute for some of the requirements of the general conditions listed above.

1. The permittee is hereby advised that Florida law states: "No person shall commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund or the Department of Environmental Protection under Chapter 253, until such person has received from the Board of Trustees of the Internal Improvement Trust Fund the required lease, license, easement, or other form of consent authorizing the proposed use." Pursuant to Florida Administrative Code Rule 18-14, if such work is done without consent, or if a person otherwise damages state land or products of state land, the Board of Trustees may levy administrative fines of up to $10,000 per offense.

2. If cultural resources, historical or archaeological artifacts are discovered at any time within the project site the permittee shall immediately discontinue any soil disturbance or other activities that could harm or displace the resource in question and notify the Department and the Bureau of Historic Preservation, Division of Historical Resources, at (800) 847-7278, R. A. Gray Building, 500 S. Bronough St., Tallahassee, Florida 32399-0250. Additional inspection and avoidance measures may be required.

Commencement requirements

3. At least 48 hours prior to commencement of work authorized by this permit, the permittee shall notify the Department of Environmental Protection, Office of Submerged Lands and Environmental Resources, MS 2500, 2600 Blair Stone Road, Tallahassee, Florida 32399, and the Northwest District Office, Submerged Lands and Environmental Resource Permitting, 160 Governmental Center, Pensacola, FL 32502 in writing of this commencement.

4. Unless otherwise specified, all reports and other information required for this permit shall be submitted to the Florida Department of Environmental Protection, Office of Submerged Lands and Environmental Resources, MS 2500, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

5. No credits may be released until the following requirements are completed:

a. A qualified mitigation supervisor (QMS) is retained as required in Specific Condition 7;
b. The site has been protected in accordance with Specific Condition 8; and
c. The applicant is in compliance with Specific Condition 9 regarding documentation of financial assurance.

6. This mitigation bank permit shall automatically expire five years from the date of issuance if the permittee has not recorded a conservation easement in accordance with the permit and Rule 62-342.750 (2) F.A.C. Except as provided above, this mitigation bank permit shall be perpetual unless revoked or modified.

7. Project Oversight. Prior to commencement of mitigation activities authorized in Specific Conditions 10-13 of this permit, the permittee shall retain a qualified mitigation supervisor (QMS) to oversee all aspects of mitigation bank site implementation, management, monitoring, and corrective actions in this permit until final success criteria are met and a long-term management entity is established.

a. The QMS will serve as the principle contact and manager regarding mitigation activities, including reporting; however, the permittee shall have ultimate responsibility to ensure that the mitigation bank requirements are conducted in accordance with the permit.

b. Within 30 days of issuance of this permit the permittee shall submit the name of the QMS retained to oversee the mitigation work and provide supporting documentation demonstrating that the QMS is authorized and qualified to oversee this work. The QMS must be approved by the Department prior to commencement of the mitigation activities.

c. Within 30 days of the discharge of any approved QMS, the permittee shall submit the name and supporting documentation of a new QMS to the Department for its review and approval.

d. The permittee shall have the approved QMS review the conditions of this permit that pertain to environmental improvement. The purpose of this review is to ascertain whether any criteria need to be modified to ensure ecological success. If the Department concurs that any proposed modifications would improve the likelihood of mitigation success, these changes shall be incorporated into this permit as a minor modification.

8. Protection and Preservation. A 105.74 acre parcel in the northern portion of the bank has been preserved in a conservation easement granted to the Department as mitigation for DEP Permit 274773-001 (Gulf Power), recorded on pp. 1926-1935 of OR Book 2871, Santa Rosa County records. Prior to release of credits, the remaining property on which the PBMB is to be implemented shall be preserved and protected in accordance with an approved executed conservation easement granted to the Department of Environmental Protection (Rule 62-342.650, F.A.C.), a draft copy of which was submitted and is contained in the permit application file.

The permittee shall also provide the following with the recorded conservation easement:

a. A title insurance policy for the easement updated to the date of conveyance.
b. Subordination, release, or joinder agreements for any lien on the property, as identified by the Title Commitment, unless the Department determines that such lien does not adversely affect the ecological viability of the Bank.
c. Legal descriptions and boundary of the conservation easement certified by a Florida registered land surveyor.
d. A clerk-of-the-court certified copy of the conservation easement.

In addition, the installation of locked gates and fencing as necessary to restrict trespassing, the installation of signage identifying the Bank, and trespass monitoring shall be implemented no later than 30 days after permit issuance.

9. Financial Assurance. Prior to the release of credits, the permittee shall provide the Department with the financial responsibility mechanisms required by Rule 62-342.700 F.A.C. Cost Estimates are provided in Attachment A. Draft document, submitted by the permittee, are contained in the permit file. The permittee shall secure financial assurance for implementation (construction activities, monitoring, maintenance, and reporting), and for long-term management activities as follows:

a. The permittee shall establish the financial assurance for implementation (Rule 62-342.700 (4), F.A.C.) in the form of a Department-approved standby trust secured with a letter of credit for $812,020.00. The permittee may request a partial reduction in the amount of the letter of credit after the successful completion of significant mitigation activities, and based upon a revised cost estimate. The permittee may request a release from its implementation financial assurance obligation upon the determination that the bank has attained final success criteria and the long-term management has been properly funded.
b. The permittee shall establish the financial assurance for perpetual management prior to the release of credits (Rule 62-342.700(9), F.A.C.) in the form of a Department-approved standby trust secured with a letter of credit for $401,700.00. Within the first 5 years and prior to the determination of final success in accordance with Specific Condition 22, the long-term management trust fund shall be fully funded in cash. The permittee may request a reduction in the letter of credit as the trust becomes funded in cash.
c. All cost-estimates shall be reviewed, and appropriate financial responsibility adjustments shall be conducted by the banker on a minimum of two-year intervals, in accordance with Rule 62-342.700 (11) F.A.C. and prior to the final credit release.

d. The Department may draw upon the financial mechanisms required for the bank when the permittee has materially failed to comply with the terms and conditions of the permit and continues to be in noncompliance after thirty (30) days written notice has been provided to and received by the permittee.
e. The interest earned from the principal deposited in the perpetual management trust may be withdrawn for use by the permittee or Department-authorized operating entity for long-term management purposes once the mitigation bank has been determined to have attained success criteria and received the final credit release. Disbursement shall be made by the trustee at the written direction of the Department in accordance with the trust agreement.

Mitigation Activities: Figure 4 shows the existing community types and configuration. The goals of the mitigation activities, schematically represented in Figures 5-7 and defined in Specific Conditions 10-13, 19, 22, and 23, are to establish a mosaic of native wetland habitats in the existing impacted property resulting in the community configuration shown in Figure 8, and described in Attachment B – Target Natural Community Descriptions. The mitigation activities are to be implemented by management units as represented in Figure 9 which have been determined based upon the existing trail network and the need to maintain long-term fire breaks. Mitigation activities include shrub reduction in flatwoods, shrub reduction in transitional zones of hardwoods, restoration and planting of off-road vehicle (ORV) impact areas, installation of low water crossings, the filling or plugging of ditches, excavation of upland fill, planting of hardwoods within areas of disturbance, and exotic treatment as necessary. For the purposes of this permit "woody shrubs" for shrub reduction includes those species, typically reduced by fire to coppice, such as titi (*Cyrilla racemifolia, Cliftonia monophylla*), gallberry (*Ilex glabra*), fetterbush (*Leucothoe racemosa, Lyonia* spp.), yaupon (*Ilex vomitoria*) and wax myrtle (*Myrica cerifera*) that tend to become dominant (weedy) and reduce the diversity of herbaceous species and desirable trees and shrubs (such as those listed for planting below) in a fire suppressed system. Slash pine is *Pinus elliottii*, loblolly pine is *Pinus taeda*, and longleaf pine is *Pinus palustris*.

10. Community restoration activities are described below defined by UMAM Category (Figures 5 and 6) and Management Unit (Figure 9). UMAM Categories 1, 2 and 11 (Management Unit 1) are preservation areas have no mitigation activities other than exotic treatments, maintenance and management.

a. UMAM Category 3 (Management Unit 2). The existing canopy of black titi and pine will be reduced to represent less than 20% live canopy coverage (i.e. ≥ 4" d.b.h.) through the application of herbicide appropriate for the community. The approximate 6.9 acre area will be underplanted at a density of 275 saplings/acre in the following proportions:

Nyssa sylvatica var. biflora	698 saplings
Magnolia virginiana	1200 saplings.

b. UMAM Category 4 (within Management Unit 12). Approximately 2.2 acres of fill will be excavated and planted to support a mixed hardwood wetland depression (Figure 10). The area will be excavated to a depth of 18" below the surrounding elevations and planted in the following proportions:

Nyssa sylvatica var. biflora	100 saplings
Taxodium distichum	800 saplings
Ilex myrtifolia	100 saplings.

In addition, the edges of the depression will be planted with approximately 1,000 wiregrass plugs clustered in groups, and seeds collected from appropriate vegetation onsite will be scattered on bare ground during inspection and monitoring trips to accelerate groundcover establishment for success criteria.

c. UMAM Category 5 (within Management Unit 6). Within approximately 7.4 acres of ORV rutted intermittent creek or "stringer", 4,000 saplings will be planted in the following proportions to approximate a density of 500 trees/ac:

Nyssa sylvatica var. biflora	1400 saplings
Taxodium distichum	1400 saplings
Magnolia virginiana	800 saplings
Acer rubrum	400 saplings.

Prescribed fire will be excluded from this area for the first two burn cycles to allow the trees to attain adequate height to avoid adverse impacts from subsequent low intensity fires.

d. UMAM Category 6 (within Management Units 5, 6, and 8-13). Approximately 50.7 acres of Gum/Cypress depressions and stringers have been disturbed by logging and fire suppression. Within 6 months of permit issuance, the standing shrub component <4" d.b.h., including but not limited to titi, gallberry, fetterbush, slash pine, loblolly pine and wax myrtle, will be reduced to represent no more than 10% cover in the stratum composed of individuals > 1" and < 4" d.b.h. by mechanical cutting near the edges of the systems and hand felling within the interior portions of the communities. This task will allow the reintroduction of fire to these systems to restore transitional zones. Additional seedlings may be planted in areas with few canopy trees.

e. UMAM Category 7 (within Management Units 4, 5, 11 and 15). Approximately 24.5 acres of Gum/Cypress depressions and stringers have been impacted by severe wildfire. Within this area, 2,500 hardwood saplings will be underplanted in the remaining tree line (variable widths) to increase the total density of trees to approximately 200 trees/ac. The plantings will consist of the following:

Nyssa sylvatica var. biflora	1,123 saplings
Taxodium distichum	781 saplings
Magnolia virginiana	340 saplings
Acer rubrum	156 saplings
Ilex cassine	40 saplings
Ilex myrtifolia	30 saplings
Cephalanthus occidentalis	30 saplings
Gordonia lasianthus	15 saplings

Prescribed fire will be restricted from these planting areas for the first two burns to allow the planted trees to attain vigor and subsequently allow low-intensity fires to restore transitional zones. This will be accomplished by using either mulched or wet firelines.

f. UMAM Category 8 (within Management Units 3, 5-8 and 15). Within approximately 11.2 acres of flatwoods rutted by ORV and logging, restoration will be completed through the installation of approximately 11,200 wiregrass plugs at a density of 1,000 plugs acre.

g. UMAM Category 9 (within Management Unit 1). Approximately 3.8 acres of Bay/Titi area disturbed by ORV and logging will be planted with 1,900 hardwood saplings in the following proportions:

Nyssa sylvatica var. biflora	350 saplings
Taxodium distichum	200 saplings
Magnolia virginiana	1350 saplings

h. UMAM Category 10 (Management Units 3-13 and 15). The largest portion of the site (~646.1 acres) are hydric flatwoods and wet prairie that are fire suppressed and have an abundance of inappropriate pine and woody shrubs. Within this area, the following activities will be completed:
    i. Shrub/Tree Reduction. After the first prescribed fire in each unit (Specific Condition 12), and within 18 months of permit issuance, the living hardwood component ≥1" d.b.h., including but not limited to

titi, gallberry, fetterbush, wax myrtle and pine, will be treated by cutting and/or herbicide application. Cutting will be utilized within 25' of embedded hardwood systems such as drainages and depressions. Herbicide treatments in all other areas will consist of spot ground applications of Garlon consistent with application guidelines for safety and efficacy.

ii. In order to replace much of the slash and loblolly pine with longleaf pine over the long-term, regular prescribed fire will be used to hinder slash pine recruitment and favor longleaf pine establishment. Additionally, after the shrub reduction in 1. above, and after the second prescribed fire within the flatwoods/prairie management units, container grown "deep" plugs of longleaf pine will be planted at a density of 150 trees/acre, for a total of approximately 97,095 plugs. Slash pine, and, as necessary, longleaf pine will be selectively girdled by hand to attain success criteria in Specific Condition 22.

iii. Within approximately 1.2 acre strip of flatwoods (UMAM 10) along the western property boundary and west of the existing disturbed fireline (Management Unit 14), mechanical mowing will be used as a surrogate for fire. Frequency will mimic the prescribed fire on the adjacent Management Unit 13

11. Exotic and nuisance vegetation control. Invasive exotic and nuisance vegetation, including but not limited to Chinese tallow, cogon grass and Japanese climbing fern shall be controlled by appropriate measures including herbicide application and/or physical removal. Exotic and nuisance species control will be conducted under the direction of the QMS. Treatments will be documented in the status reports detailed in Specific Condition 26. Inspections for exotic coverage shall be conducted annually associated with annual monitoring events, as detailed in the monitoring plan in Attachment F. Plants of concern shall be those Category I and II species listed by the Florida Exotic Pest Plant Council (FLEPPC), 2007.

12. Fire Management Plan. Prescribed fire shall be implemented to reduce woody vegetation to coppice and stimulate native herbaceous cover and seed production to attain the proposed success criteria, and as a long-term management tool to maintain the communities and function. The site has been divided into 15 Management Units of which Units 3-13 & 15 will receive prescribed fire (Figure 9). All burning will be in accordance with Westervelt's December 16, 2008 Prescribed Burning Process report contained in the file, an excerpt of which is Attachment C - Fire Management Plan. A conceptual fire prescription is included in the report; however, each prescribed burn activity will be developed and supervised by a certified burn specialist. Following each prescribed burn activity conducted at the bank, the permittee shall submit

documentation, signed by the QMS and certified burn specialist, that a burn was conducted, and provide a summary of the unit(s) and acres treated with assessment of burn success, including photographs. For the purposes of this permit, a successful burn shall mean the fire shall carry over a minimum of 70% of the flatwoods and the herbaceous ground cover is regenerating ("greening up") in the burned area. For the hardwoods the goal is to allow the fires to shape the transitional edges with the flatwoods without substantially impacting hardwood survival in the interior. It is the intent to burn all target management units within 18 months of permit issuance. If this target is not met, the permittee shall document the cause(s) to the Department in writing and propose corrective activities. Prior to the release of credits associated with this activity, the permittee shall arrange a site visit that includes the Department, QMS, and any Interagency Review Team (IRT) members that are available to review the activities. The permittee shall submit a summary of the site visit for the file to facilitate future compliance reviews.

The activities described in Specific Conditions 10, 11 and 12 above are summarized in the table below.

UMAM Categories	Management Activity Summary
1 and 2	Exotic species control; access control.
3	Cutting and chemical treatment of titi and pine; underplanting with 1,898 mixed hardwood saplings; exotic species control; access control.
4	Excavation of previous fill impacts to target elevation; planning with 1,000 mixed hardwood saplings and 1,000 wiregrass plugs; exotic species control; access control; suppression of fire until hardwoods have attained adequate height with soft firelines; ultimately allowing prescribed fire to shape the transitional zone with flatwoods.
5	Planting of impact areas with 4,000 hardwood saplings; exotic species control; access control; suppression of fire until hardwoods have attained adequate height with soft firelines; ultimately allowing prescribed fire to shape the transitional zone with flatwoods.
6	Controlled prescribed fire; review to determine coverage of shrubs after fire; reduction in shrub component by cutting and herbicide as necessary; exotic species control; access control.
7	Planting of 2,500 hardwood saplings; suppression of fire until hardwoods have attained adequate height with soft firelines; reintroduction of controlled prescribed fire; exotic species control; access control.
8	Planting of 11,200 wiregrass plugs; prescribed fire; exotic species control; access control.
9	Planting of 1,900 hardwood saplings; exotic species control; access control.
10	Fireline installation; prescribed fire; tree/shrub reduction by mechanical and chemical means as necessary; underplanting with 97,095 longleaf pine; exotic species control; access control.
11	Exotic species control; access control.

13. Hydrologic Enhancements. Hydrologic enhancements include the installation of six low water crossings, filling of one ditch, and the installation of six ditch plugs in two additional ditches (Figure 7 and 11).

a. Within 6 months of permit issuance, six low water crossings will be established in the existing dirt roads. These areas will be excavated to a depth of approximately 6" below the adjacent elevations, lined with filter fabric, and covered with rock to align with adjacent wetland elevations (Figure 11).
b. Ditch Fill Within Management Unit 15. Within 12 months of permit issuance the ditch will be filled to grade to the extent possible with the onsite spoil cast off from the ditch during the original construction. Because of spoil compaction or vegetation, the entire ditch may not be filled; however, all drainage by the ditch shall be eliminated with strategically placed ditch plugs.
c. Ditch Plugs Within Management Units 13 and 10. A total of six (6) ditch plugs will be installed to the grade of the adjacent wetlands in a manner that eliminates drainage.
d. The permittee shall submit a detailed report of the above construction within 60 days of completion work. Prior to the release of credits associated with this activity, the permittee shall arrange a post-construction site visit that includes the Department, QMS, and any IRT members that are available to review the activities. The permittee shall submit a summary of the site visit for the file to facilitate future compliance reviews.

14. Turbidity Controls. Earthwork will be implemented when there is no standing (except within ditches) and no flowing water. Best Management Practices for the control of turbidity and erosion shall be implemented during all work on site. Erosion and turbidity control measures shall be inspected regularly. All graded areas shall be stabilized within 48 hours of attaining final grades and at any other time necessary to prevent erosion, siltation and turbid discharges in violation of state water quality standards.

15. Work schedule. Bank activities are expected to occur within 10 years of permit issuance. The sequence of activities and dates given below are relative estimates to be used as guidelines. Variation in this schedule may be authorized with concurrence of the Department upon written request from the permittee.

Activity	Estimated Completion Date From Date of Permit Issuance By Agencies
Execution of Conservation Easement (SC #8), fencing & security	1-3 mo.
Identification of Reference Wetland (SC #5.d.)	1-3 mo.
Selection/approval of QMS (SC #7)	1-3 mo.
Demonstration of Financial Assurances(SC #9)	1-3 mo.
Establishment of reference wetland (SC #22.b.)	1 yr.
Installation of Low Water Crossings (SC #13a)	1-6 mo.
First Prescribed Fire (SC #12)	1 yr.
Exotic and Nuisance Species Control (SC #11)	Ongoing
Titi & Pine Reduction;Hardwood Underplanting -Mgmt Unit 2 (SC #10a)	1 yr.

Fill Excavation; hardwood planting Management Unit 12 (SC #10b)	1 yr.
Hardwood Plantings w/in ORV Impacts in Management Unit 6 (SC #10c)	1 yr.
Shrub Reduction in Management Units 5, 6 and 8-13 (SC #10d).	2 yr.
Planting in Cypress-Gum Management Units 4, 5, 11 and 15 (SC #10e)	1 yr.
Planting Wiregrass in Management Units 3, 5-8 and 15 (SC #10f)	1 yr.
Planting in Bay/Titi in Management Unit 1 (SC #10g)	1 yr.
Shrub/Tree Reduction in Flatwoods-Mgmt Units 3-13 and 15 (SC #10h1)	1-2 yr.
Mowing in Management Unit 14 (SC #10i)	1 yr.
Monitoring Year 1 / Initial Annual Report Preparation (SC #25)	1 yr.
Ditch Plugs and Filling in Management Units 13, 910 and 15 (SC #13b &c)	1-2 yr.
Monitoring Year 2 / Annual Report Preparation (SC #25)	2 yr.
Second Prescribed Fire (SC #12)	4 yr.
Plant Longleaf in Hydric Flatwoods (SC #10h2)	5 yr.
Monitoring Year 3/ Annual Report Preparation (SC #25)	3 yr.
Monitoring Year 4 / Annual Report Preparation (SC #25)	4 yr.
Monitoring Year 5 / Annual Report Preparation (SC #25)	5 yr.
Monitoring Year 6 / Annual Report Preparation (SC #25)	6 yr.
Third Prescribed Fire (SC #12)	7 yr.
Monitoring Year 7/Annual Report Preparation (SC #25)	7 yr.
Monitoring Year 8 / Annual Report Preparation (SC #25)	8 yr.
Monitoring Year 9 / Annual Report Preparation (SC #25)	9 yr.
Monitoring Year 10/Annual Report Preparation/Final Success (SC #25)	10yr.
Perpetual Management (SC #6)	Ongoing

Banking Operations

16. As specified in Rule 62-342.470(6) F.A.C., if at any time the bank is not in material compliance with the terms of this permit, no mitigation credits may be released or withdrawn. Mitigation credits shall again be available if the permittee comes back into compliance.

17. Assessment of Credits: As a result of mitigation activities, the Pensacola Bay Mitigation Bank has the potential to provide for a total of 159.83 Hydric Flatwood/Prairie credits (approximately 81%) and 37.70 Mixed Harwood credits (approximately 19%) following final bank wide success. Credits were assessed using the Uniform Mitigation Assessment Method (UMAM), Chapter 62-345, F.A.C., and a summary of the credit assessment is included in Attachment D. These credits will be released incrementally and in the same proportion as the overall credit type, as detailed in Specific Condition 19.

18. Ledger: In order to track credit releases and withdrawals, a ledger shall be kept indicating all potential, released, withdrawn and available credits. The format for the ledger, indicating potential credits, is Attachment E.

19. Credit Release Schedule. Mitigation credits will be released for use according to the following Credit Release Schedule table based on the timeframes anticipated in Specific Condition 15. The actual credit release will be determined by when the specified activity is completed or criteria achieved, which may be before or after the estimated date in Specific Condition 15. All credit releases shall be in accordance with the following table.

Task	Specific Conditions	% Credit Release	Flatwood/ Wet Prairie Credits	Mixed Hardwoods Credits	Total Credits
Conservation Easement; Financial Assurances: Security; QMS.	5, 7-9	15	24.0	5.6	29.6
No further credits may be released prior to establishment of reference wetland (Specific Condition 22. b.)					
First Prescribed Fire; Mowing in Management Unit 14	12	10	16.0	3.7	19.7
Installation of Low Water Crossings; Ditch Filling/Plugging.	13	10	16.0	3.7	19.7
Shrub/Tree Reduction; Exotic Species Treatment; Hardwood Planting	10, 11	15	24.0	5.6	29.6
1st period attainment of interim success criteria	23	12.5	20.0	4.7	24.7
2nd period attainment of interim success criteria; planting of longleaf pine	23	12.5	20.0	4.7	24.7
3rd period attainment of interim success criteria	23	12.5	20.0	4.7	24.7
Final Success	22	~12.5	19.83	5.0	24.83
TOTALS		100	159.83	37.7	197.54

Upon completion of a credit release activity, the permittee may submit a minor modification request (with fee), along with supporting documentation, for the release of the appropriate number of credits. This request shall be made in writing to the Office of Submerged Lands and Environmental Resources. The Department shall review the minor modification, in accordance with Ch. 120, F.S., for release criteria documentation, conduct a site visit to determine if the documentation is representative of on-site conditions, and perform a compliance review of the permit, prior to the issuance or denial of the minor modification to release credits. An updated ledger indicating the additional available credits shall be attached to the minor modification.

20. Mitigation Credit Withdrawal: Withdrawal of the mitigation bank credits as mitigation for wetland impacts shall be accomplished though a minor modification of this permit. Modification requests for credit withdrawal shall not require a modification fee. Modification requests shall be made in writing to the Office of Submerged Lands and Environmental Resources in Tallahassee. Minor modification requests shall only be submitted by the bank permittee or by a designated agent, provided an updated agent authorization is submitted with each request. The modification request shall include:

a. a list of all Department or Water Management District permits (or other applicable regulatory actions) that require mitigation credits from the PBMB,
b. the permit number, issue date, as available, and permit processor/reviewer,

c. an identification of the number and type of wetland credits required under each of these permits.

Minor modification approvals for credit withdrawal shall be issued only to the bank permittee within 30 days of submittal of request. An updated mitigation bank credit ledger sheet shall be included by the Department as an attachment to each minor modification approval for credit withdrawal.

21. Mitigation Service Area: The mitigation service area (MSA) is the geographic area within which adverse impacts may be offset by the bank. The MSA for the Pensacola Bay Mitigation Bank is depicted in Figure 2. The MSA includes lands within Santa Rosa, Okaloosa and Escambia Counties. Regardless of whether a project lies within the MSA, determination of the applicability of PBMB for mitigation, as well as the number and type of required mitigation credits, is made on a case-by-case basis by the impact permit reviewing agency.

Success Criteria

22. Final Success. The goal of the mitigation is to convert, enhance or preserve the existing communities shown in Figure 4 into the target communities shown in Figure 8 and as described in Attachment B. The bank shall be deemed successful when all of the following criteria, in addition to the community descriptions, have been met for a period of at least one full year without intervention in the form of eradication of undesirable vegetation, pine harvesting or replanting of desirable vegetation. For the purposes of success determination, "woody shrubs" includes those species, typically reduced by fire to coppice, such as titi (*Cyrilla racemifolia, Cliftonia monophylla*), gallberry (*Ilex glabra*), fetterbush (*Leucothoe racemosa, Lyonia* spp.), yaupon (*Ilex vomitoria*) and wax myrtle (*Myrica cerifera*) that tend to become dominant (weedy) and reduce the diversity of herbaceous species and desirable trees and shrubs (such as those listed for planting in Specific Condition 10) in a fire suppressed system. Slash pine is *Pinus elliottii*, loblolly pine is *Pinus taeda*, and longleaf pine is *Pinus palustris*.

a. Entire Site (UMAM Categories 1-11). Invasive exotic species cover is less than 1% cover in any one acre and not more than a cumulative 2 acres throughout the site.

b. Hydric Pine Flatwoods/Prairie (UMAM Categories 8 and 10).

1) The average cover of herbaceous groundcover (including graminoids, forbs, and ferns) shall be 75% or greater, with no one monitoring quadrat having less than 50% cover, and the collective cover of pioneer *Andropogon* spp. (except *A. liebmannii*) shall not exceed 10% in any quadrat.

2) Each sampling quadrat within UMAM Category 10 shall contain at least 80% of the total *number* of species identified in the reference wetland sampling (described below), and at least 75% of the quadrat's species shall be also be found in the reference wetland sampling. Species not found at the reference site shall be species appropriate to the community as demonstrated by the Banker with a literature citation and/or a third party professional botanist/ecologist opinion and agreed to by the Department.

   Reference site. The reference wetland site will be identified on lands in close proximity to PBMB on Northwest Florida Water Management District (District) property prior to release of credits beyond the initial "preservation" credit release. This site will be established in association with the District to represent optimal vegetation characteristics of the target community for the Department's approval. The intent of this reference wetland is to develop a species list to be used to gauge the species diversity success described by this condition. Random vegetation sampling transects within the reference wetland will be completed in April/May and September/ October, 2009. The reference wetland boundary and transects will be GPS-located and identified on an aerial photograph. This reference wetland will be sampled again in 2014 to generate an additional species list to account for any impacts resulting from weather patterns of the previous 5 years. Although the generation of the species list is important to the species richness success criteria, this site will also serve as example of a highly functioning wetland hydric flatwoods/prairie community from which comparisons other than just species presence or absence can be made, and as such, may be used in a qualitative manner at the discretion of the Department to otherwise demonstrate final compliance in this community category.

3) Gallberry, yaupon, wax myrtle, fetterbush, titi and other woody shrubs shall be no taller than the coppice sprouts that could have arisen from root crowns following the most recent successful fire. Areas dominated by woody shrubs (i.e. areas with shrubs averaging 1.5 meters in height and a collective canopy coverage of over 50%) shall be limited to random spots of 1 ac. or less where fire did not burn and shall represent an insignificant feature in this community type.
4) The combined canopy (>4" d.b.h.) of slash pine and loblolly pine shall not exceed 15 live trees/acre on average, and in no monitoring quadrat should the tree density be greater than 20 trees/acre.
5) Canopy and subcanopy (>1" d.b.h.) longleaf pine shall average between 5 and 100 trees/acre, with no monitoring plot having more than 110 trees/acres.
6) Appropriate vegetation is reproducing naturally, either by normal, healthy vegetative spread or through seedling establishment, growth and survival.
7) Prescribed fire routinely carries over a minimum of 70% of the community type.

c. Cypress/Gum Wetlands and Bay/Titi Enhancement Areas (UMAM Categories 3-7, and 9).

1) Planted and volunteer tree cover is increasing annually, with a minimum of 30% canopy cover (i.e. >4" d.b.h.), excluding titi, and with a species mix consistent with the community descriptions in Attachment B and the planting mix described in Specific Condition 10.
2) Total cover of combined tree, shrub and ground strata shall be greater than 70%.
3) Non-nuisance, native ground and shrub species are healthy, reproducing naturally and exhibiting the cover and diversity typical of habitat, such as found in Florida Natural Areas Inventory Natural Community Descriptions (FNAI and FDNR. 1990. Guide to the Natural Communities of Florida) or other such literature and Attachment B.
4) Titi, gallberry and fetterbush cover shall not exceed 25%.
5) Communities have developed so that prescribed fire moves from the flatwoods systems to these target communities without being catastrophic to the existing and recruited hardwoods.

d. Baygall/Mixed Hardwood Preservation (UMAM Categories 1, 2 and 11).

1) Inspections and monitoring shall indicate that conditions are not exhibiting signs of degradation and the conditions necessary to maintain functions in the long term are exhibited.
2) For any areas of restoration from rutting or ORV activity within this community, the desirable tree cover is increasing annually, with a minimum of 50% cover.
3) Within these restoration zones the total cover shall be greater than 70% through a combination of canopy, shrubs and ground cover.

e. Hydrologic Improvements. All low water crossings and ditch fill areas have been installed to the satisfaction of the Department, are stabilized and showing no signs of erosion, and have operated as designed, without the need of repairs for a period of at least three years.

f. Fire and interim success. Success criteria are being achieved at least one full year after the second successful fire and the attainment of the third level of interim success criteria described in Specific Condition 23.

23. Interim release criteria. Progressive environmental enhancement or trending toward success provides environmental lift for which credit may be released incrementally prior to achieving all the final success criteria delineated in Specific

Condition 22. Credits will be released whenever representative monitoring data provided in Annual Reports, as verified by a Department site inspection, indicate that:

a. At least one year has transpired since the activities described in Specific Conditions 10-11 and 13 were completed to the satisfaction of the Department or since the previous interim success attainment;
b. There is less than 2% exotic vegetation cover per acre;
c. Planted vegetation is surviving at a rate necessary to support final success criteria;
d. Preservation areas are maintaining or improving in function;
e. Hydric/Wet Flatwoods are attaining success criteria or are measurably increasing in herbaceous groundcover and decreasing in woody vegetation cover;
f. For the first level of interim success, the wet flatwoods quadrat's shall have at least 30% of *number* of species documented in the reference wetland sampling, and at least half of the site's species shall also be found at the reference site.
g. For the second level of interim success, the wet flatwoods quadrat's shall have at least 40% of *number* of species documented in the reference wetland sampling, and at least half of the site's species shall also be found at the reference site.
h. For the third level of interim success, the wet flatwoods quadrat's shall have at least 50% of *number* of species documented in the reference wetland sampling, and at least half of the site's species shall also be found at the reference site.
i. Prescribed burns have been conducted in accordance with the season and schedule described in Attachment C.
j. The project is in compliance with this permit.

24. Management and Maintenance. Monitoring data, observation and the QMS's professional judgment will dictate the type and frequency of management activities. In addition to the activities required by Specific Conditions 10-13, the following management activities shall also be required to achieve success and in the long term and to ensure that success criteria are maintained:

a. Replanting as necessary to achieve interim and final success criteria.
b. Conducting prescribed burns in accordance with Specific Condition 13 and Attachment C at a frequency and season optimal to promote desirable vegetation and wildlife, with a minimum of one growing season burn every 10 years;
c. Conducting exotic and nuisance plant control, as necessary, to avoid infestation of these species. At no time shall the cover of these species exceed 5% in any one acre prior to remedial eradication activities;

d. Quarterly inspection of the property for signs of trespassing, poaching or dumping and to ensure that the structures and security features are in good working order;
e. Reporting and timely maintenance, restoration, stabilization or repair of any damaged structures, fencing, equipment, roads or erosion areas identified in the quarterly inspection;
f. Removing feral/exotic animals that threaten the mitigation activities or success, such as feral hogs; and
g. Other management activities deemed necessary by the QMS to achieve success.

25. Monitoring. Qualitative and quantitative monitoring of vegetation and community structure shall be required annually until the bank is determined to have achieved the success criteria in Specific Condition 22. The Department has reviewed the proposed monitoring plan in Attachment F. This plan has been determined to be substantively adequate to evaluate progress toward restoration goals, identify potential roadblocks or impacts that may hamper attaining those goals, provide opportunities for scientific assessment of wetland functions and processes, and ultimately demonstrate that the Bank's success criteria have been met. However, in order to accommodate any changes necessitated by permitting conditions and/or operational restrictions, the permittee shall submit, for the Department's written approval, a final monitoring plan 60 days prior to conducting the first year monitoring for this permit. The Department shall complete such review within 60 days of receipt of a written submittal of the final monitoring plan. This plan shall include the following attributes:

a. a figure showing all sampling locations;
b. a table indicating all sampling frequencies and/or dates;
c. a detailed description of all sampling methodologies to be utilized;
d. samples of field and data tables;
e. photographic information.

In addition, this monitoring plan shall include a section detailing the proposed analyses and reporting that will be conducted utilizing the collected data. This section shall include:

f. proposed reporting format;
g. sample data summary tables and graphs;
h. proposed analytical assessments and discussion contents; and
i. a success/progress assessment.

26. Progress Reports. Beginning the first June or December after permit issuance and every 6 months thereafter, the permittee shall submit semi-annual status reports or letters containing the following information regarding the project:

a. Date permitted activities were begun or are anticipated to begin;

b. Brief description and extent of construction or management activities completed since the previous report or since permit was issued;
c. Copies of permit drawings indicating areas where work has been completed;
d. A description of problems encountered and solutions undertaken;
e. A brief description of the work and/or site management the permittee anticipates commencing, continuing or completing in the next six months; and
f. Site management undertaken, including type of management and dates each type was undertaken.

27. Annual Reports. The Annual Report is a summary of the yearly monitoring for success and an assessment of the degree to which the bank is attaining success. This report shall be submitted after completion of the end-of-growing-season vegetation monitoring and shall be prepared according to the format required and approved in accordance with Specific Condition 25. This report is due by January 30 and shall be submitted annually until the Bank site has been determined to be successful. The permitee may synchronize the reporting required in Specific Condition 26 such that alternate progress reports may be included as a section in the Annual Report. The Annual Report that requests a determination of final success in accordance with Specific Condition 22 shall also include the following information:

a. a summary of all previous Annual Reports, including, as appropriate, timeline graphics;
b. a list of each success criterion and documentation of how and when it was attained;
c. a notation of problems encountered in attaining the success criteria and how the problems were solved, and a notation of any exceptionally successful management activity;
d. a summary of compliance and/or enforcement submittals or actions during the implementation of the bank; and
e. any other information helpful for the continued success of the mitigation.

The Report requesting the final success determination shall be submitted to both the Department and the long-term manager.

28. Compliance: Prior to the initial credit release, the permittee shall prepare a checklist showing all compliance activities required in this permit, and the actual or relative dates for these activities. This checklist, with appropriate items "checked", shall be included with each annual monitoring report submittal or credit release modification request.

List of Attachments:

Figures 1-11
Attachment A – Cost Estimate
Attachment B – Target Community Descriptions
Attachment C – Fire Management Plan
Attachment D – UMAM Summary
Attachment E – Ledger
Attachment F – Monitoring Plan
FLEPPC species list

Recommended by:

RWC/TR/CA/VT/vt

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Richard W. Cantrell, Deputy Director
Division of Water Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies this **PERMIT** was mailed before the close of business on

_____ (date)

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to 120.52(7) F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.

DRAFT

Clerk Date

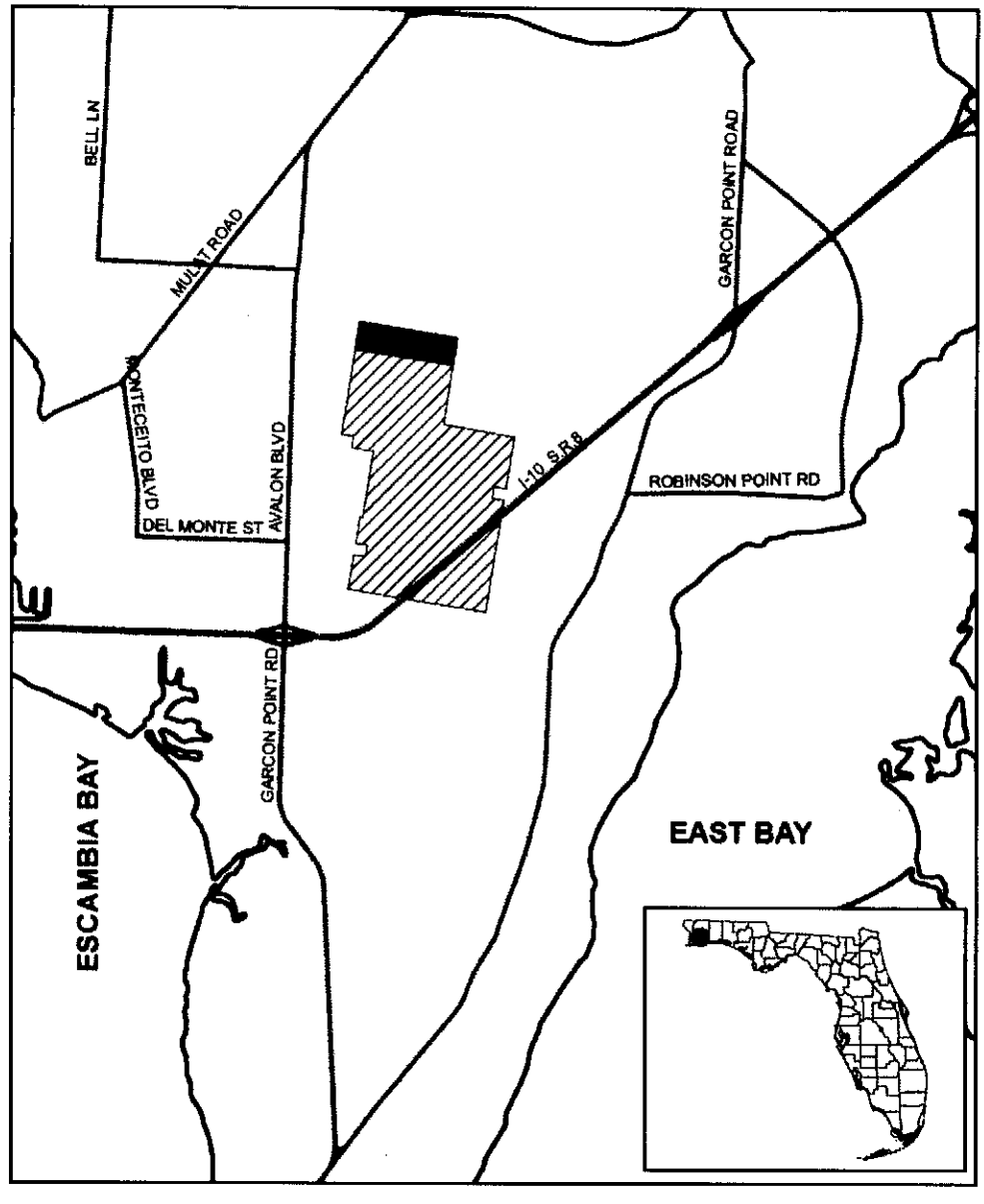

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Figure 1 - Pensacola Bay Mitigation Bank Location

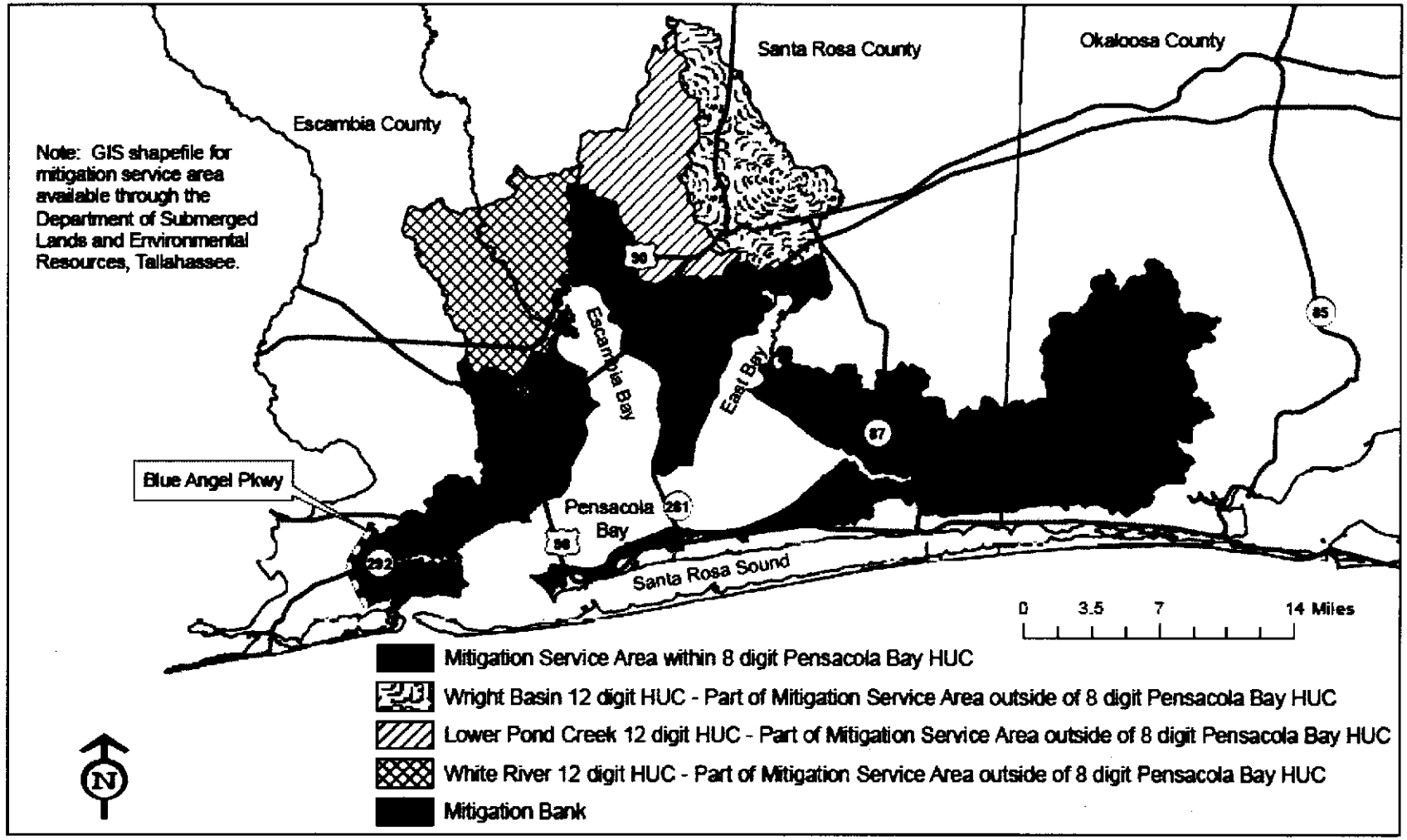

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Figure 2 - Mitigation Service Area

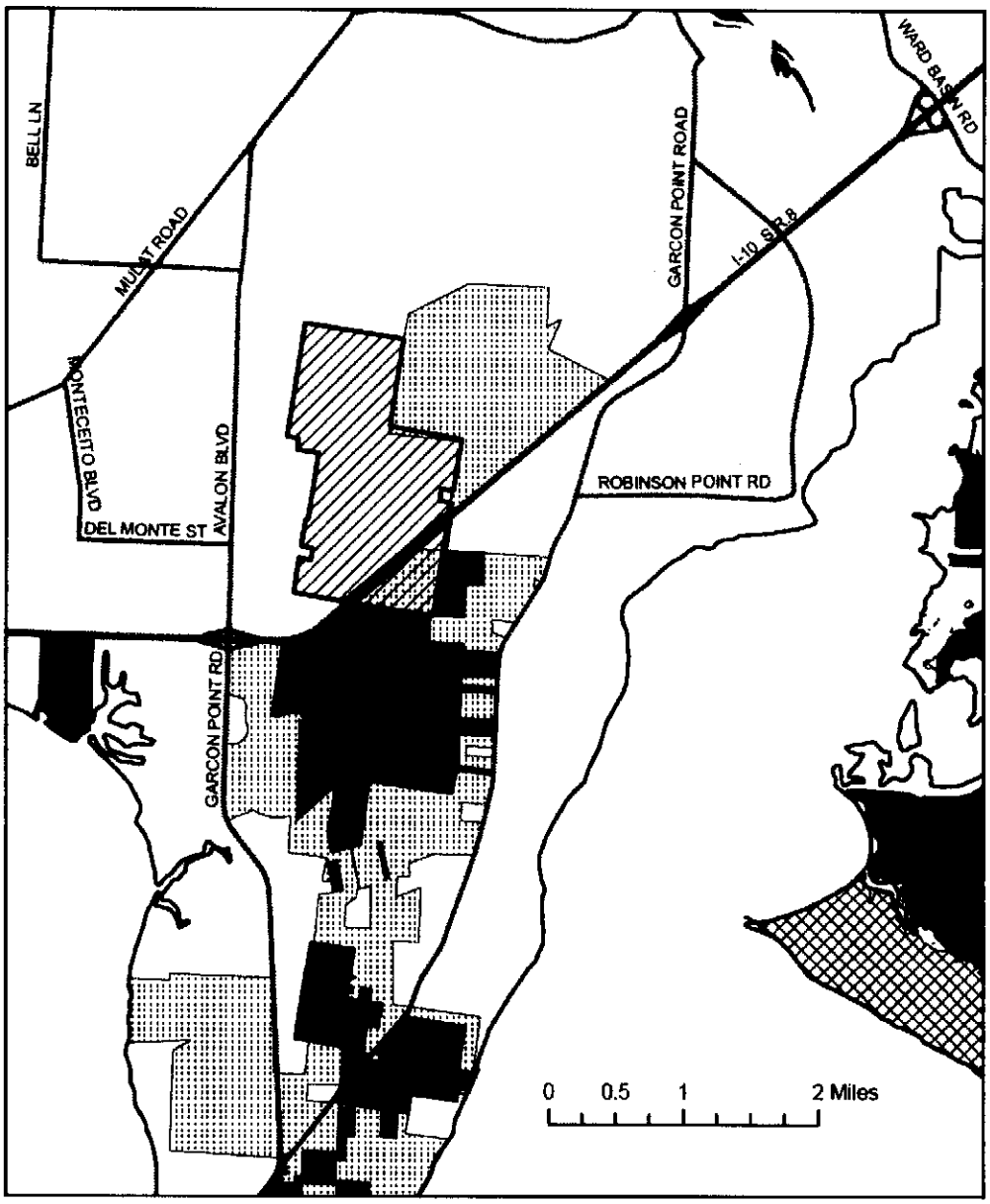

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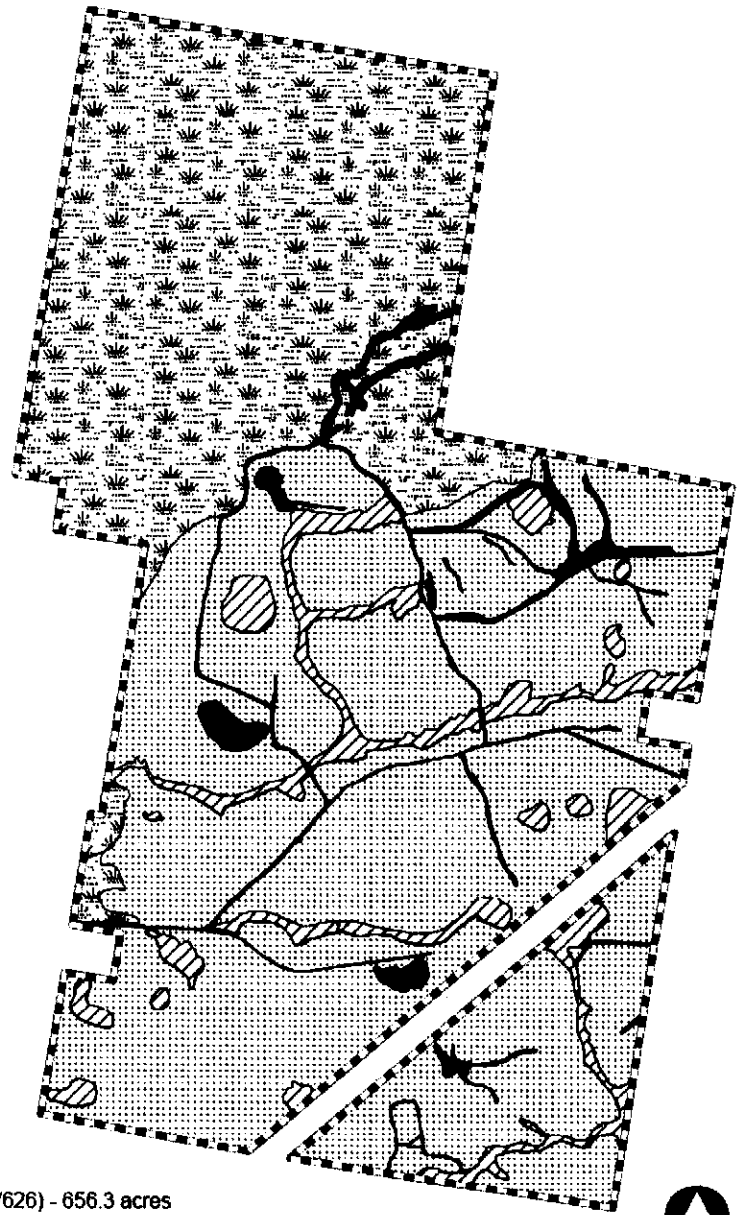
Figure 3 - Bank Location with Respect to Other Conservation Lands



Boundary
Wet Flatwoods (FLUCCS 625/626) - 656.3 acres
Disturbed Lands/Trails (FLUCCS 740/8146) - 41.8 acres
Bay and Titi Swamps (FLUCCS 611/614) - 414.9 acres
Gum/Cypress Swamps - FLUCCS 613/621 - 75.2 acres

0 1,000 2,000 4,000 Feet

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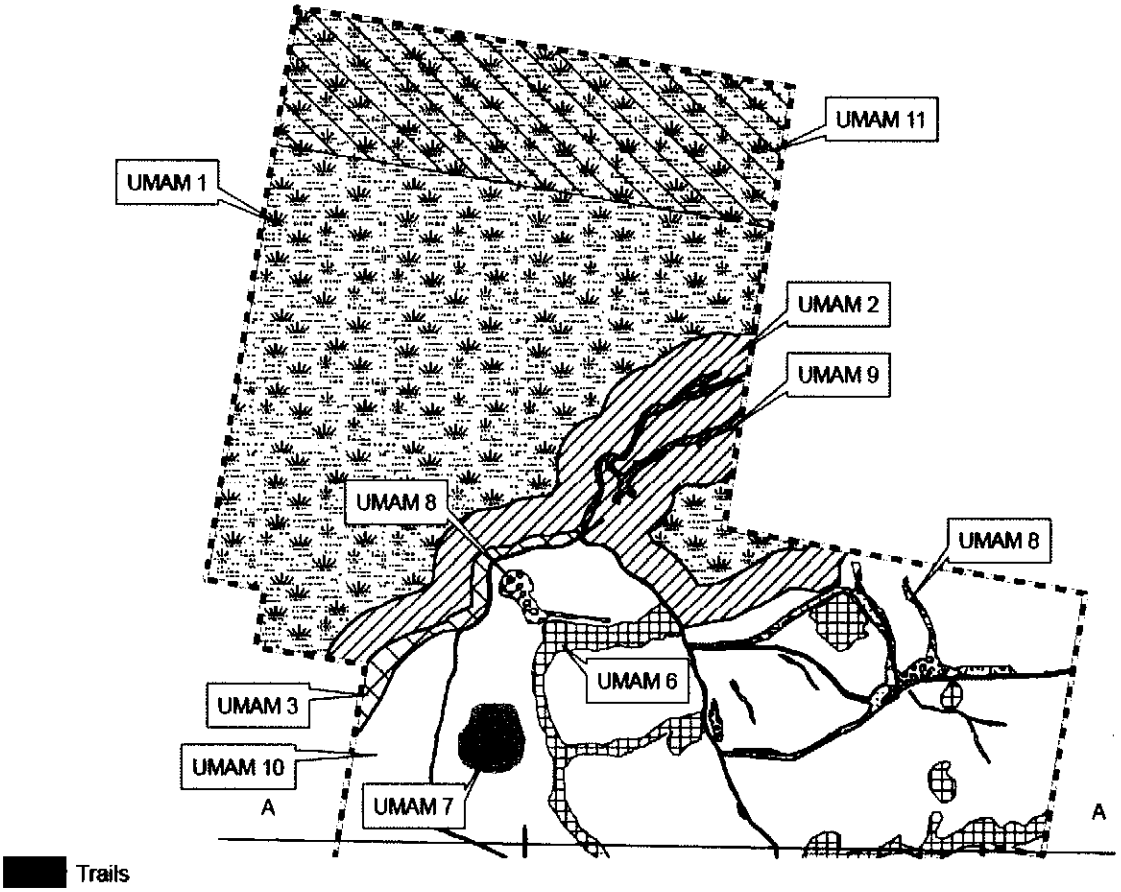
Figure 4 - Existing FLUCCS Communities
Pensacola Bay Mitigation Bank



Trails

Preservation; Prohibit Logging; Access Control; Exotic Control (UMAM 1 + 11)

Preservation; Prohibit Logging; Access Control; Exotic Control (UMAM 2)

Preservation; Cut/Chemical Treat Titi; Plant Hardwoods; Control Access; Exotic Control (UMAM 3)

Plant Hardwoods; Exotic Control (UMAM 5)

Excavation; Plant Hardwoods; Prescribed Fire Management; Exotic Control (UMAM 4)

Shrub Reduction; Prescribed Fire; Exotic Control (UMAM 6)

Supplemental Hardwood Plantings; Low Intensity Fire; Exotic Control (UMAM 7)

Recontour Ruts; Plant Native Herbaceous; Exotic Control (UMAM 8)

Plant Mixed Hardwoods; Exotic Control (UMAM 9)

Previous Permit Conservation Easement (UMAM 11)

Shrub Reduction; Prescribed Fire; Exotic Control (UMAM 10)

0 700 1,400 2,800 Feet

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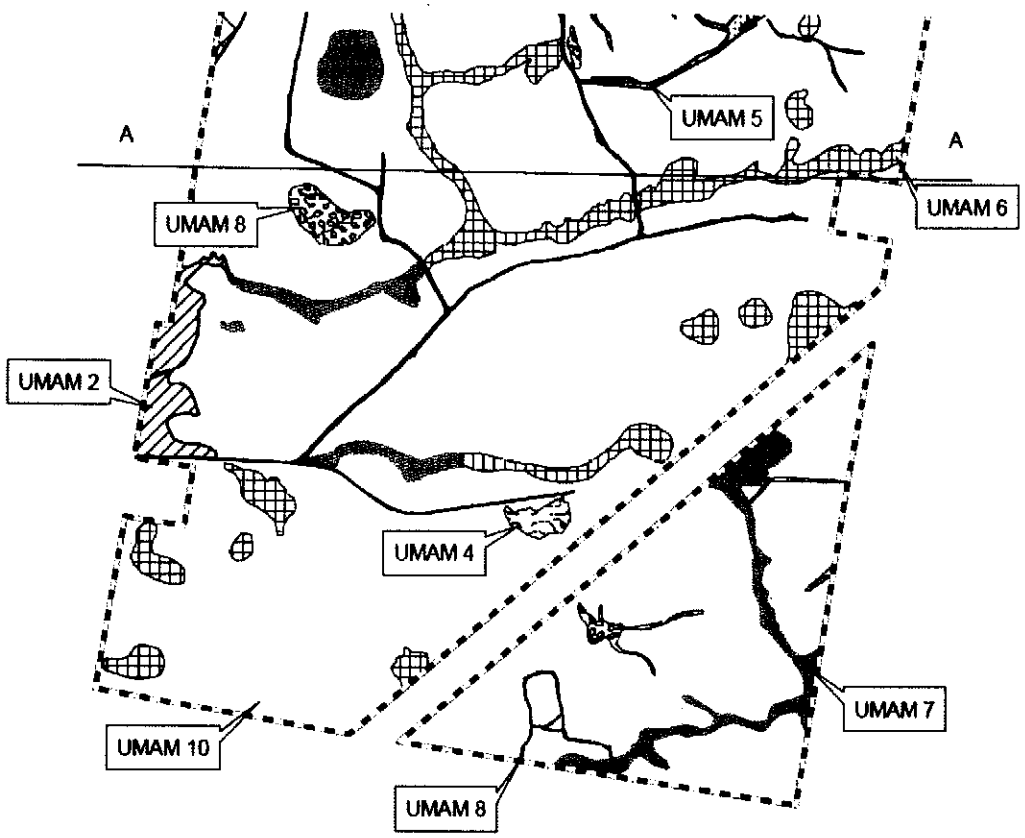
Figure 5 - Mitigation Activities North
Pensacola Bay Mitigation Bank

3Di INC.



Trails

Preservation; Prohibit Logging; Access Control; Exotic Control (UMAM 1 + 11)

Preservation; Prohibit Logging; Access Control; Exotic Control (UMAM 2)

Preservation; Cut/Chemical Treat Titi; Plant Hardwoods; Control Access; Exotic Control (UMAM 3)

Plant Hardwoods; Exotic Control (UMAM 5)

Excavation; Plant Hardwoods; Prescribed Fire Management; Exotic Control (UMAM 4)

Shrub Reduction; Prescribed Fire; Exotic Control (UMAM 6)

Supplemental Hardwood Plantings; Low Intensity Fire; Exotic Control (UMAM 7)

Recontour Ruts; Plant Native Herbaceous; Exotic Control (UMAM 8)

Plant Mixed Hardwoods; Exotic Control (UMAM 9)

Shrub Reduction; Prescribed Fire; Exotic Control (UMAM 10)

0 700 1,400 2,800 Feet

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Figure 6 - Mitigation Activities South
Pensacola Bay Mitigation Bank

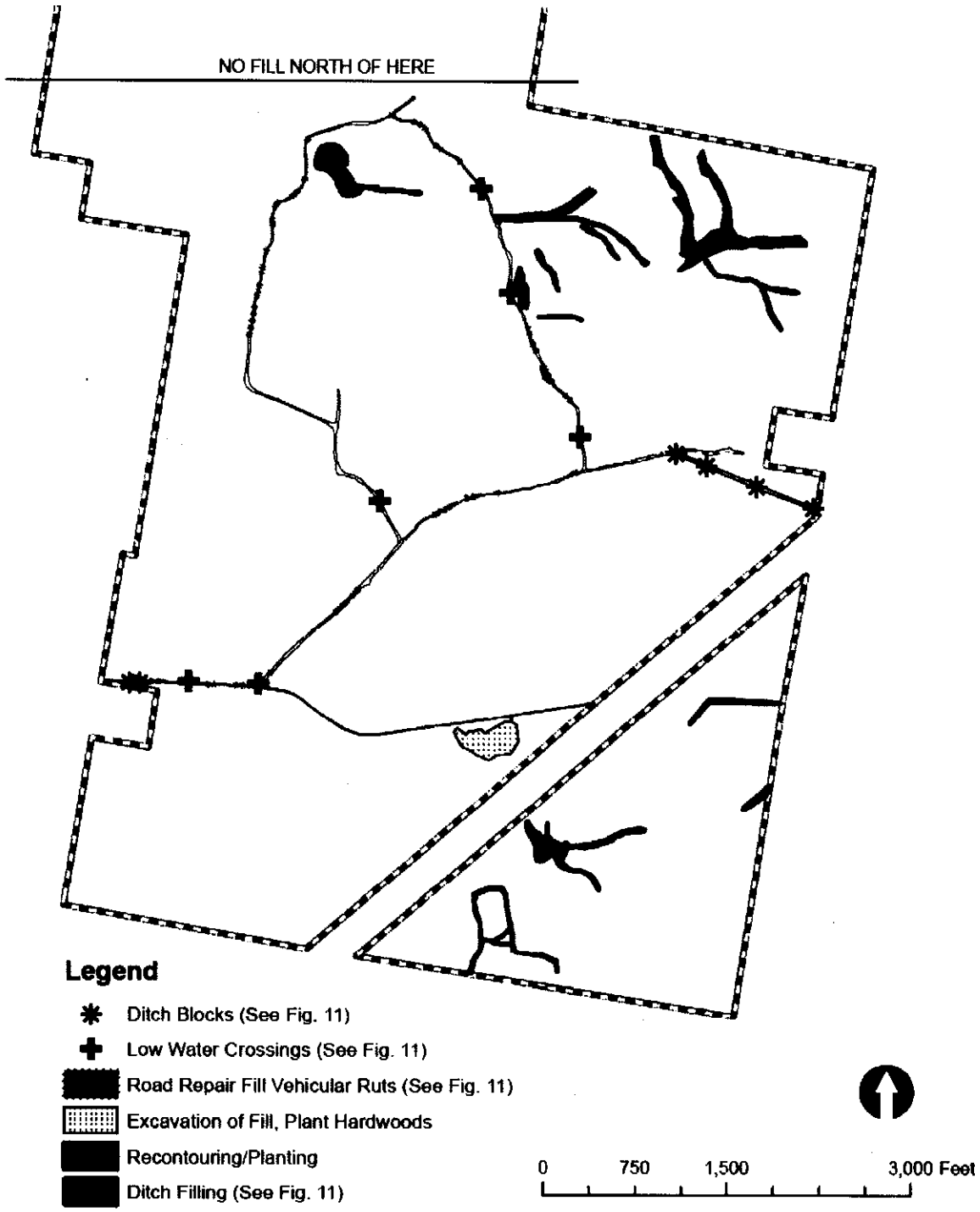

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Figure 7 - Plan View Excavation/Filling Activities
Pensacola Bay Mitigation Bank
*Excavation/Filling Occurs Only in South Portion of Property

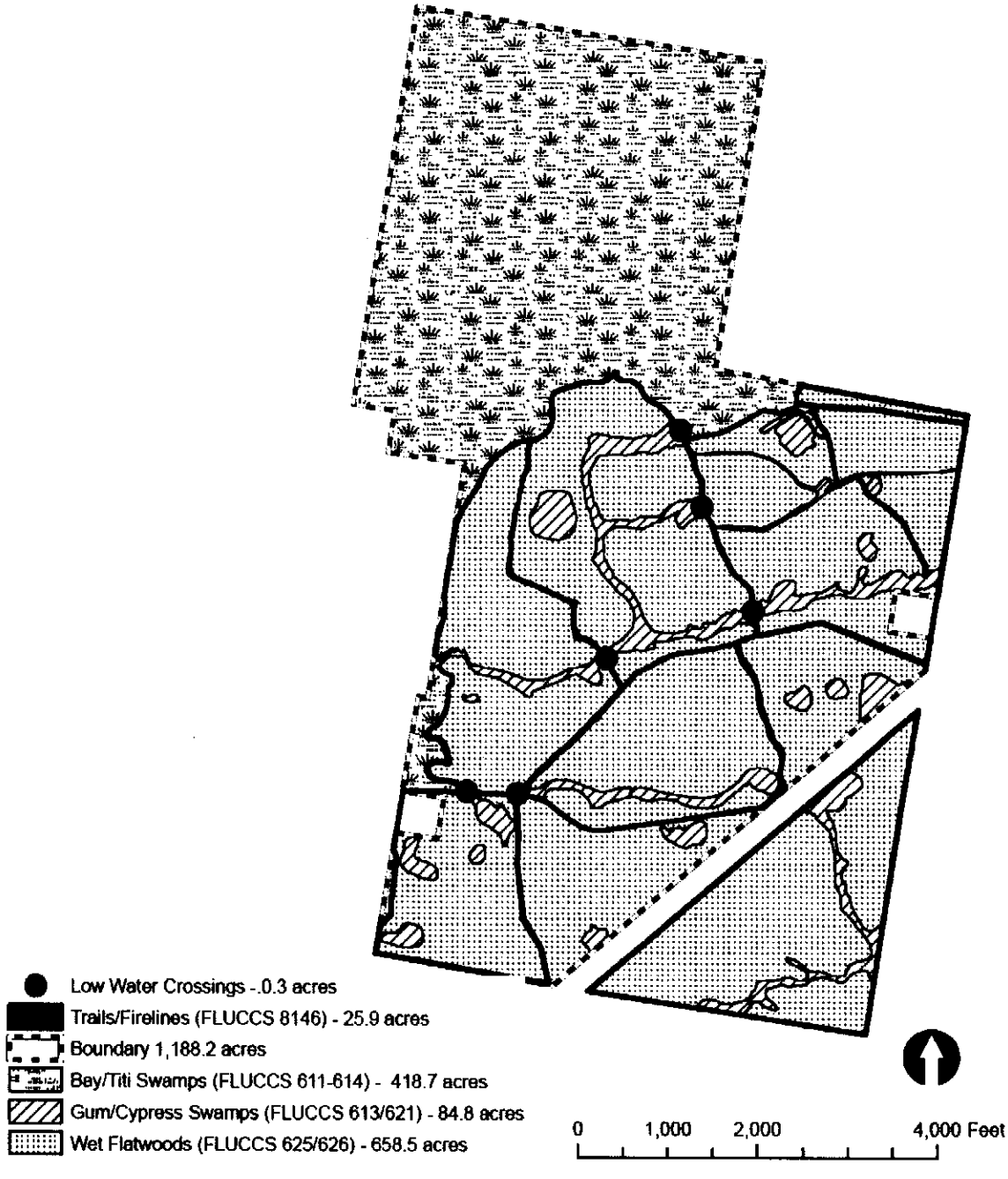

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Figure 8 - Proposed FLUCCS Communities
Pensacola Bay Mitigation Bank

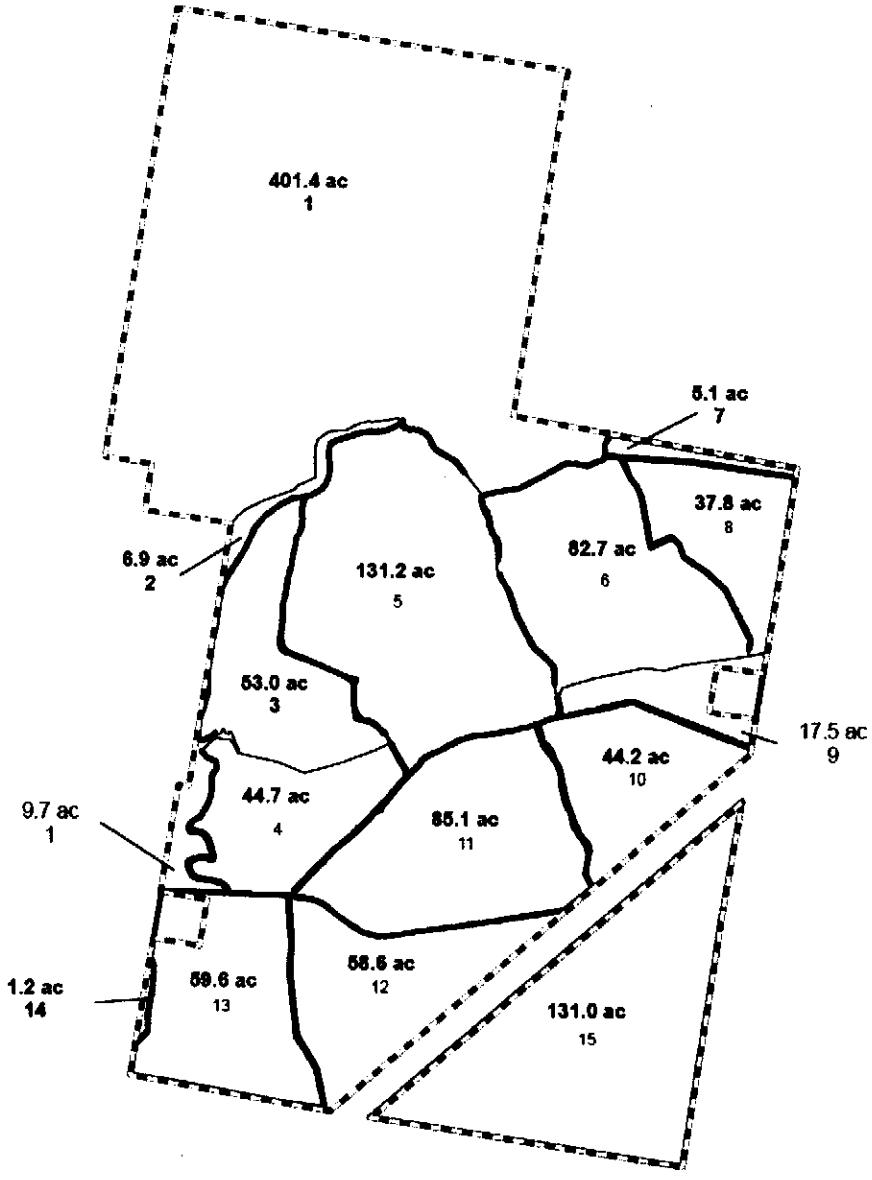

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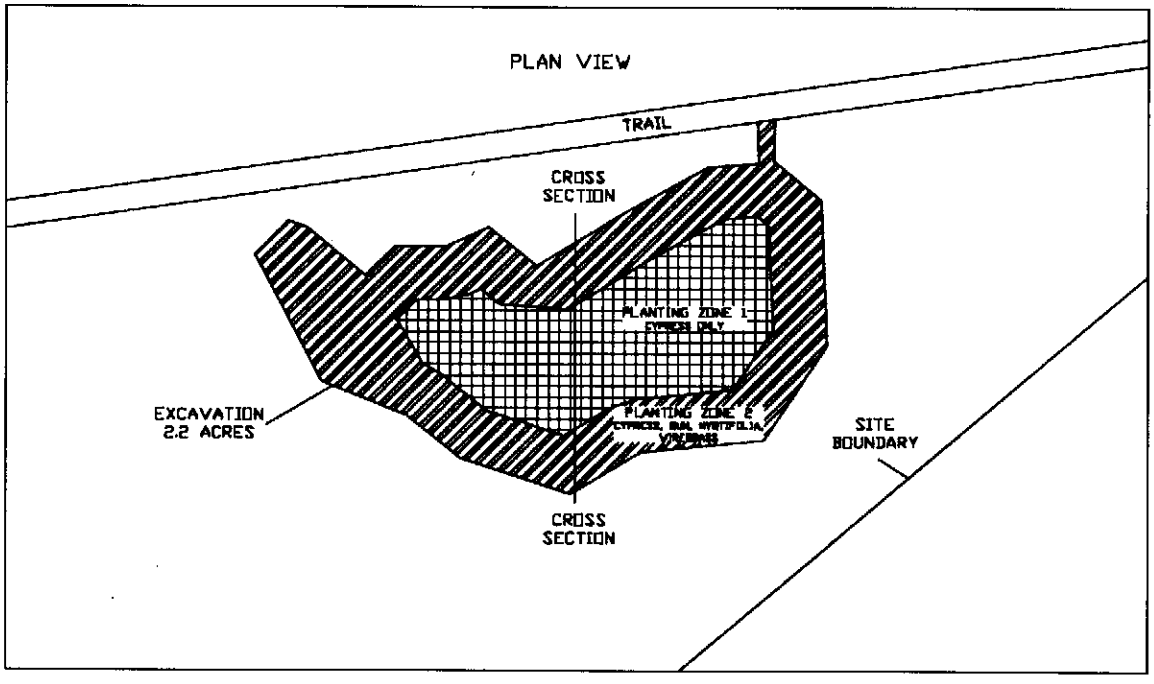
Figure 9 - Management Units 1-15
Pensacola Bay Mitigation Bank



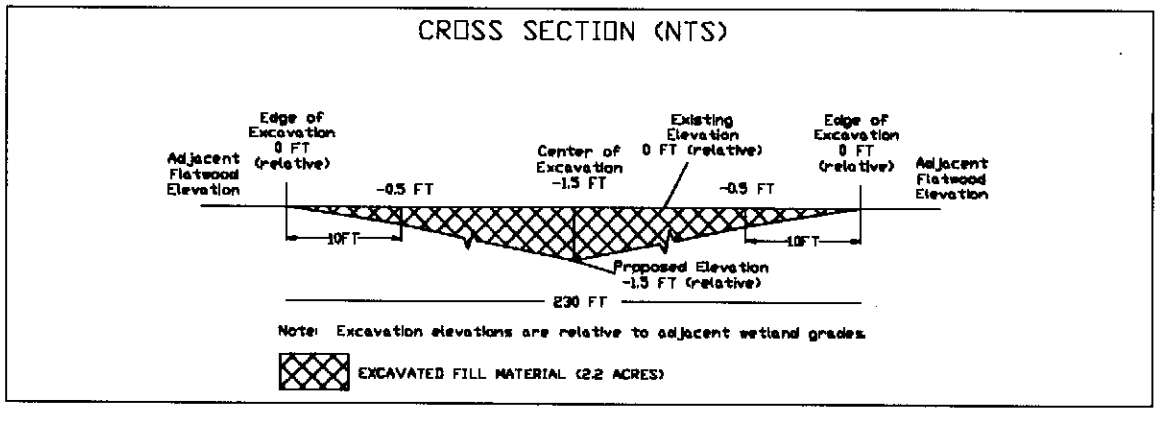


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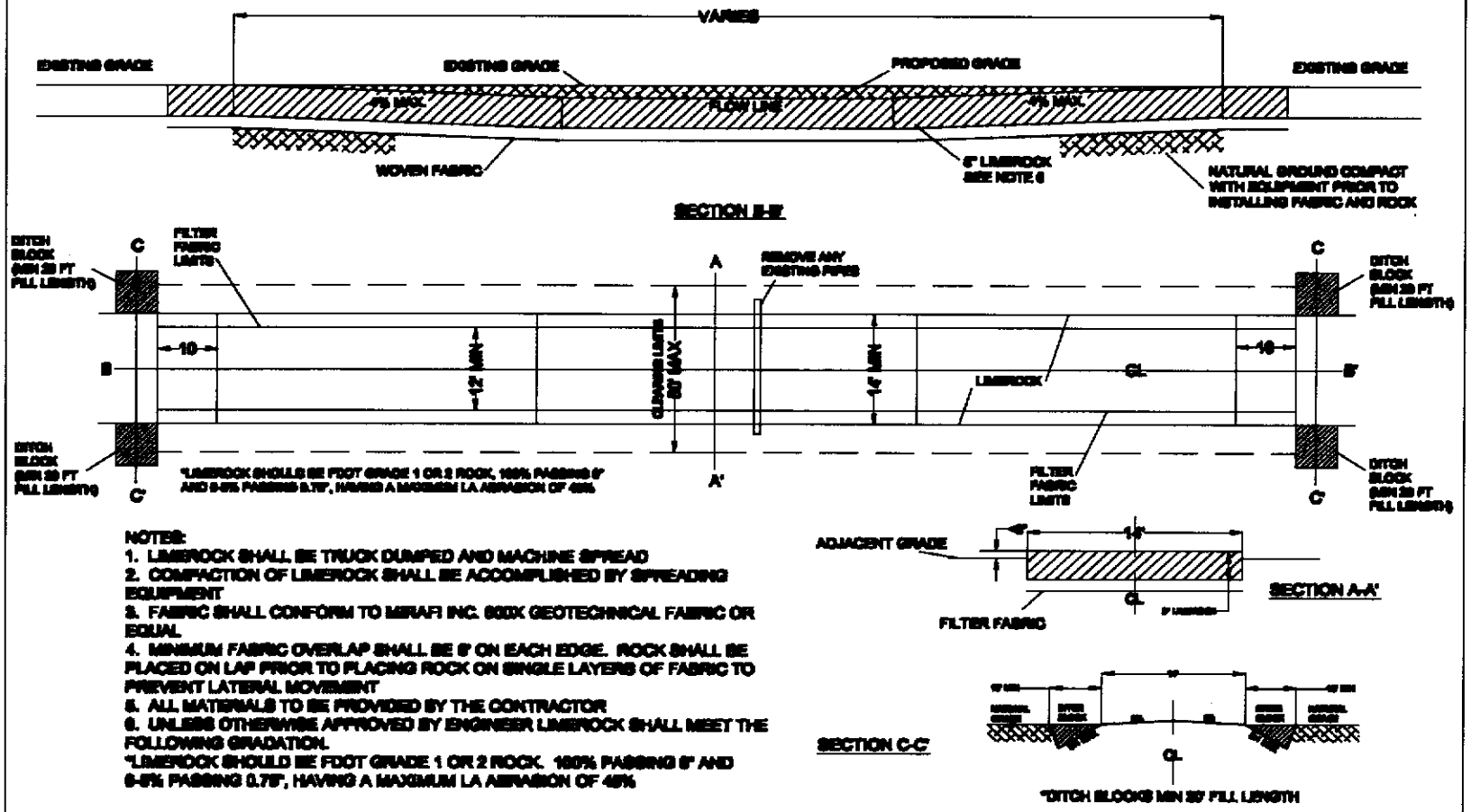
Figure 10 - Hardwood Creation from Filled Wetlands

Pensacola Bay Mitigation Bank

Scale (top only) 1 inch = 150 feet
1/27/2009

TYPICAL HARDENED LOW WATER CROSSING DETAIL

(NOT TO SCALE)



NOTES:

1. LIMEROCK SHALL BE TRUCK DUMPED AND MACHINE SPREAD
2. COMPACTION OF LIMEROCK SHALL BE ACCOMPLISHED BY SPREADING EQUIPMENT
3. FABRIC SHALL CONFORM TO MIRAFI INC. 600X GEOTECHNICAL FABRIC OR EQUAL
4. MINIMUM FABRIC OVERLAP SHALL BE 8' ON EACH EDGE. ROCK SHALL BE PLACED ON LAP PRIOR TO PLACING ROCK ON SINGLE LAYERS OF FABRIC TO PREVENT LATERAL MOVEMENT
5. ALL MATERIALS TO BE PROVIDED BY THE CONTRACTOR
6. UNLESS OTHERWISE APPROVED BY ENGINEER LIMEROCK SHALL MEET THE FOLLOWING GRADATION.

*LIMEROCK SHOULD BE FDOT GRADE 1 OR 2 ROCK. 100% PASSING 8" AND 0-5% PASSING 0.75", HAVING A MAXIMUM LA ABRASION OF 45%

FIGURE 11

ATTACHMENT A – Cost Estimates

Construction Activities through Final Success

Year 1

Activity	Cost
Establish baseline monitoring on NWFWMD Property to south.	5,000.00
Herbicide application/mechanical cutting of vegetation to facilitate restoration of impacted and flatwoods – 126 acres ($150/acre)	19,000.00
Access control and installation of signage (3 gates; 44,000 linear feet of boundary marked at 500' intervals)	8,000.00
Initial fireline installation	10,000.00
Prescribed fire management (700 acres at $45/acre)	31,500.00
Excavation of roads into roadside ditches/ditch plugging	13,500.00
Excavation of 2.2 acres	15,000.00
Initial exotic identification (technician at $60/hr) – 40 hrs.	2,400.00
Initial exotic eradication (2 technicians at $60/hr. each) – 80 hrs.	4,800.00
Herbicide purchase	5,000.00
Quarterly onsite inspections for access problems and exotics	6,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Agency reporting on quarterly basis	5,000.00
Planting of wiregrass plugs	8,800.00
Installation of low water crossings	25,000.00
Year 1 contingency fund	10,000.00
Total Year 1 costs estimated	172,000.00

Year 2

Activity	Cost
Year 1 onsite vegetation monitoring	20,000.00
Exotic treatment with chemicals	4,500.00
Planting Hardwoods	11,200.00
Quarterly onsite inspections for access problems and exotics	6,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Year 2 contingency fund	10,000.00
Total Year 2 costs estimated	59,700.00

Year 3

Activity	Cost
Follow-up monitoring	20,000.00
Prescribed fire management	31,500.00
Fireline rehabilitation	2,500.00
Herbicide/mechanical cutting of vegetation to facilitate fire	10,500.00
Exotic Treatment	4,500.00
Quarterly onsite inspections for access problems and exotics	6,000.00
Agency reporting on quarterly basis	5,000.00
Plant longleaf plugs	10,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 3 costs estimated	103,000.00

Year 4

Activity	Cost
Follow-up monitoring of communities	20,000.00
Exotic treatment	4,500.00
Quarterly onsite inspections for access problems, etc.	6,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 4 costs estimated	48,500.00

Year 5

Activity	Cost
Follow-up monitoring	20,000.00
Exotic treatment	4,500.00
Quarterly onsite inspections for access problems, etc.	10,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 5 costs estimated	52,500.00

Year 6

Activity	Cost
Follow-up monitoring	20,000.00
Qualitative monitoring of reference wetland on NWFWMD property	5,000.00
Prescribed Fire Management	31,500.00
Additional hardwood plantings	3,000.00
Additional herbaceous plantings	2,500.00
Quarterly onsite inspections for access problems, etc.	6,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 6 costs estimated	86,000.00

Year 7

Activity	Cost
Follow-up monitoring.	20,000.00
Quarterly onsite inspections for access problems, etc.	6,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 7 costs estimated	44,000.00

Year 8

Activity	Cost
Follow-up monitoring.	20,000.00
Prescribed fire	31,500.00
Quarterly onsite inspections for access problems, etc.	10,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 8 costs estimated	79,500.00

Year 9

Activity	Cost
Follow-up monitoring.	20,000.00
Exotic treatment	5,000.00
Quarterly onsite inspections for access problems, etc.	6,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 9 costs estimated	49,000.00

Year 10

Activity	Cost
Follow-up monitoring.	20,000.00
Quarterly onsite inspections for access problems, etc.	6,000.00
Agency reporting on quarterly basis	5,000.00
Biannual inspection by senior scientist to determine trends and issues	3,000.00
Contingency fund	10,000.00
Total Year 10 costs estimated	44,000.00

Actual costs for years 1-10 through success calculated at $738,200. Letter of Credit with Standby Trust to total $812,020.00

Long-term Management Costs

Activity	Annual Cost
Prescribed fire management ($31,500/2.5 years)	12,600.00
Quarterly onsite inspections for access problems	6,000.00
Exotic treatment/inspections	2,000.00
Annual inspection by senior scientist to determine trends and issues	1,500.00
Contingency fund	2,000.00
	24,100.00

A long-term management endowment of $401,700.00 will be established by year 5 and adjusted, as necessary, at determination of final success. This will be guaranteed with a Letter of Credit and Standby Trust of $401,700.00. After the sale of each credit from the Bank, at least $2,000.00 will be deposited into the Perpetual Management Trust Fund account until the total amount has been reached, upon which time the Letter of Credit will be dissolved.

Attachment B – Target Natural Community Descriptions

The goal of the mitigation is to convert, enhance or preserve the existing communities shown in the permit's Figure 4 into the target communities shown in Figure 8. Qualitative descriptions of onsite target communities are as follows:

Bay and Titi Swamps (FLUCCS 611/614) / Baygall
This area is currently densely forested and has predominantly peat soils, and its preservation and natural succession is the goal. A principle source of hydrology is the seepage along base of adjacent upland sandy slopes. This community is not fire dominated and the relative infrequency of fire (>100 year return) promotes a densely packed canopy and subcanopy of shrubs, hardwoods and pines. The canopy is dominated by sweetbay, black titi, swamp bay, blackgum, sweetgum, red maple, slash pine and loblolly pine. In areas that were subject to a severe wildfire, the dominant canopy will be black titi for the near future but will transition to a mixed hardwood composition over time. The subcanopy consists of saplings of the canopy species interspersed with other species that will typically not attain canopy status in this community. These species include fetterbush, myrtle-leaved holly, gallberry, tall gallberry, wax myrtle, greenbrier and scattered ferns. Some areas of open canopy along the community edge or internally from tree falls or other minor disturbances will have periods of herbaceous coverage, with species including rushes, wiregrass, bluestem, meadow beauty, and yellow-eyed grass.

Gum and Cypress Swamps (FLUCCS 613/614) / Depressional Wetlands; Forested Wetlands
There are two distinct forms associated with this community assemblage onsite. The first is a depressional system within the matrix of wet flatwoods and prairie, with hydroperiods tied to vertical variations in ground-water levels. These areas are characterized by a canopy of cypress and gum, with scattered slash and loblolly pines along the perimeters. In the restored form these central hardwoods will grade up to the slightly higher flatwoods with a shrub and herbaceous transitional zone. Typical canopy species include cypress, blackgum, slash pine, loblolly pine, sweetbay, swampbay, red maple and dahoon holly. Typical transitional species include bluestem, wiregrass, pitcherplants, yellow-eyed grass, Curtiss' sandgrass, meadow beauty, redroot, blazing star, St. John's wort, wax myrtle, gallberry, tall gallberry, myrtle-leaved holly, dahoon holly and pines. The shrub representation will vary depending upon the fire return interval with the largest density achieved 3 years or more after the last prescribed fire. Fire will generally extend into the edges of these systems on a regular basis, and may burn completely through in some conditions, as these depressions are frequently not inundated. The fire would, however, be low and

not impact the canopy. However, the frequency of fire will tend to keep the shrub and tree canopy relatively open, with canopy coverage having a maximum of about 50% cover.

The second form of cypress-gum swamp is the forested wetland stringers or drains that contain flowing water at certain periods of the year. These systems are characterized by low-lying, closed canopy of hardwoods with either a dense shrubby understory with little ground cover, or an open understory and groundcover of ferns, herbs, and grasses. The defining factor in the vegetation composition depends on the ability of fire to reach into these systems from the adjacent flatwoods. In wet periods, the fire will largely be excluded from the bulk of the community, except the extreme edges, and hardwoods and shrubs will dominate. In very dry periods, or in portions of the drains that have little standing water, the fire may work deeper into the systems allowing a greater representation of herbaceous species. Typical canopy species include cypress, blackgum, slash pine, loblolly pine, sweetbay, swampbay, red maple and dahoon holly. Typical subcanopy species include saplings of the above species and also include myrtle-leaved holly, buttonbush, wax myrtle, St. John's wort, gallberry, tall gallbery, fetterbush and greenbrier. Herbaceous representation includes redroot, sphagnum moss, bluestem, wiregrass, pitcherplants, Curtiss' sandgrass and ferns. Fire is essential to the maintenance of the edges and transitional zones of these systems.

Hydric Flatwoods/Wet Prairie (FLUCCS 625/626)

Flatwoods are characterized by relatively flat and poorly drained soils with a high water table, but seasonally, may have quite dry, sandy soil. The flats are characterized by a lush and diverse groundcover dominated by grasses and herbaceous forbs that provide 80-100% cover. Above this savanna is an open-canopy forest of scattered pine trees that grade into wet prairie/savanna with few to no trees. Understory shrubs are controlled by frequent fire and is typically low and open in structure or altogether sparse. The community is characterized by a dense and diverse ground cover with typical plants including spikerush, beakrush, wiregrass, pitcherplants, sundews, redroot, gay feather, St. John's wort, yellow-eyed grass, Curtis' sandgrass, bluestem, and rushes. Canopy is longleaf pine, slash pine, sweetbay, titi, wax myrtle, gallberry. Fire is essential to the maintenance of these communities, and in its absence, transition to a closed canopy, hardwood dominated forest would occur.

ATTACHMENT C – Fire Management Plan

Site Description:

The proposed 1200 acre mitigation bank is in Santa Rosa County, FL, approximately 5.5 mil northeast of Pensacola and 5.5 miles southwest of Milton. The property is largely north of I but does include land south of the interstate. Of the whole property, approximately 786 acr be enrolled in a prescribed burning program.

The property lies virtually contiguous with the Garcon Ecosystem Florida Forever BOT Proj The Garcon Ecosystem project is managed in large part with frequent fire by Northwest Flor Water Management District. **(Figure 1)**

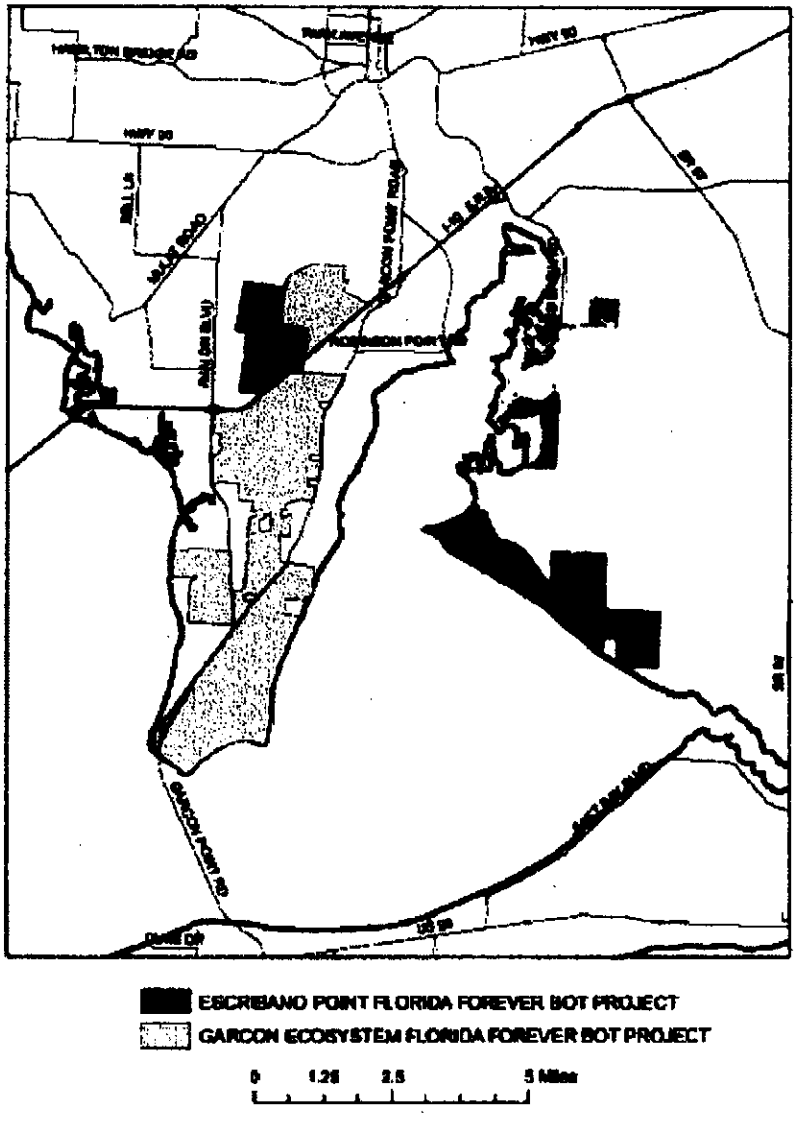


Figure 1. Landscape position of burn unit (in red).

Legal Description:
E ¾ of S ½ of Section 42 Township 1N Range 28 W
Section 37 Township 1N Range 28 W
Section 3 Township 1S Range 28 W

Date of Last Burn:
In 1999, an approximately 450 acre wildfire ignited off of I-10 blew across the property from the south. Any burning of this location prior to 1999 is unknown. However, local people have indicated that this area has burned "frequently". Potential fire occurrence is high for much of the area (see **Appendix A**).

Burning Objectives:
Objectives will be iterative and follow adaptive management principles. Short term burn objectives will be fuel reduction to minimize wildfire risk and uncontrolled smoke impacts. Long-term goals will be minimizing smoke impacts while restoring historic "open pine [flat] woods" structure and function. Minimizing damage of overstory pine resources is not a driving factor in managing this site. However, minimizing significant mortality to large overstory pine trees is only desired in that these dead trees will contribute to future smoke management issues. Fire-related damage to hardwoods in embedded wetlands should be avoided.

A minimum of 3 prescribed fires will be conducted in the first 8 years of acquiring the property. A 50% reduction in vertical shrub structure and a 30% decline in shrub abundance is desired following the first burn, e.g., average 5' stature to 2.5' stature. Likewise a 60% reduction in doghair reproduction of slash pine is desired after the first burn season.

Current Conditions:
The current condition of this area is an artifact of 1) clearcutting with little advance regeneration followed by 2) promiscuous burning that did not allow regeneration followed by 3) planting of high density slash pine followed by 4) fire exclusion followed by 5) a significant wildfire that killed most of the planted slash pine. Due to the heterogeneity of the last wildfire, current conditions (including fuel type and loading) vary with each burn unit.

Vegetation and Soils:
Most of the remnant pine on the site is slash pine, however, an occasional longleaf pine is found scattered throughout. Likewise the pine regeneration coming up is predominantly slash pine. The dominant native warm season grass is wiregrass whose presence implies that site has never been under agriculture. The site has a number of listed plant species including the white-topped pitcher plant. Midstory shrubs include black and red titi, gall berry, holly and yaupon.

Soils are mostly hydric and mesic comprised of Mulat, Garcon, Pactolus and Albany series. ORV activities have impacted the soil in places and will likely degrade fire movement in localized areas.

Desire Future Condition
The long term management goal is restore historic forest structure and function to this location. The historic "open pine woods" of this area likely had an overstory dominated with longleaf and slash pine that ranged anywhere from 5 ft2/ac to 150 ft2/ac. Overstory structure could have just as

easily been dispersed with aggregate islands of meadows or vice versa. Likewise, a diverse herbaceous community dominated by C_4 grasses and acidophilic plants (like pitcher plants) evolved on this pyrogenic landscape (**Figure 2**). Numerous embedded wetlands comprised of sweetbay, cypress, gum and pond pine where found across the landscape yet likely only burned under the driest of conditions. Burning alone may not achieve this desired structure and thus herbicides and/or mechanical shrub control will be used. Fuel loads will be reevaluated and burn plan amended as needed if herbicides and/or mechanical midstory control are used.

Burn Units:

Using existing road systems and fire breaks, the 748 acre fire management area will be broken into 15 burn units (or compartments). No burning is proposed in Units 1, 2 and 14. The decision to break into smaller units is considered to minimize both potential fire and smoke management issues (**Figure 3**). The approximate size of each unit is as follows:

Unit 3 = 53 acres	Unit 8 = 38 acres	Unit 13 = 60 acres
Unit 4 = 45 acres	Unit 9 = 17 acres	Unit 5 = 131 acres
Unit 10 = 44 acres	Unit 15 = 128 acres	
Unit 6 = 83 acres	Unit 11 = 85 acres	
Unit 7 = 5 acres	Unit 12 = 59 acres	

Figure 2 – structure Pine-Savanna

ATTACHMENT D

Credit Assessment - DEP UMAM Summary

(Part I & II's provided in file)

															CREDIT
#1 Bay/Titi north 300' mgmt	230.36	7.0	8.0	9.0	9.0	7.0	8.0	0.77	0.83	0.067	0.7	1.00	1.00	0.047	**10.75**
#2 Bay/Titi w/in 300' mgmt	71.90	7.0	9.0	9.0	9.0	7.0	9.0	0.77	0.90	0.133	0.8	1.00	1.00	0.107	**7.67**
#3 Bay/Titi - Planted	6.90	7.0	9.0	8.0	9.0	7.0	9.0	0.73	0.90	0.167		1.14	1.00	0.146	**1.01**
#4 Cypress/Gum in Fill Area	2.20	0.0	9.0	0.0	9.0	0.0	9.0	0.00	0.90	0.900		1.46	1.00	0.616	**1.36**
#5 Cypress/Gum -ORV area	7.40	5.0	9.0	2.0	9.0	0.0	9.0	0.23	0.90	0.667		1.46	1.00	0.457	**3.38**
#6 Cypress/Gum-Fire Supp'd	50.70	7.0	9.0	8.0	9.0	7.0	9.0	0.73	0.90	0.167		1.00	1.00	0.167	**8.45**
#7 Cypress/Gum-Wildfire	24.50	7.0	9.0	9.0	9.0	5.0	9.0	0.70	0.90	0.200		1.46	1.00	0.137	**3.36**
#8 Rutted Hydric Flatwoods	11.20	7.0	9.0	3.00	9.00	2.00	9.00	0.40	0.90	0.500		1.00	1.25	0.400	**4.48**
#9 Rutted Bay/Titi	3.80	5.0	9.0	2.0	9.0	0.0	9.0	0.23	0.90	0.667		1.46	1.00	0.457	**1.74**
#10 Flatwoods/Wet Prairie	647.30	6.0	9.0	7.0	9.0	6.0	10.0	0.63	0.93	0.300		1.00	1.25	0.240	**155.35**
#11 Previous Permit Area*	105.74	7.0	8.0	9.0	9.0	7.0	8.0	0.77	0.83	0.067	0.7	1.00	1.00	0.047	**0***
TOTALS**		**1162.0**													**197.54**

Forested Freshwater credits from Bay/Titi and Cypress/Gum = 37.7 Freshwater Flatwoods/Wet Prairie credits from flatwoods/wet prairie = 159.83

*Bay/Titi area previously preserved as mitigation for DEP' permit 274773-001, included in acreage of bank, but not for credit generation

** The site also contains about 26 acres of trails and firelines from which no credit is assessed.

Pensacola Bay Mitigation Bank Ledger
Permit No. 0284438-001
March 2009

ATTACHMENT E: LEDGER

Freshwater Wet Flatwoods/Wet Prairie Credits: Total Potential Credits = 159.83

Release Mod./ Impact Permit	Permit Date	Issuing Agency	Ledger Modification	Credits Added	Credits Used	Balance

Freshwater Forested Wetlands Credits: Total Potential Credits = 37.7

Release Mod./ Impact Permit	Permit Date	Issuing Agency	Ledger Modification	Credits Added	Credits Used	Balance

ATTACHMENT F – Monitoring Plan

The monitoring plan for the Bank shall include a combination of quantitative, qualitative monitoring and fixed point photography. Monitoring will be conducted annually during October (or generally at end of growing season). Additional monitoring may also be conducted in April-May to identify spring-flowering species. Monitoring will include:

1. Qualitative Random Pedestrian Transects
2. Quantitative Permanent Quadrats, with random sub-quadrats
3. Quantitative Permanent Transects
4. Fixed Point/Fixed Perspective Photographic Stations.

Qualitative Pedestrian Transect

The goal of the Qualitative Pedestrian Transect is to provide the maximum amount of qualitative or semi-quantitative information over the largest variable area to document the success of the restoration and management activities, conduct surveillance for problems, and determine whether the quantitative sampling is representative of the overall site. Ten (10) random GPS points will be chosen prior to sampling. Then, a few points may be moved such that at least one point will originate in each of these community types: bay-titi; hydric flatwoods/prairie; cypress-gum stringers; cypress-gum depressions. From these points, a ~ 1,000 linear foot transect will be walked in a random direction (but remaining within the bank), as represented in Figure M1, transects Nos. 1-10.

For each community type (as defined by the permit figures) encountered within a particular transect, the Qualitative Assessment will include:

1. Community type as is apparent in the field;
2. Comments on listed species, nuisance species, health and reproductive status of vegetation, cover estimates as described below, dominant species, recruitment of new species, hydrologic condition, fuel loads and general condition with respect to target community type.
3. GPS location of any observed exotic, nuisance species or listed species.
4. Estimates of burn coverage.

Three equidistant areas of approximately 2 square meters will be selected along each transect for herbaceous cover estimates using the cover classifications in the attached monitoring form. Shrub cover (woody material greater than 1' in height) will be estimated from three square meter area at the same points.

To provide a record of the qualitative observations, the following field sheet will be filled out for each transect. This information will provide a visual assessment over a prolonged period, and to identify potential problems and appropriate solutions.

Qualitative Monitoring Form

Management Unit:_____ Start point (GPS) and direction:_____

Date: _____ Inspector: _____

Community type(s) and proportion in transect:

General Condition of each community crossed by transect: (vegetation health, reproductive status, hydrologic condition, fuel loads, etc.)

Approximate Coverage of Most Recent Burn:
_____0-35% _____36-70% _____71-90% _____90%+

Observed Species in each community:

Dominant Species in each community:

Exotic or listed species present/location:

Herbaceous Ground Cover at 3 Points along Transect (note community):
Point 1
_____<1% ____1-10% _____11-30% _____31-49% _____50-69%_____70-90% >_____90%
Point 2
_____<1% ____1-10% _____11-30% _____31-49% _____50-69%_____70-90% >_____90%
Point 3
_____<1% ____1-10% _____11-30% _____31-49% _____50-69%_____70-90% >_____90%

Shrub Cover at 3Points along Transect (note community):
Point 1
_____<1% ____1-10% _____11-30% _____31-49% _____50-69%_____70-90% >_____90%
Point 2
_____<1% ____1-10% _____11-30% _____31-49% _____50-69%_____70-90% >_____90%
Point 3
_____<1% ____1-10% _____11-30% _____31-49% _____50-69%_____70-90% >_____90%

Evidence of Flowering By Helio-phytic Species: _____YES _____NO

Ecological Functions Being Maintained: _____YES_____NO

Comments:

Permanent Quantitative Quadrats

Eight (8) 200 x 100 foot Permanent Quantitative Quadrats (PQQ) will be GPS located as depicted in Figure M1 (Quadrats 11 -18). Quadrats will be located to be representative of the community and to avoid transitional zones between communities. Quadrats will be sampled in October (or generally at end of growing season). Data sampled will include:

1. Number of canopy pines, by species, with a d.b.h. greater than 4".
2. Number of subcanopy pines, by species, with a d.b.h. > 1" and <4".
3. Exotic, nuisance or listed species observed with % cover estimate.
4. Listing all species observed within overall quadrat,

Within each quadrat, ten (10) randomly selected 1 square meter sub-quadrats will be sampled to determine herbaceous and shrub cover. These sub-quadrats will be randomized for each sampling event. Percent cover will be determined for the following categories: Graminoid; Herbaceous; Woody/Shrub; Wiregrass; Individual Species of Interest. The interval ranges for cover shall be as follows:

Class	Range of Cover (%)	Mean
7	91-100	95.5
6	70-90	80.0
5	50-69	59.5
4	31-49	40.0
3	11-30	20.5
2	1-10	5.5
1	<1%	0.5

The boundary of each 200 X100 quadrat will also be used as a line-intercept transect. Intercept points will be at 1 meter at intervals. All species intercepting the point will be recorded to demonstrate density and to compare to cover estimates generated from individual sub-quadrats.

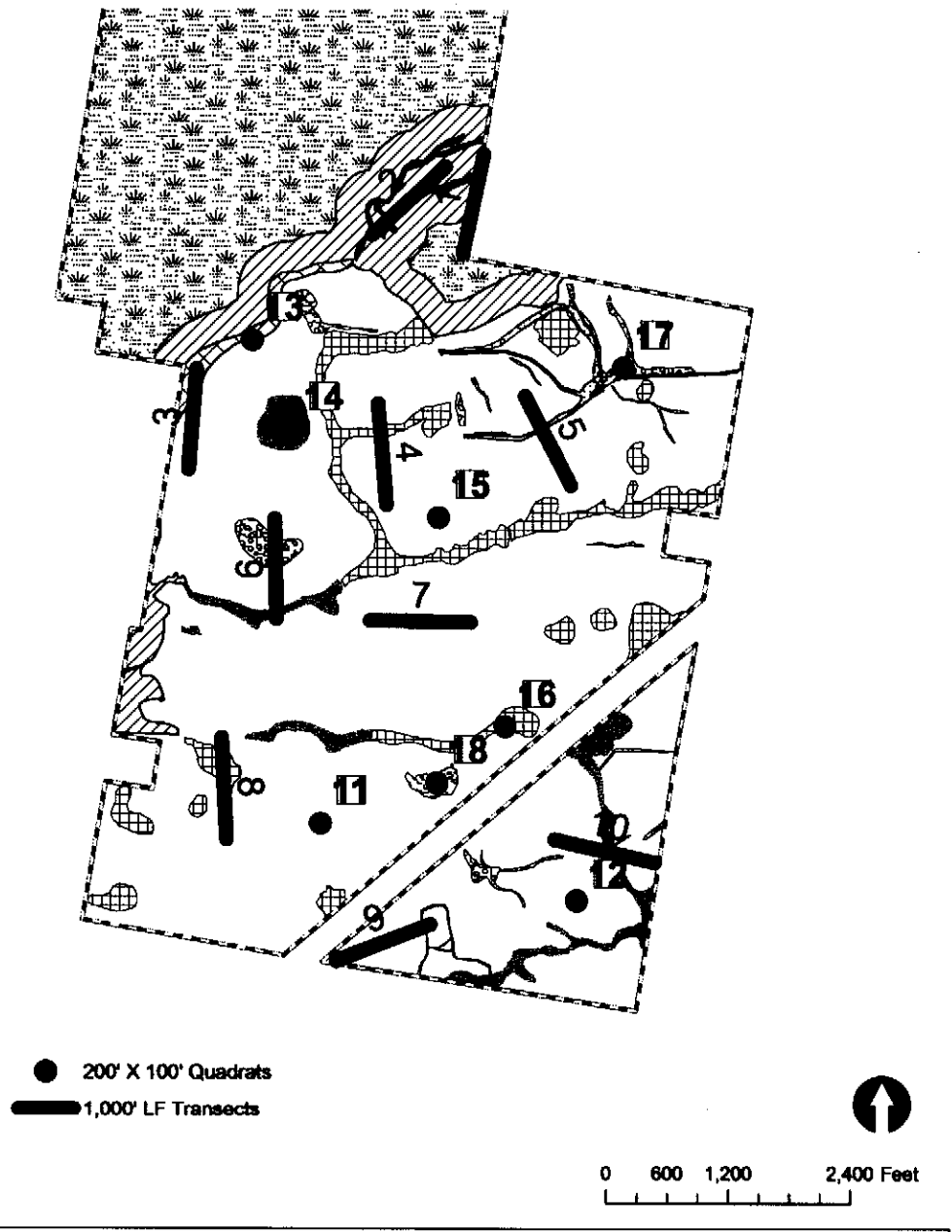
Permanent Photo Points

Permanent photographic points will be established as follows and taken annually:

1. The 4 corners of each permanent 200 x 100 foot quadrat, facing center.
2. The 4 corners of each permanent 200 x 100 foot quadrat, facing out.
3. Aerially (to the greatest degree possible) of each 10 m subquadrat.

Ten additional locations will be established to show landscape conditions using permanent orientation and perspective. These stations will be located along trails and access and will be sampled quarterly.

Additionally, the most recent aerial photo of the entire bank site will be provided annually.



(1000-foot transect locations are representative; locations will vary during each sampling event)

Florida Exotic Pest Plant Council's 2007 List of Invasive Plant Species

Purpose of the List: *To focus attention on —*

- the adverse effects exotic pest plants have on Florida's biodiversity and plant communities,
- the habitat losses from exotic pest plant infestations,
- the impacts on endangered species via habitat loss and alteration,
- the need to prevent habitat losses through pest-plant management,
- the socio-economic impacts of these plants (e.g., increased wildfires in certain areas),
- changes in the seriousness of different pest plants over time,
- the need to provide information that helps managers set priorities for control programs.

CATEGORY I

Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. *This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.*

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Abrus precatorius	rosary pea	I	N	C, S
Acacia auriculiformis	earleaf acacia	I		C, S
Albizia julibrissin	mimosa, silk tree	I		N, C
Albizia lebbeck	woman's tongue	I		C, S
Ardisia crenata (=*A. crenulata* misapplied)	coral ardisia	I		N, C, S
Ardisia elliptica (=*A. humilis* misapplied)	shoebutton ardisia	I	N	C, S
Asparagus aethiopicus (=*A. sprengeri; A. densiflorus* misapplied)	asparagus-fern	I		N, C, S
Bauhinia variegata	orchid tree	I		C, S
Bischofia javanica	bishopwood	I		C, S
Calophyllum antillanum (=*C. calaba* and *C. inophyllum* misapplied)	santa maria (names "mast wood," "Alexandrian laurel" used in cultivation)	I		S
Casuarina equisetifolia	Australian-pine, beach sheoak	I	P, N	N, C, S
Casuarina glauca	suckering Australian-pine, gray sheoak	I	P, N	C, S
Cinnamomum camphora	camphor tree	I		N, C, S
Colocasia esculenta	wild taro	I		N, C, S
Colubrina asiatica	lather leaf	I	N	S
Cupaniopsis anacardioides	carrotwood	I	N	C, S
Dioscorea alata	winged yam	I	N	N, C, S
Dioscorea bulbifera	air-potato	I	N	N, C, S
Eichhornia crassipes	water-hyacinth	I	P	N, C, S
Eugenia uniflora	Surinam cherry	I		C, S
Ficus microcarpa (*F. nitida* and *F. retusa* var. *nitida* misapplied)	laurel fig	I		C, S
Hydrilla verticillata	hydrilla	I	P, U	N, C, S
Hygrophila polysperma	green hygro	I	P, U	N, C, S
Hymenachne amplexicaulis	West Indian marsh grass	I		C, S
Imperata cylindrica (*I. brasiliensis* misapplied)	cogon grass	I	N, U	N, C, S
Ipomoea aquatica	waterspinach	I	P, U	C
Jasminum dichotomum	Gold Coast jasmine	I		C, S
Jasminum fluminense	Brazilian jasmine	I		C, S
Lantana camara	lantana, shrub verbena	I		N, C, S
Ligustrum lucidum	glossy privet	I		N, C
Ligustrum sinense	Chinese privet, hedge privet	I		N, C, S

FLEPPC List Definitions:

Exotic – a species introduced to Florida, purposefully or accidentally, from a natural range outside of Florida.

Native – a species whose natural range included Florida at the time of European contact (1500 AD).

Naturalized exotic – an exotic that sustains itself outside cultivation (it is still exotic; it has not "become" native).

Invasive exotic – an exotic that not only has naturalized, but is expanding on its own in Florida native plant communities.

Abbreviations:

Government List (Gov. List):

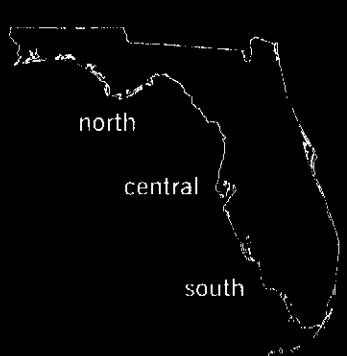
P = Prohibited by Florida Department of Environmental Protection;

N = Noxious weed listed by Florida Department of Agriculture & Consumer Services;

U = Noxious weed listed by U.S. Department of Agriculture.

Regional Distribution (Reg. Dist.):

N = north, C = central, S = south, referring to each species' current distribution in general regions of Florida (not its potential range in the state). Please refer to the map below.



Changes to the 2007 List:

Ludwigia peruviana added to list as Category I

Peruvian primrose willow (*Ludwigia peruviana*) is a shrub known from at least 48 Florida counties, from the Panhandle to the Keys. It is also known in the United States from North Carolina, Georgia, Alabama, Mississippi, and Texas. While always known as an aggressive weed in wetlands in Florida, there has been debate about its nativity. After an evaluation of available data, the Committee now agrees that this species was introduced into Florida, probably from South America, by the late 1800s, and has subsequently spread throughout the state and to other states. It can form monospecific stands in both disturbed and undisturbed wetlands, especially river and lake edges, and dramatically change ecosystem structure.

Tradescantia spathacea moved from Category I to Category II

Oyster plant (*Tradescantia spathacea*) is an herb known from at least 12 counties in southern Florida, although many populations have not been documented. A native of tropical America, this species was a very common ornamental plant decades ago, and is still grown occasionally for its green and purple foliage. The species spreads readily, both by vegetation offshoots and by seed. In urban areas, plants often appear on rooftops or on rock walls. It does spread into natural areas, but Committee members are unaware of sites where it has invaded natural areas and displaced native species to the extent of other Category I species. It has been moved to Category II.

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Lonicera japonica	Japanese honeysuckle	I		N, C, S
Ludwigia peruviana	Peruvian primrosewillow	I		N, C, S
Lygodium japonicum	Japanese climbing fern	I	N	N, C, S
Lygodium microphyllum	Old World climbing fern	I	N	C, S
Macfadyena unguis-cati	cat's claw vine	I		N, C, S
Manilkara zapota	sapodilla	I		S
Melaleuca quinquenervia	melaleuca, paper bark	I	P, N, U	C, S
Mimosa pigra	catclaw mimosa	I	P, N, U	C, S
Nandina domestica	nandina, heavenly bamboo	I		N, C
Nephrolepis cordifolia	sword fern	I		N, C, S
Nephrolepis multiflora	Asian sword fern	I		C, S
Neyraudia reynaudiana	Burma reed, cane grass	I	N	S
Paederia cruddasiana	sewer vine, onion vine	I	N	S
Paederia foetida	skunk vine	I	N	N, C, S
Panicum repens	torpedo grass	I		N, C, S
Pennisetum purpureum	Napier grass	I		N, C, S
Pistia stratiotes	waterlettuce	I	P	N, C, S
Psidium cattleianum (=*P. littorale*)	strawberry guava	I		C, S
Psidium guajava	guava	I		C, S
Pueraria montana var. *lobata* (=*P. lobata*)	kudzu	I	N	N, C, S
Rhodomyrtus tomentosa	downy rose-myrtle	I	N	C, S
Rhynchelytrum repens (=*Melinis repens*)	Natal grass	I		N, C, S
Ruellia tweediana (= *R. brittoniana* , *R. coerulea*)	Mexican petunia	I		N, C, S
Sapium sebiferum (=*Triadica sebifera*)	popcorn tree, Chinese tallow tree	I	N	N, C, S
Scaevola taccada (=*Scaevola sericea, S. frutescens*)	scaevola, half-flower, beach naupaka	I	N	C, S
Schefflera actinophylla (=*Brassaia actinophylla*)	schefflera, Queensland umbrella tree	I		C, S
Schinus terebinthifolius	Brazilian pepper	I	P, N	N, C, S
Senna pendula var. *glabrata* (=*Cassia coluteoides*)	climbing cassia, Christmas cassia, Christmas senna	I		C, S
Solanum tampicense (=*S. houstonii*)	wetland nightshade, aquatic soda apple	I	N, U	C, S
Solanum viarum	tropical soda apple	I	N, U	N, C, S
Syngonium podophyllum	arrowhead vine	I		N, C, S
Syzygium cumini	jambolan plum, Java plum	I		C, S
Tectaria incisa	incised halberd fern	I		S
Thespesia populnea	seaside mahoe	I		C, S
Tradescantia fluminensis	white-flowered wandering jew	I		N, C
Urochloa mutica (= *Brachiaria mutica*)	Para grass	I		C, S

CATEGORY II

Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. ***These species may become ranked Category I, if ecological damage is demonstrated.***

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist
Adenanthera pavonina	red sandalwood	II		S
Agave sisalana	sisal hemp	II		C, S
Aleurites fordii (=*Vernicia fordii*)	tung oil tree	II		N, C
Alstonia macrophylla	devil tree	II		S
Alternanthera philoxeroides	alligator weed	II	P	N, C, S
Antigonon leptopus	coral vine	II		N, C, S
Aristolochia littoralis	calico flower	II		N, C, S

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Asystasia gangetica	Ganges primrose	II		C, S
Begonia cucullata	wax begonia	II		N, C, S
Blechum pyramidatum	green shrimp plant, Browne's blechum	II		N, C, S
Broussonetia papyrifera	paper mulberry	II		N, C, S
Callisia fragrans	inch plant, spironema	II		C, S
Casuarina cunninghamiana	river sheoak, Australian-pine	II	P	C, S
Cecropia palmata	trumpet tree	II		S
Cestrum diurnum	day jessamine	II		C, S
Chamaedorea seifrizii	bamboo palm	II		S
Clematis terniflora	Japanese clematis	II		N, C
Cryptostegia madagascariensis	rubber vine	II		C, S
Cyperus involucratus (*C. alternifolius* misapplied)	umbrella plant	II		C, S
Cyperus prolifer	dwarf papyrus	II		C, S
Dalbergia sissoo	Indian rosewood, sissoo	II		C, S
Elaeagnus pungens	silverthorn, thorny olive	II		N, C
Epipremnum pinnatum cv. Aureum	pothos	II		C, S
Ficus altissima	false banyan, council tree	II		S
Flacourtia indica	governor's plum	II		S
Hemarthria altissima	limpo grass	II		C, S
Hibiscus tiliaceus (=*Taliparíti tiliaceum*)	mahoe, sea hibiscus	II		C, S
Ipomoea fistulosa (=*I. carnea* ssp. *fistulosa*)	shrub morning-glory	II	P	C, S
Jasminum sambac	Arabian jasmine	II		S
Kalanchoe pinnata	life plant	II		C, S
Koelreuteria elegans ssp. *formosana* (=*K. formosana; K. paniculata* misapplied)	flamegold tree	II		C, S
Leucaena leucocephala	lead tree	II	N	N, C, S
Limnophila sessiliflora	Asian marshweed	II	P, U	N, C, S
Livistona chinensis	Chinese fan palm	II		C, S
Melia azedarach	Chinaberry	II		N, C, S
Melinis minutiflora	Molassesgrass	II		C,S
Merremia tuberosa	wood-rose	II		S
Murraya paniculata	orange-jessamine	II		S
Myriophyllum spicatum	Eurasian water-milfoil	II	P	N, C, S
Nymphoides cristata	snowflake	II		C, S
Panicum maximum	Guinea grass	II		N, C, S
Passiflora biflora	two-flowered passion vine	II		S
Pennisetum setaceum	green fountain grass	II		S
Phoenix reclinata	Senegal date palm	II		C, S
Phyllostachys aurea	golden bamboo	II		N, C
Pittosporum pentandrum	Philippine pittosporum, Taiwanese cheesewood	II		S
Pteris vittata	Chinese brake fern	II		N, C, S
Ptychosperma elegans	solitaire palm	II		S
Rhoeo spathacea (see *Tradescantia spathacea*)				
Ricinus communis	castor bean	II		N, C, S
Rotala rotundifolia	roundleaf toothcup, dwarf Rotala,	II		S
Sansevieria hyacinthoides	bowstring hemp	II		C, S
Scleria lacustris	Wright's nutrush	II		C, S
Sesbania punicea	purple sesban, rattlebox	II		N, C, S
Solanum diphyllum	two-leaf nightshade	II		N, C, S
Solanum jamaicense	Jamaica nightshade	II		C
Solanum torvum	susumber, turkey berry	II	N, U	N, C, S

Changes to the 2007 List:

Melinis minutiflora
added to list as Category II

Molasses grass (*Melinis minutiflora*) is a grass known from at least 6 Florida counties, mostly along the lower eastern coast. It is native to Africa and western Asia and was originally introduced as a forage grass in southern Florida. While it has been known to be established for some time, its populations have been expanding recently into undisturbed natural areas, especially pine rocklands in Miami-Dade County. Once established, it forms locally dense stands and excludes other herbs and graminoids. The strong molasses smell given off by the plants makes it especially easy to identify, particularly when it is stepped on.

Rotala rotundifolia
added to list as Category II

Roundleaf toothcup (*Rotala rotundifolia*) is an aquatic herb known from at least three Florida counties in southern Florida (Broward, Lee, and Palm Beach). It is also introduced in Alabama. It is native to India and Southeast Asia. The species is commonly grown as an aquarium plant and has been introduced after aquarium grown plants were discarded into Florida wetlands. It has become established in canals and along rivers. It reproduces readily through sexual and asexual means and is expected to spread within the state. It is also known as dwarf rotala.

Use of the FLEPPC List

FLEPPC encourages use of the Invasive Species List for prioritizing and implementing management efforts in natural areas, for educating lay audiences about environmental issues, and for supporting voluntary invasive plant removal programs. When a non-native plant species is to be restricted in some way by law, FLEPPC encourages use of the List as a first step in identifying species worth considering for particular types of restriction. For more information on using the FLEPPC List of Invasive Plant Species, see *Wildland Weeds* Summer 2002 issue (Vol. 5, No. 3), pp. 16-17.

NOTE: Not all exotic plants brought into Florida become pest plants in natural areas. The FLEPPC List of Invasive Plant Species represents only about 10% of the 1,300+ exotic species that have been introduced into Florida and subsequently established outside of cultivation. Most escaped exotics usually present only minor problems in highly disturbed areas (such as roadsides). And there are other exotics cultivated in Florida that are "well-behaved" — that is, they don't escape cultivation at all.

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Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Sphagneticola trilobata (=*Wedelia trilobata*)	wedelia	II		N, C, S
Stachytarpheta cayennensis (=*S. urticifolia*)	nettle-leaf porterweed	II		S
Syagrus romanzoffiana (=*Arecastrum romanzoffianum*)	queen palm	II		C, S
Syzygium jambos	rose-apple	II		C, S
Terminalia catappa	tropical-almond	II		C, S
Terminalia muelleri	Australian-almond	II		C, S
Tradescantia spathacea (=*Rhoeo spathacea, Rhoeo discolor*)	oyster plant	II		S
Tribulus cistoides	puncture vine, burr-nut	II		N, C, S
Urena lobata	Caesar's weed	II		N, C, S
Vitex trifolia	simple-leaf chaste tree	II		C, S
Washingtonia robusta	Washington fan palm	II		C, S
Wedelia (see *Sphagneticola* above)				
Wisteria sinensis	Chinese wisteria	II		N, C
Xanthosoma sagittifolium	malanga, elephant ear	II		N, C, S

Citation example:
FLEPPC. 2007. List of Florida's Invasive Plant Species. Florida Exotic Pest Plant Council. Internet: http://www.fleppc.org/07list.htm or *Wildland Weeds* Vol. 10(4), Fall 2007.

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FLEPPC Database – The Florida Exotic Pest Plant Database contains over 6,000 sight records of infestations of FLEPPC Category I and Category II species in Florida public lands and waters. 360 species are recorded. Nearly all of the records are from local, state, and federal parks and preserves; a few records document infestations in regularly disturbed public lands such as highway or utility rights-of-way. Natural area managers and other veteran observers of Florida's natural landscapes submit these records, with many supported further by voucher specimens housed in local or regional herbaria for future reference and verification. New and updated observations can be submitted online at www.fleppc.org/EDDMapS/ This database, along with other plant-data resources such as the University of South Florida Atlas of Florida Vascular Plants at www.plantatlas.usf.edu, the Florida Natural Areas Inventory database at www.fnai.org, and The Institute for Regional Conservation Floristic Inventory of South Florida database at www.regionalconservation.org, provides important basic supporting information for the FLEPPC List of Invasive Plant Species.

Images of FLEPPC-listed species may be found at one or more of the following websites: University of South Florida Atlas of Florida Vascular Plants, www.plantatlas.usf.edu; the "Introduced Species" page on the University of Florida Herbarium website, www.flmnh.ufl.edu/herbarium/cat/digitalimagingprojects.htm; at Fairchild Tropical Garden's Virtual Herbarium, www.virtualherbarium.org/vhportal.html, The Robert K. Godfrey Herbarium at FSU, http://herbarium.bio.fsu.edu/index.php; and at the University of Florida's Center for Aquatic and Invasive Plants, http://plants.ifas.ufl.edu. Please note that greater success and accuracy in searching for plant images is likely if you search by scientific name rather than a common name. Common names often vary in cultivation and across regions. For additional information on plants included in this list, see related links and pages at www.fleppc.org.