



Florida Department of Environmental Protection

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Tallahassee, Florida 32399-2400

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Secretary

ENVIRONMENTAL RESOURCE/MITIGATION BANK PERMIT

PERMITTEE:

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

PROJECT:

St. Marks Mitigation Bank
Permit Number: 0295847-001
Issued: August 5, 2011
Expiration Date: perpetual
County: Wakulla and Jefferson

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:

The project is to establish the St. Marks Mitigation Bank (SMMB) on a site in the Gulf Coast Flatwoods ecoregion of the southern coastal plain. The mitigation bank project includes the preservation of the site (approximately 1,450 acres) and the restoration or enhancement of a mosaic of habitats described in the permit as mesic flatwoods, wet prairie/wet flatwoods, cypress-mixed hardwood swamp and slough swamp communities. Credits generated may be used as mitigation for future unavoidable wetlands impacts to these natural or disturbed communities within the service area. Enhancement will be accomplished by thinning and removal of plantation slash pine, reducing woody shrub density, decreasing bedding impacts, installing ditch blocks, culverts and low water crossings, restoring fill roads and disturbed areas to native communities, planting longleaf pine, cypress and wetland hardwoods, and wiregrass in appropriate areas, and implementing a management program including frequent prescribed burns. The mitigation was assessed using the Uniform Mitigation Assessment Method (UMAM) (Chapter 62-345, F.A.C.) as having a potential total of 314.57 credits (165.36 Wet Prairie/Flatwoods Credits and 149.21 Cypress/Mixed Hardwoods Credits).

PROJECT LOCATION:

The bank site is on the Wakulla- Jefferson county line, south of Tallahassee and just north of Highway 98, more specifically in Sections 13, 24 and 25, Township 3 South, Range 2 East, Wakulla County and Sections 19 and 30, Township 3 South, Range 3 East, Jefferson County (Figures 1 and 2), Class III waters. The SMMB is bordered by timber lands, low density residential, and conservation lands (Figure 4). SMMB has a service area that includes portions of Jefferson, Leon and Wakulla Counties (Figure 3). The service area includes appropriate communities within the St. Marks River drainage basin (Basin 17) defined in Rule 62-346, F.A.C., which is congruous with the USGS map of the St. Marks River HUC #03120001, excluding estuarine habitats.

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, are 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.

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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 and georeferenced point 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 the General Conditions are part of the reasonable assurance required for the issuance of this permit; however, some specific conditions may further define some of the requirements of the general conditions.

Agency Provisions

1. This permit authorizes and obligates the permittee to timely and completely implement all of the conditions in this permit. This mitigation bank permit shall automatically expire five years from the date of issuance if the permittee has not conveyed a conservation easement to the Department in accordance with the permit and Rule 62-342.650, F.A.C. Except as provided above, this mitigation bank permit shall be perpetual unless revoked. Any deviation from permit conditions must be authorized by the Department through a permit modification. The permit may be modified or transferred in accordance with Rules 62-343 and 62-342.800, F.A.C.
2. Unless otherwise specified, all reports, notices 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. Currently, the permittee is Westervelt Ecological Services, LLC, represented by its Southeast Regional Manager, John Wigginton, and the authorized agent is BDI, Inc., represented by Mike Dentzau. Consistent with General Condition 11, in the event that there is any transfer of property, the permittee shall notify the Department of the change. Notification shall be in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of this permit or the real property on which the permitted mitigation bank is located. All transfers of ownership or transfers of a permit are subject to the requirements of section 62-343.130, F.A.C. The Permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to any such sale, conveyance, or other transfer. Additionally, in the event that there is a change in the authorized individuals representing the permittee, the permittee shall notify the Department, identifying the new permittee representative or agent and contact information, and provide documentation that the new designee is appropriately authorized. Failure to provide notification is a violation of the permit, subject to revocation of any agency actions or ledger modifications issued under the signature of an unauthorized designee.
3. The permittee is hereby advised that pursuant to Rule 18-14, F.A.C., no 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, may be conducted without received the required lease, license, easement, or other form of consent authorizing the proposed use, and the Board of Trustees may levy administrative fines of up to \$10,000 per offense.

4. At least 48 hours prior to commencement of each of the work activities authorized in Specific Conditions 11-14 of this permit, the permittee shall notify the Department in writing of this commencement.

5. 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.

6. Project Oversight. Prior to commencement of mitigation activities authorized in Specific Conditions 10-14 of this permit, the permittee shall retain a qualified mitigation supervisor (QMS) or QMS team 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. Although the permittee shall have ultimate responsibility to ensure that the mitigation bank requirements are conducted in accordance with the permit, the QMS shall have the contractual obligation and authority to implement permit conditions and serve as the principle contact and manager regarding mitigation activities, including monitoring and reporting.
- b. Within 30 days of issuance of this permit, the permittee shall submit the name of the QMS (or team) 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 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. The QMS may make minor adaptive changes to the construction locations (field locating), monitoring, management and planting plans to adjust for on-site conditions without a formal permit modification, provided the Department is given prior or concurrent (within a week) written notification (email is acceptable) describing the alteration. The Department may either concur with the change, or determine that a formal permit modification is necessary or that corrective actions are required.

7. Protection and Preservation. Prior to release of credits, the SMMB property shall be preserved and protected in accordance with an approved conservation easement granted to the Department of Environmental Protection. A copy of the draft conservation easement language and title commitment is contained in the permit application file, but shall be updated and approved by the Department immediately prior to recordation.

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 such lien does not adversely affect the ecological viability of the Bank (Rue 62-342.650 F.A.C.).
- c. Legal descriptions and sketches of the conservation easement certified by a Florida registered land surveyor.
- d. A clerk-of-the-court certified copy of the conservation easement.

8. Security, Hunting, and Recreation. Within 30 days after permit issuance and prior to credit release, the site shall be secured at all entrances with locked gates and boundary signs (every 1000 ft.) that display "St. Marks Mitigation Bank; Conservation Area; No Trespassing" and provide the name or contact of the permittee. Existing hunting leases may be honored through spring turkey season, 2012, at the risk of the permittee to restore any ecological damage. Thereafter, limited hunting may be authorized by the permittee under a Department-approved annual hunting lease agreement that is consistent with all FWCC regulations and the restoration goals of the mitigation bank. The lease shall only allow hunting of deer, turkey and feral hog (no limit), and shall prohibit ATVs and any off road vehicle use, food plots or other soil disturbance, permanent structures, blinds or stands. Existing stands, trailers, feeders, structures, and trash shall be removed within 1 year after permit issuance. Besides the authorized hunting, no other commercial use or public access is allowed without notification and approval of the Department to ensure that it is not contrary to the goals and purpose of the mitigation bank and conservation easement.

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. 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 in the form of a Department-approved standby trust secured with a letter of credit for \$1,049,730. The permittee may request a partial reduction or release of the letter of credit after the successful completion of significant mitigation activities, or attainment of final success, and based upon a revised cost estimate.
- b. The permittee shall establish the financial assurance for perpetual management in the form of a Department-approved standby trust secured with a letter of credit for \$617,000. 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 made, 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 5 shows the existing community types and configuration. The mitigation activities, schematically represented in Figure 6 and defined in Specific Conditions 10-16 and 27 are intended to establish a mosaic of native mesic and wetland habitats 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 7 using the existing road network, which will also be maintained as fire breaks. Mitigation activities include substantial slash pine thinning, perpetual prescribed fire, installation of additional culverts, low water crossings, and ditch plugs, removal of fill logging roads, planting of cypress, longleaf pine and wiregrass, and exotic treatment as necessary, and summarized in the following table.

10. Community Targets. The permittee shall manage the site in accordance with the activities, goals and acreage in the table and descriptions below, the management areas shown in Figure 7, and detailed Specific Conditions.

AA #	EXISTING CONDITION	AREA (acres)	PRINCIPLE ACTIVITIES	PROPOSED CONDITION
1	Timbered Slough Swamp	188.00	cypress planting, management	Slough Swamp (~363 ac.)
2	Intact Slough Swamp	175.00	management	
3	Timbered Cypress/ Mixed Hardwoods	371.40	tree planting, shrub reduction, fire management	Cypress/Mixed Hardwoods
4	Wetland Pine Plantation	569.40	pine and shrub reduction, longleaf and wiregrass planting, fire	Wet Prairie/ Wet Flatwoods
5	Mesic Pine Plantation	129.60	pine and shrub reduction, longleaf and wiregrass planting, fire	Mesic Flatwoods
6	Freshwater Marsh	3.60	fire management at periphery	Freshwater Marsh
	Disturbed Areas, within the areas above	(total ~17)	some dirt roads, food plots, skidder trails to be restored	Included in the above communities
	Forestry Roads and Ditches	11.65	construct hydrology enhancements	Management roads and fire breaks

The assessment areas form the basis of many of the mitigation activities, as well as credit evaluation, and are summarized below, with details provided in the following Specific Conditions.

- a) Assessment Area 1 - Timbered Slough Swamp. Historically part of a cypress-dominated forested slough, with a long hydroperiod, that has been logged for cypress, most recently in the mid-1990's. Although the area is recovering and will be preserved from future impacts, supplemental cypress will be planted.
- b) Assessment Area 2 - Intact Slough Swamp. Internal or protected areas within the central cypress-dominated forested slough, with a long hydroperiod. Area will be preserved from future impact from adjacent logging activities.
- c) Assessment Area 3 - Timbered Cypress/Mixed Hardwoods. Historically a mixed system with a shorter hydroperiod than the slough, and depressions dominated by cypress, that have been logged for cypress, and will be planted with a mixture of pond cypress, sweetbay, blackgum, red bay, dahoon holly, and myrtle-leaved holly. Depressions and ecotone area within and bordering the wet prairie/wet flatwoods will be managed with fire to reduce shrubs and enhanced groundcover.
- d) Assessment Area 4 - Wet Pine Plantation will be converted to Wet Prairie/Wet Flatwoods by thinning of plantation pine, bedding reduction, prescribed fire, and seeding or planting longleaf pine and wiregrass.
- e) Assessment Area 5 - Mesic Pine Plantation will be converted to Mesic Flatwoods by thinning of plantation pine, prescribed fire, and seeding or planting longleaf pine and wiregrass.
- f) Assessment Area 6 - Freshwater Marsh has been established in an old borrow area and resembles a natural marsh, which will be maintained by prescribed fire.

In addition to these primary assessment areas, construction of additional culverts, low water crossings, and ditch plugs in the existing network of roads and ditches is designed to mimic historic drainage patterns and enhance hydrology. Furthermore, disturbed areas (food plots and skidder trails) will receive restoration targeted to the adjacent community type, principally by ground preparation and planting.

11. Vegetation Control and Removal:

- a. Pine Harvesting/Thinning and Bedding Removal. Planted slash or loblolly pine within the wetland and mesic pine plantation will be thinned to an average of 75 trees per acre using silviculture harvest best management practice (BMP), in addition to the following specifics. Tree counts will be estimated in the field by the QMS and include trees with a dbh ≥ 1 ". The initial thinning target is intended to allow adequate tree density for needle-cast fuel. Ultimate target density (see Specific Condition 17) may require additional thinning using fire, hand-felling, and/or girdling techniques rather than a separate mechanical harvest. Harvest operations will be instructed and directed by the QMS to avoid and minimize impact to native wetland trees, and to avoid areas where there is significant cypress sapling or wiregrass cover.

Because of the high water table, the opportunity for mechanical harvest across the site may take as many as 3 years, and therefore is divided into 3 stages based on management areas (Figure 7), with an anticipated sequence of harvesting Units 2 & 3 first, followed by Unit 1, and finally Unit 4. If conditions for harvesting allow, this timetable will be expedited as possible. The QMS shall submit a summary harvest report with ground and/or aerial pictures with the next status report and with the credit release request. Harvested pines will be removed from the bank boundaries; however, some logging slash/debris may remain to be consumed by fire. The QMS may direct additional debris removal to facilitate future planting and/or management.

- b. Woody Shrub and Vine Reduction. During and after harvest activities, cover by woody shrubs, vines and remaining slash pine will be reduced within areas of the wetland and mesic plantation area and some of the previously harvested slough or cypress/ mixed hardwood areas where they are likely to impede progress toward success criteria. For the purposes of this permit, "woody shrubs" for shrub reduction includes species, such as titi (*Cyrilla racemifolia*, *Cliftonia monophylla*), gallberry (*Ilex glabra*), fetterbush (*Leucothoe racemosa*, *Lyonia* spp.), yaupon (*Ilex vomitoria*) and wax myrtle (*Myrica cerifera*) and vines (principally blackberry - *Rubus* spp., and grape vine - *Vitis* spp.) that tend to become dominant and reduce the diversity of herbaceous species and desirable trees. Mechanical treatments with low ground-pressure equipment, such as

roller chop or disk harrow may be used in areas where wiregrass, sawgrass or other vulnerable groundcover is absent or minimal. Hand felling, and/or hand-application of foliar or stump herbicide (targeting broad-leaf or vine vegetation) may be used in conjunction with prescribed burning, as directed by the QMS, to promote increased dominance by herbaceous groundcover (or, in the forested systems, by target wetland trees and saplings).

Additional routine treatments of nuisance shrubs and vines by herbicide or hand felling may be necessary to attain interim and final success criteria, but any additional mechanical treatment shall require a permit modification.

- c. Exotic vegetation control. Within 1 year after harvesting activities in any management area, invasive exotic vegetation listed as Category I or II by the Florida Exotic Pest Plant Council (FLEPPC) (<http://www.fleppc.org>) (Attachment D), including but not limited to Chinese tallow, cogon grass and Japanese climbing fern shall be treated by appropriate herbicide application and/or physical removal under the direction of the QMS.

- d. Reporting and Performance

These vegetation treatments will be described and mapped, as they occur, in the semi-annual status reports (Specific Condition 28), and summarized, with documentation (photos, maps, dates, etc.), in the modification requests for credit release (Specific Condition 21) associated with this activity. For credit release requests associated with each stage of harvest and nuisance and exotic vegetation reduction, plantation pines shall average no more than 75 trees/acre, all exotic vegetation has been treated, and QMS-directed treatment of shrub thickets has been completed.

12. Fire Management Plan. Following the completion of plantation pine thinning described in Specific Condition 11 above, prescribed fire shall be implemented in accordance with this condition and the Fire Management Plan, provided as Attachment C, to attain the proposed enhancement, and as a long-term management tool to sustain the communities and function. The site has been divided into four Management/Burn Units using existing roads as fire breaks (Figure 7) that will likely be burned using aerial ignition for better coverage. Interior firebreaks will not be installed, except in an emergency to prevent damage to forested areas. An initial fuel-reduction prescribed burn shall be conducted within 1 year following harvest in any management unit. Subsequent burns are scheduled on a target of a 3 year rotation or as frequently as fuel and weather conditions would result in a complete restoration burn. The Department must be contacted if a burn is not initiated within 3 years of the previous burn in the management unit to discuss the reasons, alternatives or need for permit modifications. Each burn event will be developed and supervised by a certified burn manager.

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 aerial and/or ground photography. For the purposes of this permit, a successful burn shall mean the fire carries over a minimum of 70% of the mesic flatwoods and wet prairie/wet flatwoods, extending into the ecotone of slough or cypress/mixed hardwood areas boundary, and the herbaceous ground cover is regenerating ("greening up") across the entire site (or, for initial credit release, across the appropriate management units). Credit releases dependant on completion of successful burns shall document the location and dates of individual burns.

13. Planting. Supplemental seeding and planting shall be implemented in accordance with this condition and Attachment E. Initial planting and supplemental seeding will occur in stages as the targeted site is prepared by harvest and burning in each management unit. The permittee shall document all planting and seeding in the semi-annual status reports, providing maps of planting areas, planting dates, and species and numbers planted. In addition, the planting documentation will be summarized in the credit release request associated with this activity. All supplemental plantings will be installed by hand at a time to promote maximum survival. Areas of significant die-off identified during inspections or monitoring shall be replanted to ensure the attainment of success and as a condition of future credit releases.

Following the completion of the first successful burn in any management unit, the timbered slough and cypress/mixed hardwood areas shall be planted as follows:

- **Timbered Slough:** At least 37,600 bare root pond cypress seedlings (~200 trees/acre) shall be planted, under the direction of the QMS, to be concentrated on hummocks or other areas to promote survivorship.
- **Cypress/Mixed Wetland Hardwoods:** At least 74,780 wetland hardwoods (~200 trees/acre) shall be planted, under the direction of the QMS, to be concentrated on hummocks or other areas to promote survivorship. Planted trees include pond cypress, sweetbay, blackgum, red bay, dahoon holly, and myrtle-leaved holly, in a mix consistent with Attachment E.

Following harvest and the completion of the first successful prescribed burn in any management unit, the wet prairie/wet flatwoods and the mesic flatwoods shall be evaluated and planted as follows:

- The QMS shall identify areas where herbaceous fuels are absent or woody stems dominate the groundcover and submit a planting and seeding plan consistent with Attachment E, to be implemented upon Department approval. In the fall following the second successful burn, containerized longleaf seedlings shall be planted by hand in the Mesic Flatwoods and Wet Prairie/Wet Flatwoods communities in accordance with Attachment E and under the direction of the QMS.

The disturbed lands shown on Figure 7 shall be restored to surrounding community type. On these disturbed sites, restoration will include site preparation, as necessary, by herbicide application to forage, nuisance or exotic vegetation and/or mechanical treatment (grading, disking) to ensure natural ground elevation and either bare soils or native groundcover. Supplemental vegetation shall be installed as follows:

- Cypress/Mixed Hardwood areas shall be planted with ~400 with pond cypress trees/ac.;
- Wet Prairie/Wet Flatwoods and Mesic Flatwoods shall be planted with +2500 wiregrass plugs/ac. and +150 longleaf pine/ac.

14. Hydrologic Enhancement. Within 3 years of permit issuance or after the timber reduction has been completed, whichever occurs first, the following construction activities shall be implemented in accordance with Figures 9-16. Prior to construction, the permittee shall provide (with the construction notice in Specific Condition 4), updated use agreements with adjacent landowners allowing for culvert installation, maintenance and water flow in perimeter roads and adjacent property.

- a. Three low water crossings will be established in the existing northern boundary road (see Figure 9). The fill road area shall be excavated to a depth of ~6-12" below the adjacent natural elevations, lined with geotextile fabric, and covered with crushed rock to align with adjacent wetland elevations. For each low-water crossing, the QMS shall identify natural grade and other site-specific details for construction.
- b. Forty 30' ditch blocks shall be installed in the roadside borrow ditches to match adjacent natural grade to curtail channeling of water offsite and to divert low to interior wetlands. In areas where there is a ditch on both sides of the road, both ditches will be filled, unless the ditch is outside of the bank's boundary.
- c. Ten 18" culverts and one 36" culverts will be installed to enhance natural connections and flow patterns, and two 30" culverts are proposed to be removed and replaced.
- d. Disturbed areas or old fill roads will be graded to natural ground elevation (and native soils if visible) at the direction of the QMS, by pushing fill into adjacent ditches or removing for ditch plugs, and planted in accordance with Specific Condition 13.
- e. The permittee shall submit a detailed report of the above construction within 60 days of completion of 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.

15. Turbidity Controls. Earthwork will be implemented when there is no standing water (except within ditches) and no flowing water, to the greatest extent possible. 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 and at any other time necessary to prevent erosion, siltation and turbid discharges. Turbidity monitoring shall be conducted daily using a portable turbidimeter whenever there is discharge to surface waters during construction activities. The background monitoring site shall be placed upstream of the influence of the discharge. Compliance monitoring sites shall be within 10 feet of the discharge or turbidity curtain, and within any visible plume. If measurements exceed 29 NTUs above background, work shall be discontinued until turbidity levels are corrected, and the Department shall be notified within 24 hours.

16. Work schedule. Bank activities are expected to be completed 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 by the Department.

Activity	Estimated Completion Date From Date of Authorization
Execution of Conservation Easement, fencing & security (SC #7 & 8)	1-3 mo.
Selection/approval of QMS (SC #6)	1-3 mo.
Demonstration of Financial Assurances (SC #9)	1-3 mo.
Inspection & Status Reports (SC #27 & 28)	Jan. & July annually
Timber Thinning/First Prescribed Fire/Exotic and Nuisance Vegetation Control (SC# 10, 11, 14 & 15)	Units 2 & 3 -1 year
	Unit 1 - 2 year
	Unit 4 - 3 year
Monitoring and Annual Report Preparation (SC #29 & 30)	Each year till success
Planting trees in each management unit except for longleaf pine (SC #12)	1 year after burn
Exotic and Nuisance Species Treatment Follow-up (SC #11)	ongoing
Construction activities and restoration of disturbed areas (SC #13 & 14)	3 year
Cash Funding of Perpetual Management Trust	5 year
Plant longleaf and wiregrass and/or Seed for Herbaceous Cover (SC # 10)	After 2 nd burn
Prescribed Fire - All Management Units (SC # 12)	3 yr return after initial
At least 3 Prescribed Fires in each Management Unit (SC #12)	10 year
Monitoring and Annual Report Preparation for Final Success (SC #29-30)	~10 year
Update management plan, ID long term manager, adjust trust fund	~10 year
Perpetual Management (SC #27-28)	Ongoing

Success Criteria

17. Final Success. The overall goal of the St. Marks Mitigation Bank is to manage and enhance the communities and hydrology on the site to function as closely as possible to their native, historic condition. The principle goal of the wetland forested communities is the increase in canopy cover with appropriate wetland trees and a reduction of vines

and shrubs. The main target for the Mesic Flatwoods and Wet Prairie/Wet Flatwoods communities is to significantly increase fire fuel grasses and herbaceous vegetation density and diversity and to significantly reduce slash pine trees and other woody shrubs. All communities are expected to attain or approach the descriptions in Attachment B.

The bank shall be deemed successful when quantitative, qualitative and photographic monitoring (see Attachment I-Monitoring Plan) that is representative of the site or assessment area, indicate that all of the following criteria, in addition to the stated goals and community descriptions in Attachment B, 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 planting. Alternative criteria may be proposed after several monitoring events if actual onsite data indicate that such criteria provide a better assessment of the ecological goals and outcomes upon which credit was assessed. The Department may determine an area to be successful regardless of whether all criteria are met, provided the broad ecological goals are attained, and there is creditable scientific research or evidence provided to support the determination.

For the purposes of success determination, "woody shrubs" includes species that are typically reduced to coppice by fire, such as titi (*Cyrilla racemiflora* and *Cliftonia monophylla*), gallberry (*Ilex glabra*), fetterbush (*Leucothoe racemosa*, *Lyonia* spp.), yaupon (*Ilex vomitoria*), and wax myrtle (*Myrica cerifera*), and that tend to become dominant (weedy) and reduce the diversity of herbaceous species and desirable trees and shrubs in a fire suppressed system. Nuisance vines include blackberry (*Rubus* spp.), grape vine (*Vitis* spp.) and greenbrier (*Smilax* spp.). Slash pine is *Pinus elliottii*, loblolly pine is *Pinus taeda*, and longleaf pine is *Pinus palustris*. Wiregrass is *Aristida stricta beyrichiana*. Sawgrass is *Cladium jamaicense*. Desirable species for specific assessment areas are listed in the descriptions in Attachments B and H and can also be found in pertinent scientific literature.

a. Entire Site (all Assessment Areas):

1. Appropriate plants are reproducing naturally, either by normal, healthy vegetative spread (in ways that will be normal for each species) or through seedling establishment, growth, and survival;
2. All wetland target communities shall meet wetland delineation criteria as defined by 62-340, F.A.C.;
3. Coverage by category I and II invasive exotic plant species (pursuant to the most current list established by the Florida Exotic Pest Plant Council at www.fleppc.org) shall not exceed 1% total coverage per acre;
4. Nuisance species including, but not limited to *Typha*, dog fennel and nuisance vines species such as *Rubus*, *Vitis* and *Smilax*, are controlled to a level that does not inhibit the goals of increased appropriate canopy or groundcover.

5. Vegetation species and structure in each target community is consistent with description in Attachment B. In areas where trees are planted, appropriate immature canopy is considered acceptable structure.
6. The site is appropriately fenced, posted, and secured as against unauthorized entry or activity.

b. Overall Hydrology.

1. All hydrology construction areas have been completed to the satisfaction of the Department, are stabilized and showing no signs of erosion, and have operated as designed without repair for a period of two years;
2. There is no evidence of wash outs, erosion, or other indications of unnatural channelized water flow throughout the site;
3. Random soil samples from wetland assessment areas demonstrate hydric soils.

c. Mesic Flatwoods (Assessment Area 5; ~130 ac.): Representative quantitative and qualitative data shall indicate:

1. There is at least 70% total cover in groundcover stratum by appropriate species (including saw palmetto-*Serenoa*), and herbaceous species $\geq 30\%$ relative cover.
2. Each quantitative sampling transect shall contain at least 25 native, non-nuisance species appropriate* to mesic flatwoods, wiregrass and other fine fuel grasses are among the dominant species, and the cumulative total of appropriate species from qualitative and quantitative transects is >40 .

*Determination of appropriateness of species to a community will be based on pertinent scientific literature and Attachment H.

3. Woody shrubs (excluding saw palmetto-*Serenoa*) are reduced to coppice, typically $<1.5\text{m}$ high and with a total aerial cover in all strata averaging $<30\%$.
4. Total pine saplings and trees are <150 trees per acre, with at least 50 longleaf pine trees per acre taller than grass stage and increasing in height.
5. At least 3 successful prescribed fires have been conducted in this community.

d. Wet Prairie/Wet Flatwoods (Assessment Area 4; ~570 ac.): Representative quantitative and qualitative data shall indicate:

1. There is at least 80% total cover in groundcover stratum by appropriate species, with a relative cover of herbaceous species $\geq 70\%$.
2. Each quantitative sampling transect shall contain at least 40* native, non-nuisance species appropriate to wet prairie/ wet flatwoods, wiregrass and other fine fuel grasses are among the dominant species, and the cumulative total of appropriate species from qualitative and quantitative transects is >60 .

*Areas where sawgrass is a dominant component may lower species richness expectations proportional to sawgrass dominance.

3. Woody shrubs are reduced to coppice, typically <1.5 m high and with a total aerial cover of all strata averaging <30%. Areas where woody shrubs exceed 1.5 meters in height and have a collective canopy coverage of over 50% shall be limited to random spots of <1 ac. and shall represent an insignificant feature in this community type.
 4. Total slash pine saplings and trees are <75 trees per acre, with an average of 50 longleaf pine/ ac. taller than grass stage and increasing in height.
 5. At least 3 successful prescribed fires have been conducted in this community.
- e. Cypress/Mixed Hardwoods (Assessment Area 3; ~372 ac.) and Slough Swamp (Assessment Areas 1&2; ~363 ac.):
1. Native FAC, FACW or OBL tree species canopy cover is $\geq 70\%$ and qualitative assessment indicates FAC species are less than 30% of the relative canopy cover. In areas where trees were planted, the canopy tree species cover demonstrates an annual increase with a minimum of 30% canopy cover. Canopy cover to be estimated from observations in qualitative transects, and supported by extrapolation of quantitative plot data.
 2. Planted trees appear healthy, and have attained an average of 8-10 feet.
 3. Combined ground, shrub and tree cover is $\geq 80\%$ total cover, and FACW and OBL species are $\geq 80\%$ relative cover (i.e., FAC and UP species including blackberry, redroot, dog fennel or other indicators of disturbance are $\leq 20\%$ relative cover).
 4. Woody shrub cover (excluding sapling canopy species) shall be <30% total cover or demonstrate an annual decreasing trend, either by fire in the ecotone or shading from canopy tree cover, and titi is <30% relative cover. Cover to be estimated from observations in qualitative transects, and supported by extrapolation of quantitative plot data.
 5. There is at least 10% relative cover (combined) of the following wetland wildlife mast producing species to ensure a diversity of food sources: *Ilex cassine*, *I. amelanchier*, *I. coriacea*, *I. myrica*, *Vaccinium corymbosum*, *Cephalanthus occidentalis*, *Nyssa* spp. *Persea* spp. and *Magnolia virginiana*.
 6. Slash or loblolly pine that is less than 1 ft. dbh is reduced to <20 stems per acre. Mature, established pine trees greater than 1ft. dbh should not be removed unless the Department directs further reduction of pine density at the time of success determination.
 7. For those areas adjacent to Mesic Flatwoods or Wet Prairie/Wet Flatwoods, prescribed fire is effective in shaping a transitional zone with a herbaceous outer ring progressing interior to the forested system. For Cypress/Mixed Hardwoods, fire may maintain a significant portion of this community as a transitional ecotone with reduced canopy and increased groundcover.

f. Freshwater Marsh (Assessment Area-8 - approximately 3 acres):

1. Appropriate composition and cover of groundcover and shrub species.
2. The marsh shall demonstrate appropriate zone or rings of progressively more hydrophytic plants from the boundary to the center,
3. Hardwood and shrub species are $\leq 10\%$ areal coverage.

g. Disturbed Areas: All areas restored from roads, skidder trails, ditches or food plots shall be at natural grade elevation, exhibit at least a 50% cover by native vegetation with reproduction appropriate for the species, and shall exhibit a trend toward its target community type structure and decrease in ruderal species cover.

h. Compliance

1. The permittee, or QMS, has conducted inspections, monitoring and management, including the appropriate schedule of prescribed burns and has submitted all required reports to the satisfaction of the Department;
2. All security measures are established and are in working order;
3. At least three successful prescribed burns have been completed in accordance with Specific Condition 12;
4. An updated, detailed long-term management plan and a long term management entity has been submitted and approved by the Department. The long term management trust fund has been fully funded.

i. UMAM Assessment. Using monitoring data and reports, and in conjunction with the permittee and available members of the Interagency Review Team, the Department shall inspect the site and conduct a UMAM analysis to ensure that all communities have reached, or are reasonably expected to reach, the "with mitigation" scores in Attachment F and community descriptions in Attachment B under the permitted management requirements.

18. Interim release criteria. Approximately 40% of the potential credits are scheduled for interim releases as shown in Specific Condition 21. Prior to achieving the final success criteria described in Specific Condition 17, and in order to qualify for the interim credit releases, the standards that must be attained are as follows. Credits will be released only after at least one year has passed since the previous interim success criteria release and whenever inspection and representative monitoring data provided in Annual Reports indicate that the following interim success criteria are met:

- a. For the first interim success criteria release, at least one year has passed since the successful (credits released) completion of initial vegetation treatment (Specific Condition 11) and initial fire (Specific Condition 12) in all management units, construction activities (Specific Condition 14), and initial planting (Specific Condition 13 - except for longleaf pine);

- b. Prescribed fire is being conducted in accordance with permit conditions;
- c. Exotic species are <3% cover and decreasing or have achieved final criteria;
- d. Vine cover is not inhibiting growth and cover of appropriate structure;
- e. Areas of woody shrubs are decreasing and being maintained in coppice or are approaching final criteria;
- f. For Mesic Flatwoods and Wet Prairie/Wet Flatwoods: When compared to the monitoring following the initial harvest and prescribed burn or the monitoring from the previous interim release, there is a measurable (at least 10%) decrease in bare ground/leaf litter, increase in relative cover of herbaceous species, and increase in species richness, or these variables are approaching final success;
- g. For Cypress/Mixed Hardwood and Slough Swamp: Tree canopy is increasing annually (or has achieved >70%) with appropriate tree species consistent with the community descriptions in Attachment B and planted trees demonstrate establishment and growth.

19. Interim Evaluation. Prior to the modification request for the third interim credit release, the permittee shall meet with the Department to re-evaluate permit figures (community configurations) and criteria to determine whether current site conditions accurately reflect permit conditions and are expected to attain success criteria by January 2022. If not, and based upon the reassessment discussions, the permittee shall submit a modification request to the Department for any requisite figure, criteria, credit assessment or release schedule before the Department releases additional credits.

Banking Operations

20. Assessment of Credits: As a result of mitigation activities, the SMMB Mitigation Bank has the potential to provide for a total of 165.36 Wet Prairie/Wet Flatwoods Credits and 149.21 Mixed Hardwood Credits following final bank-wide success. Credits were assessed using the Uniform Mitigation Assessment Method (UMAM), Chapter 62-345, F.A.C., and a summary is included in Attachment F. These credits will be released incrementally, as detailed in Specific Condition 21.

21. Credit Release Schedule. Mitigation credits will be released for use according to the following Credit Release Schedule table and the modification procedure in this condition. The actual release will be determined by when the specified activity is satisfactorily completed or achieved which may be before or after the estimated timeframe in the work schedule in Specific Condition 16.

St. Marks Mitigation Bank Permit
File# 0295847, Wakulla and Jefferson Counties
Page 21 of 25

Task	Specific Conditions	% Credit Release	Wet Prairie/ Flatwoods	Cypress/ Mixed Forest	Total Credits
Conservation Easement; Financial Assurances; Security; QMS.	7-9	15.0	24.8	22.4	47.2
Vegetation Control/ Prescribed Fire; Units 2 and 3	11, 12	7.0	11.6	10.4	22.0
Vegetation Control/ Prescribed Fire; Units 1	11, 12	7.0	11.6	10.4	22.0
Vegetation Control/ Prescribed Fire; Units 4	11, 12	6.0	9.9	9.0	18.9
Hydrologic Enhancements, Road removal; Planting	13-15	10	16.5	14.9	31.4
1 st interim success criteria	18	10	16.5	14.9	31.4
2 nd interim success criteria	18	15	24.8	22.4	47.2
Re-assess (Specific Condition 19)					
3 rd interim success criteria	18	15	24.8	22.4	47.2
Final Success	17	15	24.86	22.41	47.27
TOTALS		100	165.36	149.21	314.57

The permittee shall submit a minor modification request (with fee), along with supporting documentation, for the release of credits upon the completion of tasks in the above table. The Department shall review the release modification request in accordance to Chapter 120, F.S. to identify any additional information necessary for the evaluation. The Department shall evaluate the 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.

22. Implementation End-Date. A material part of the reasonable assurances the Department is relying upon in issuing this permit is that the permittee will timely and completely implement all of the conditions in this permit. Failure to timely and completely comply with all of the conditions of this permit may result in a revocation or suspension of the permit, and release and withdrawal of mitigation credits may be suspended. If the project has not attained final success criteria and received the final credit release modification by March 2022, or has not otherwise obtained a permit modification to adjust for revised expectations and timeframes, in accordance with the interim evaluation in Specific Condition 19, any potential credits that have not been released shall be forfeited, and annual monitoring/reporting (Specific Conditions 29 & 31) may be discontinued. However, long-term management, inspections and status reporting requirements (Specific Conditions 28 & 30) remain in effect.

23. Mitigation Credit Withdrawal: Withdrawal of the mitigation bank credits as mitigation for wetland impacts shall be accomplished through 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, an authorized representative or designated agent. 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 SMMB,
- b. the permit number, issue date and environmental permit processor/reviewer,
- c. 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.

24. Ledger: In order to track credit releases and withdrawals, the permittee and Department shall keep and update a ledger indicating all potential, released, withdrawn and available credits. The format for the ledger, indicating potential credits, is Attachment G. Updated ledgers shall be attached to any credit release or withdrawal modification request.

25. 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.

26. Mitigation Service Area: The mitigation service area (MSA) is shown in Figure 3 and includes lands within Jefferson, Leon and Wakulla Counties. The service area includes appropriate communities within the St. Marks River drainage basin (Basin 17) defined in Rule 62-346, F.A.C., which is congruous with the USGS map of the St. Marks River HUC #03120001, excluding estuarine habitats. Regardless of whether a project lies within the MSA, determination of the appropriateness of SMMB to offset the impact, 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.

Inspections, Monitoring, and Maintenance

27. Inspection, Adaptive Management, and Maintenance. The QMS shall oversee and inspect all mitigation activities and conduct quarterly inspections of the property until success is attained, and semiannual inspections thereafter, in perpetuity, for the purpose of assessing and correcting the following management or maintenance needs. Inspections shall include boundary access gates or blocks, low water crossings, ditch blocks, management roads, and several transects across the different community types. Monitoring and inspection data, observation, DEP or IRT recommendations, and the QMS's professional judgment will dictate the type and frequency of management activities. The following management activities shall be required to achieve success and in the long term to ensure that success criteria are maintained, and shall be documented in the status reports required by Specific Condition 28:

- a. 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;
- b. Reporting and timely maintenance, restoration, stabilization or repair of any damaged ditch blocks, low-water crossings, structures, gates, fencing, equipment, roads or erosion areas identified in the quarterly/semiannual inspection;
- c. Replanting as necessary to achieve and maintain final success criteria;
- d. Conducting prescribed burns in accordance with Specific Condition 12 and Attachment C at a frequency and season optimal to promote desirable vegetation and wildlife, with a minimum of one burn per management unit every 3 years;
- e. 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;
- f. Removing of nuisance animals, such as feral hogs, that threaten the mitigation activities or success; and
- g. Other management activities deemed necessary by the QMS for success.

28. Status Reports. Beginning in January, 2012, and every July and January thereafter, including after success, the permittee shall submit status reports containing the following information regarding the project:

- a. The name, authorized representative, signature, and current contact information for the permittee, any agent of the permittee, and QMS individual(s);
- b. A compliance review of all permit conditions, indicating QMS oversight and submittals since the last status report, and those anticipated in the next 6 months;

- c. Site inspections, construction, and management activities undertaken since the previous status report, including type of construction or management, dates of the inspections and management activities undertaken, and maps indicating areas where construction or management activities have been completed;
- d. A description of the activities (including specific reporting requirements), problems encountered, and solutions undertaken; and
- e. A brief description of the work and/or site management the permittee anticipates commencing, continuing, or completing in the next six months.

29. Monitoring. Qualitative and quantitative monitoring of the vegetation and community structure shall be required until the bank is determined to have achieved final success criteria in Specific Condition 17 or has otherwise been transferred to long-term management. The proposed monitoring plan (Attachment I) 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, after completing the initial monitoring and reporting, the permittee shall submit an updated monitoring and reporting plan that incorporates practical changes recommended by the QMS or Department to better evaluate the site. The revised plan shall be submitted to the Department for review and approval prior to conducting the next annual monitoring. The plan shall include, at a minimum, the following attributes:

- a. A figure showing all sampling and photo 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 sheet, data tables and data analyses and graphs;
- e. Proposed report format, analytical assessments and discussion contents showing what measures will be used for each success criterion; and
- f. An assessment of success criteria progress or attainment.

30. Annual Reports. The Annual Report (or monitoring 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 29. This report is due by January 30 and shall be submitted annually until the Bank site has been determined to be successful, or is otherwise transferred to long-term management. The Annual Report that requests a determination of final success in accordance with Specific Condition 17 shall also include the following information:

- a. a summary of all previous Annual Reports, including, as appropriate, timeline graphics;
- b. a list of success criteria and documentation of how and when 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 associated with the final success determination shall be submitted to both the Department and the proposed long-term manager.

List of Figures:

1. Location Map
2. Section Map
3. Service Area Map
4. Adjacent Lands Map
5. Existing Communities Map
6. Mitigation Plan Map
7. Management Unit Map
8. Proposed Communities Map
- 9 -16. Hydrology and Construction

List of Attachments:

- A. Cost Estimates
- B. Community Descriptions
- C. Fire Management Plan
- D. FLEPPC list
- E. Planting Plan
- F. UMAM Scoring Table
- G. Ledger
- H. Species List
- I. Monitoring Plan & Figures

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION



John A. Coates, P.E.
Deputy Director
Division of Water Resource Management

CERTIFICATE OF SERVICE, FILING AND ACKNOWLEDGMENT

The undersigned duly designated deputy clerk hereby certifies this PERMIT was mailed before the close, and FILED, on this date, pursuant to 120.52(7) F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.



Clerk

8/5/11
Date

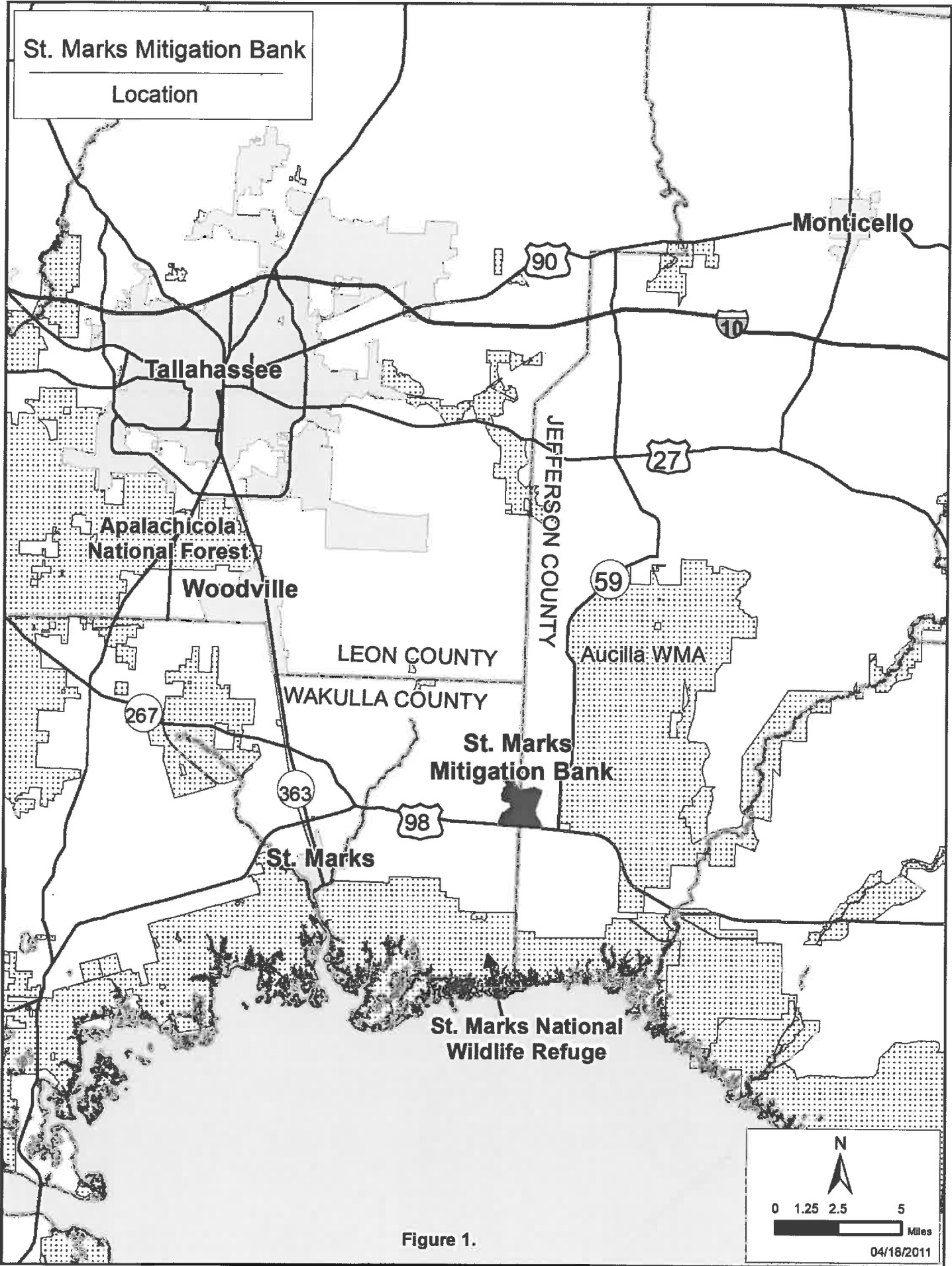
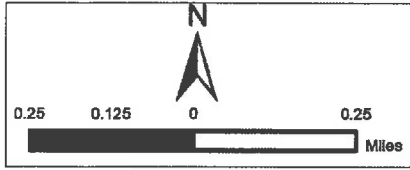


Figure 1.

St. Marks Mitigation Bank

Township, Range and Section



Wakulla County

Jefferson County

Forest Roads

Forest Roads

03S03E18

03S02E13

03S02E24

03S03E19

03S02E25

03S03E30



03S02E36

03S03E31

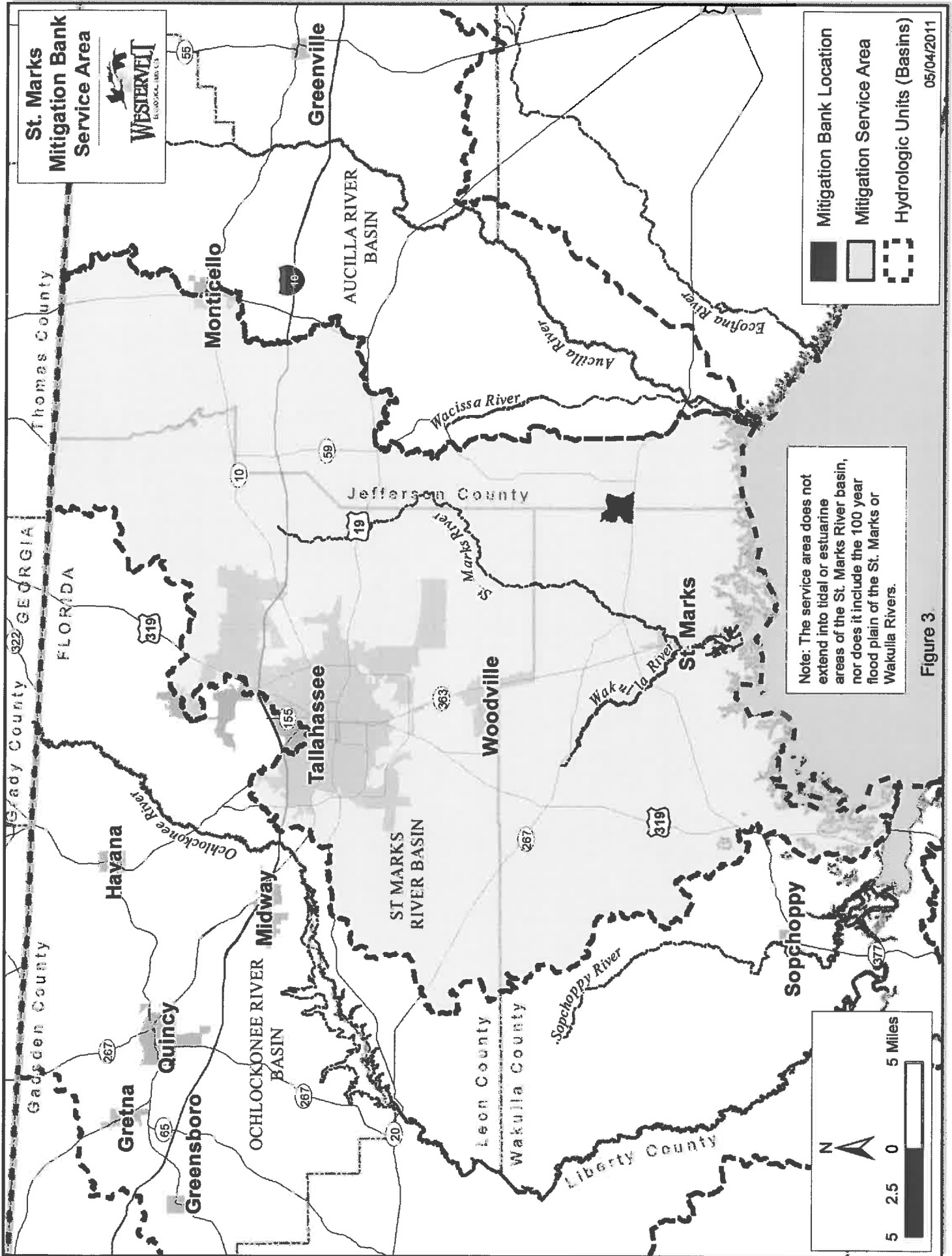


Figure 3

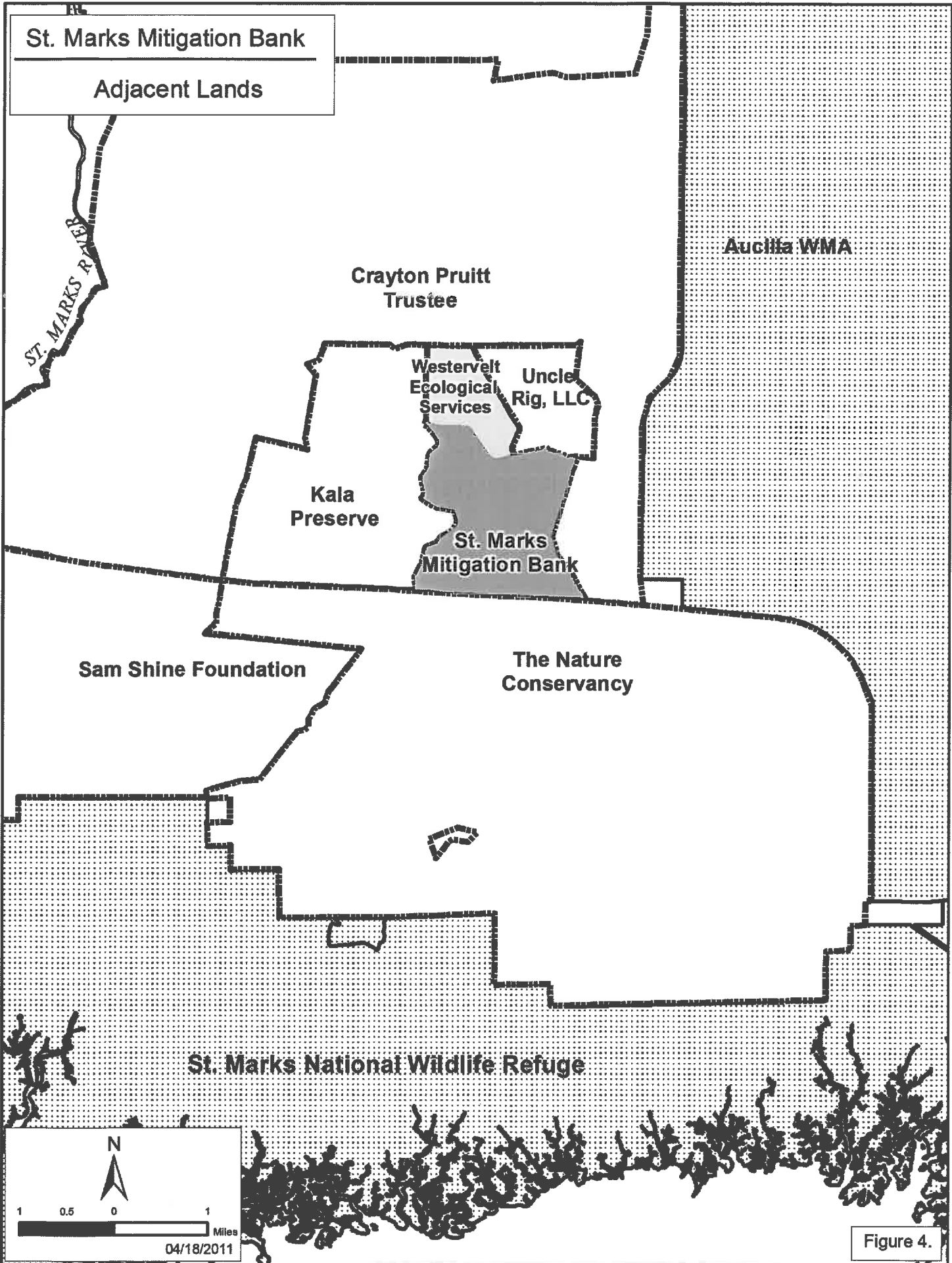









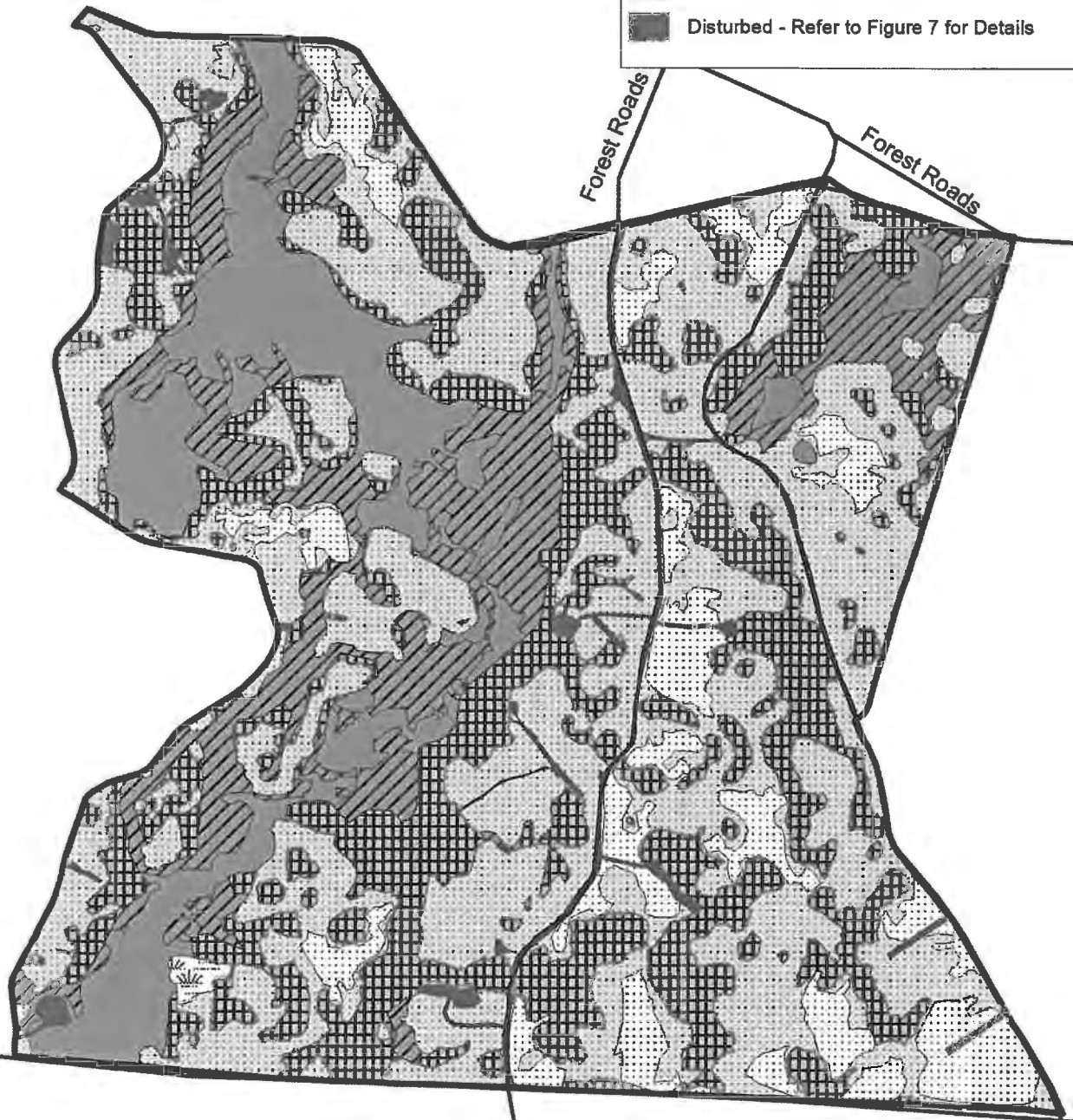
Figure 4.

St. Marks Mitigation Bank

Existing Communities and Assessment Areas (AA)

Wetland Bank Existing Community Types

-  Timbered Slough Swamp - AA 1 (188.0 Acres)
-  Intact Slough Swamp - AA 2 (175.0 Acres)
-  Timbered Cypress/Mixed Hardwoods - AA 3 (371.4 Acres)
-  Wet Pine Plantation - AA 4 (569.4 Acres)
-  Mesic Pine Plantation - AA 5 (129.6 Acres)
-  Freshwater Marsh - AA 6 (3.6 Acres)
-  Disturbed - Refer to Figure 7 for Details



05/31/2011





1,500 750 0 1,500
Feet




Figure 5.

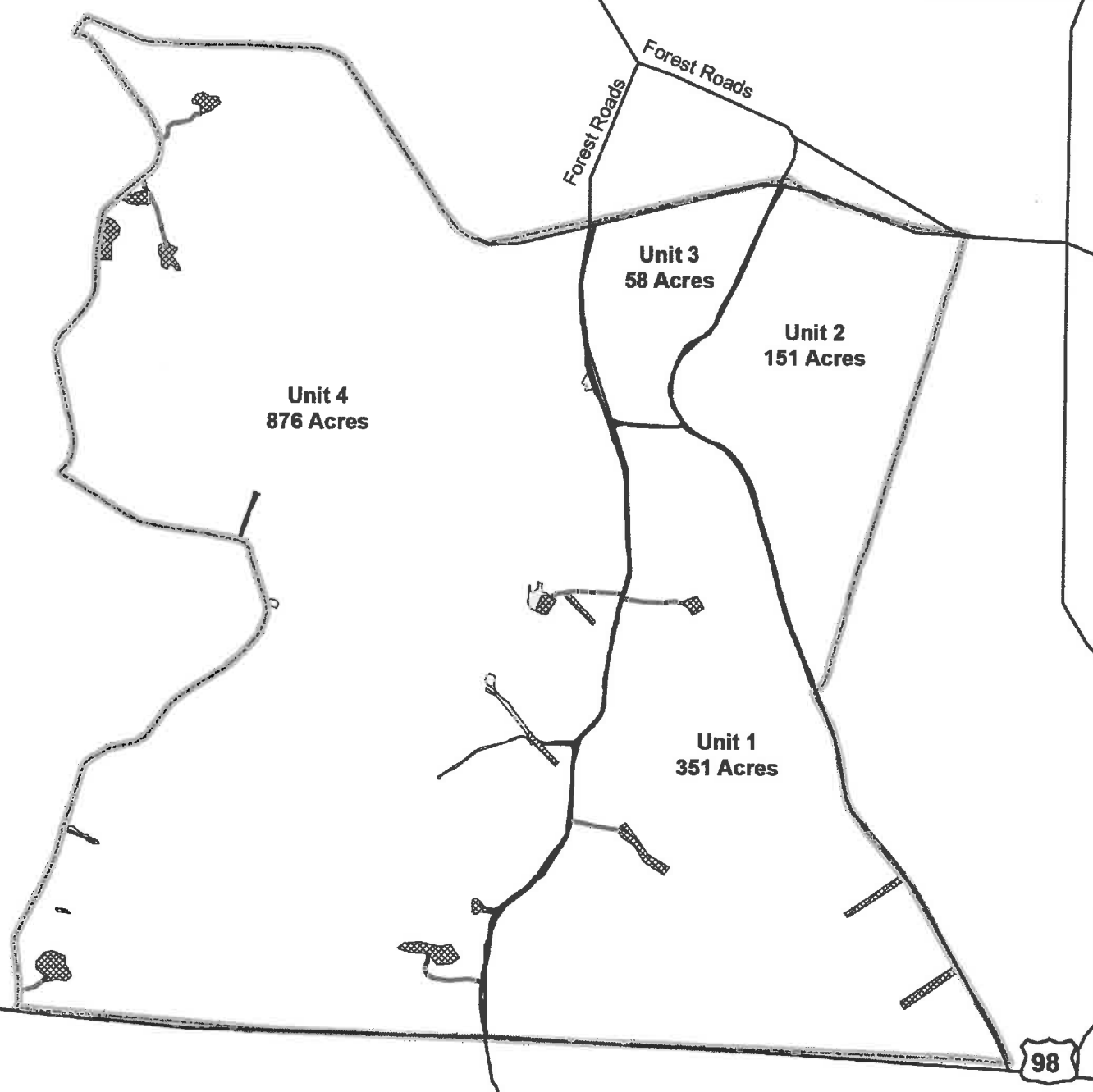
St. Marks Mitigation Bank

Disturbed Communities - Detail and Management Units

 Wetland Bank  Roads to Remain


Restoration Activities

-  Disturbed Lands Restored to Mixed Wetland Swamp.
-  Disturbed Lands to Wet Flatwoods.
-  Disturbed Lands to Mesic Flatwoods.




05/31/2011

N



1,500 750 0 1,500



Feet

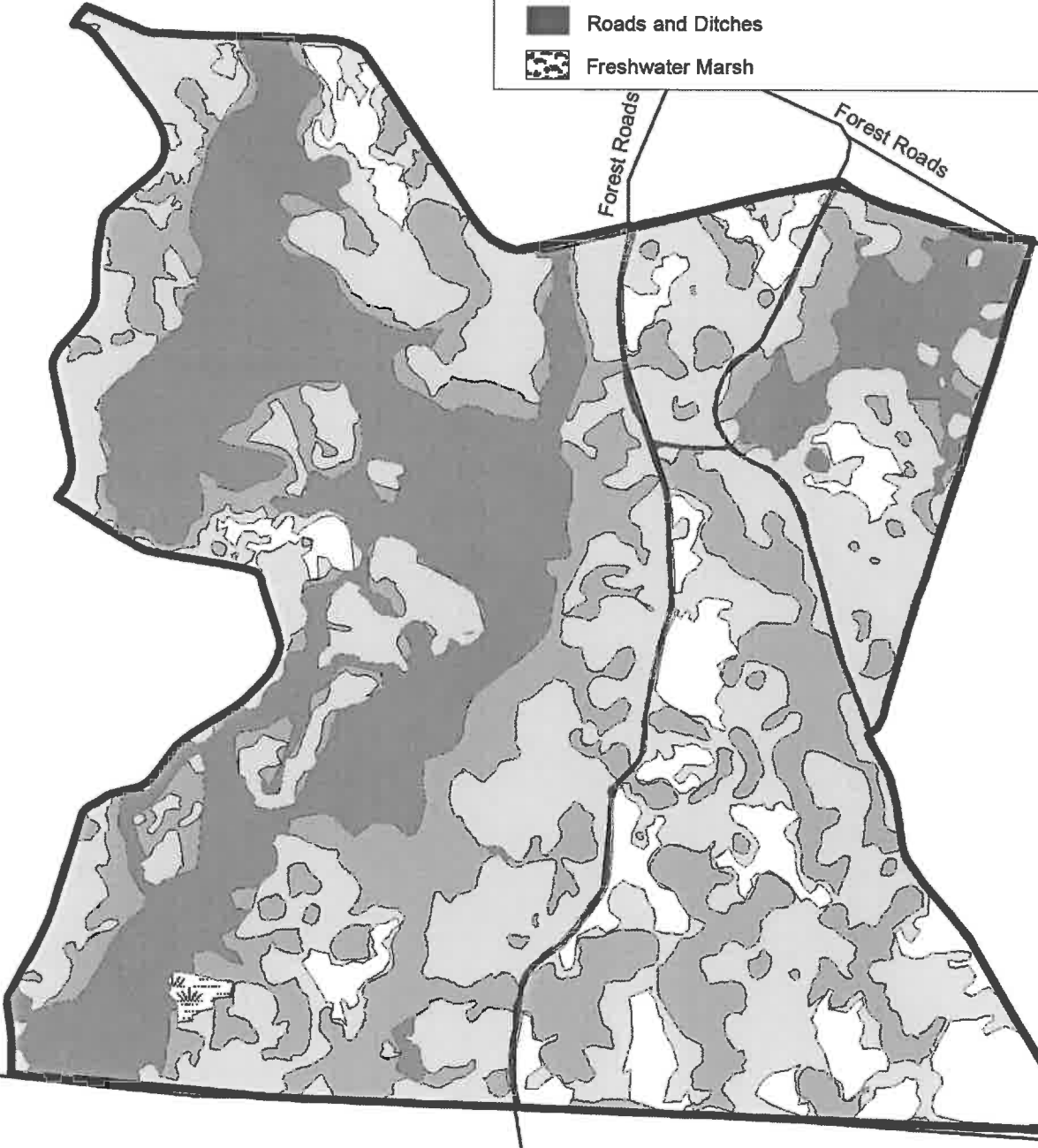
Figure 7.

St. Marks Mitigation Bank

Proposed Communities

Restored Community Types

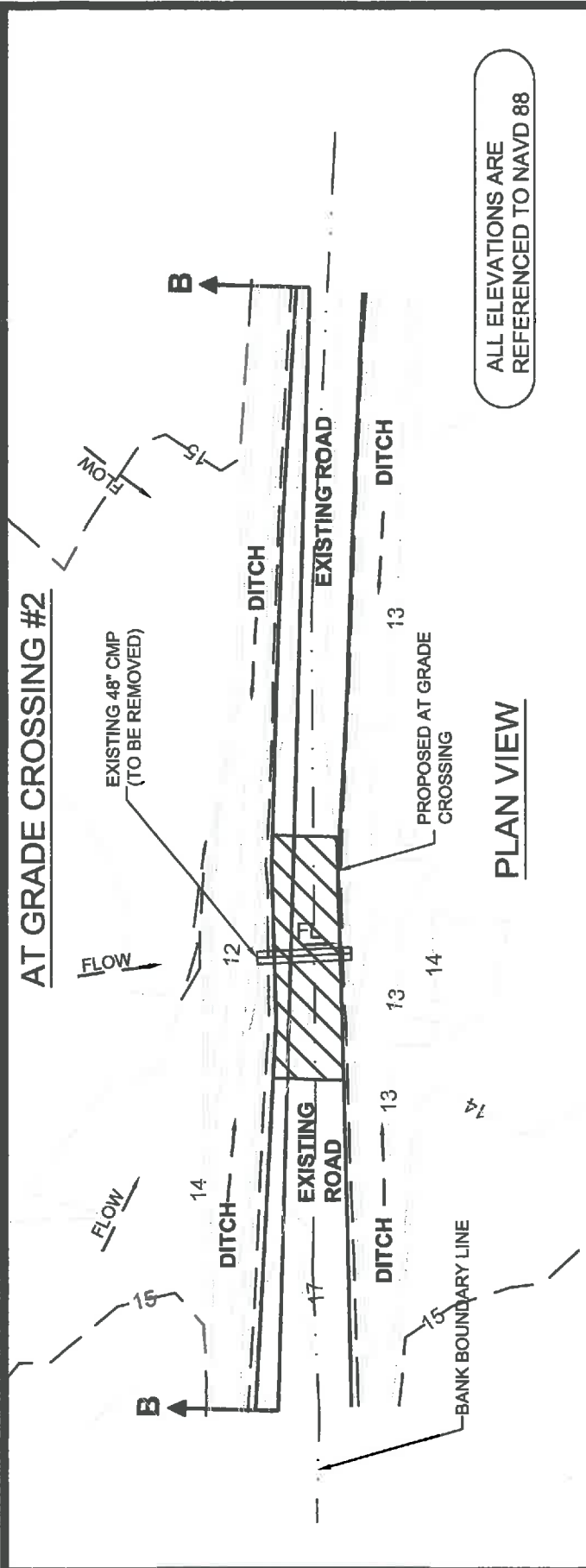
-  Mesic Flatwoods
-  Wet Prairie/ Wet Flatwoods
-  Cypress/ Mixed Wetland Hardwoods
-  Slough Swamp
-  Roads and Ditches
-  Freshwater Marsh



05/31/2011



Figure 8.



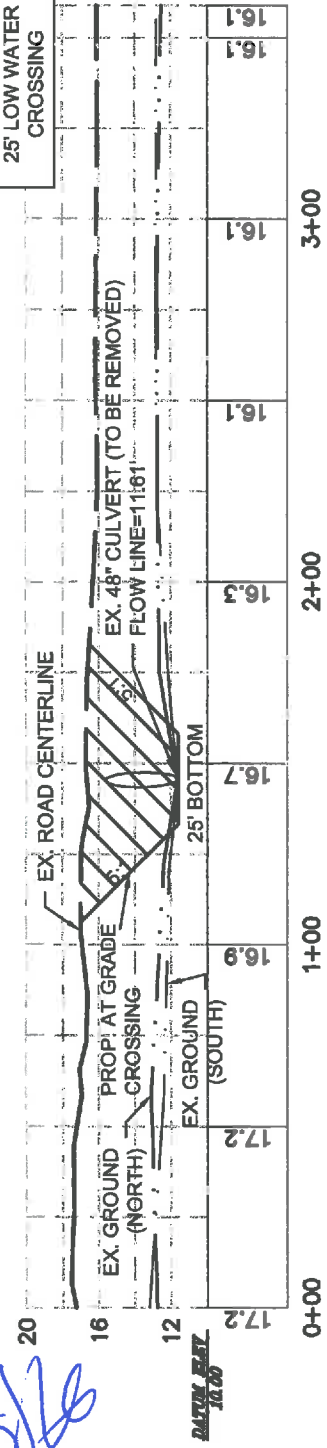
ALL ELEVATIONS ARE REFERENCED TO NAVD 88

LEGEND

- DREDGE / CUT
(±1,115 C.Y.) OF ROAD FILL

SCALE:
1"=50' H
1"=10' V

STRUCTURE	FLOW RATE (MAX)	WATER DEPTH
48" CORRUGATED METAL PIPE	45.6 CFS	45"
25' LOW WATER CROSSING	425.5 CFS	36"



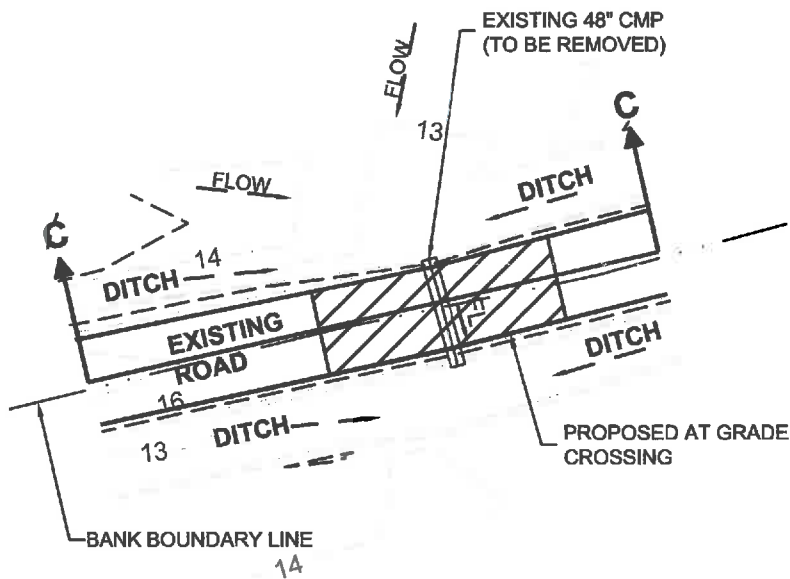
CROSS SECTION VIEW
B-B

[Signature]
 8/4/2011

FIGURE 11

AT GRADE CROSSING #3

FIGURE 12

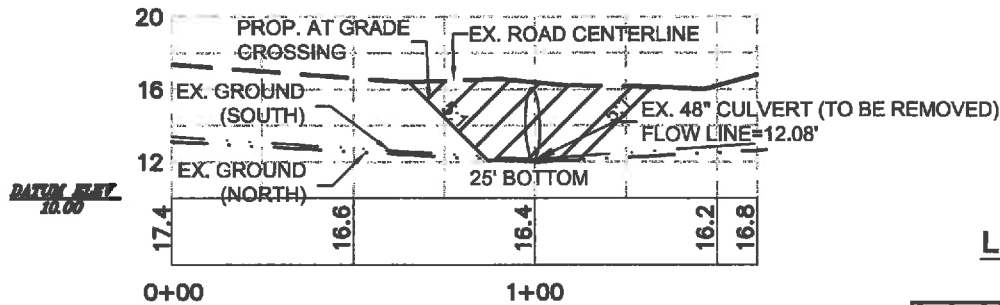


PLAN VIEW

ALL ELEVATIONS ARE REFERENCED TO NAVD 88

SCALE:
1"=50' H
1"=10' V

HYDROLOGICAL DATA		
STRUCTURE	FLOW RATE (MAX)	WATER DEPTH
48" CORRUGATED METAL PIPE	45.6 CFS	45"
25' LOW WATER CROSSING	425.5 CFS	36"



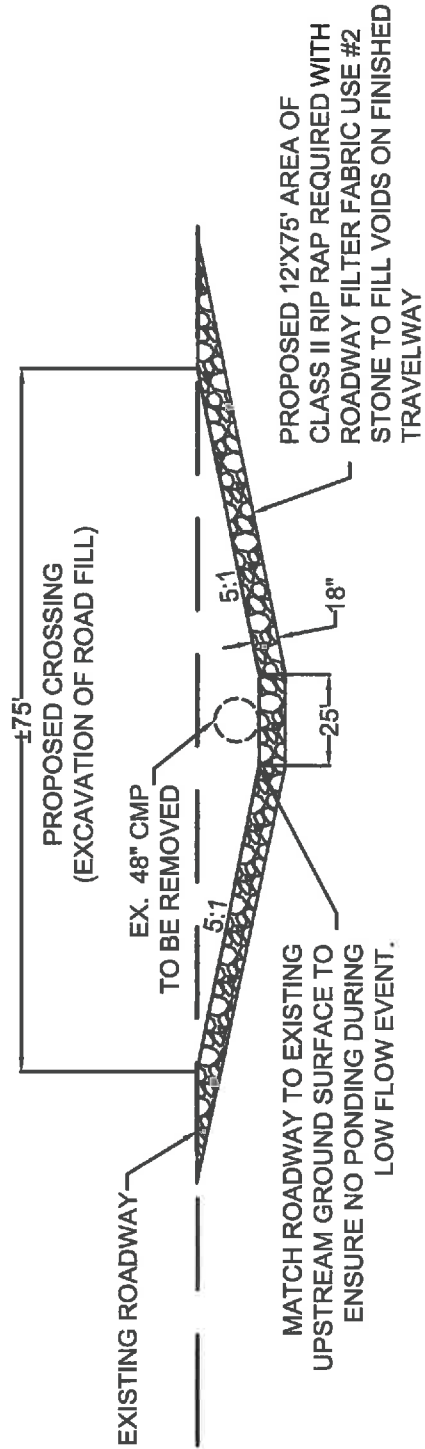
CROSS SECTION VIEW
C-C

LEGEND

 DREDGE / CUT
(±885 C.Y.) OF
ROAD FILL

Handwritten signature
8/4/2011

AT GRADE CROSSING INSTALLATION DETAIL



PROFILE VIEW
N.T.S.

Handwritten signature

8/4/2011

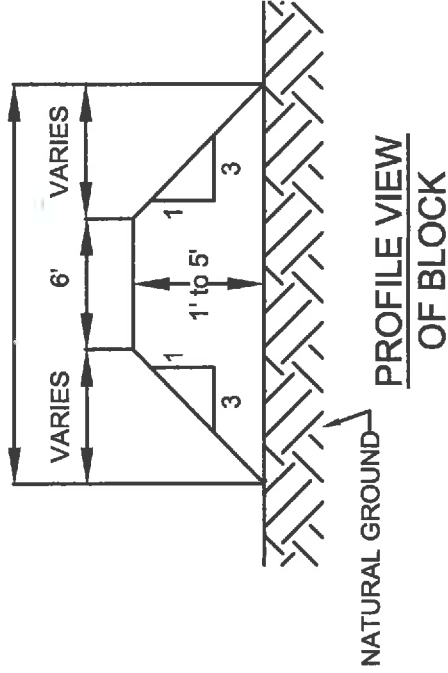
FIGURE 13

FIGURE 14

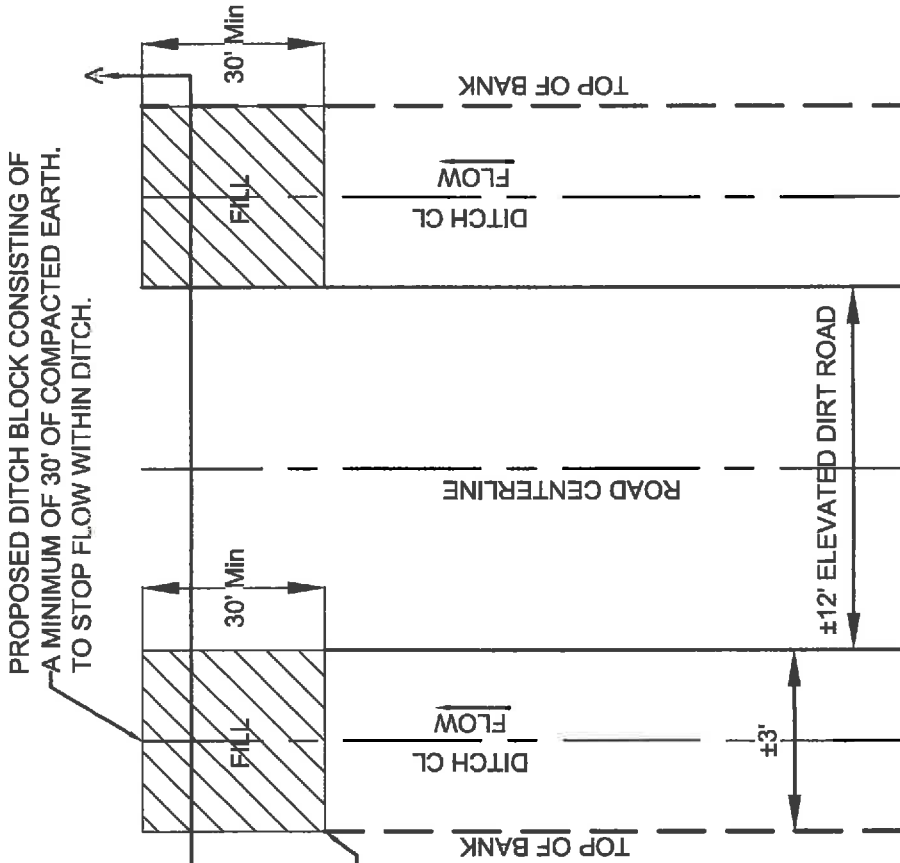
TOTAL NUMBER OF PROPOSED DITCH BLOCKS = 40
 (NOTE: 'DOUBLE DITCH BLOCKS' INCLUDE BOTH SIDES OF ROAD; 'SINGLE DITCH BLOCKS' INCLUDES ONLY THE DITCH WITHIN THE PROPERTY BOUNDARY)

NOTES:

1. EACH DITCH BLOCK WILL VARY IN SIZE BASED ON SPECIFIC SITE CONDITIONS.
2. FILL IS TO BE GENERATED ONSITE BY AT GRADE CROSSINGS AND NEW CULVERT INSTALLATIONS.
3. SEE FIGURE 9 FOR DITCH BLOCK LOCATIONS. 30' MIN



PROFILE VIEW OF BLOCK



PLAN VIEW



CROSS SECTION A-A

TYPICAL DITCH BLOCK DETAIL

N.T.S.

Handwritten signature and date: 8/4/2011

PROPOSED DITCH BLOCK CONSISTING OF A MINIMUM OF 30' OF COMPACTED EARTH, TO STOP FLOW WITHIN DITCH.

DISTURBED AREA TO BE SEEDED AND MULCHED IMMEDIATELY AFTER COMPLETION OF THE DITCH BLOCK.

DITCH CL
FLOW

ROAD CENTERLINE

TOP OF BANK

±3'

±12' ELEVATED DIRT ROAD

30' Min

30' Min

30' Min

VARIES

6'

VARIES

1

1' to 5'

1

3

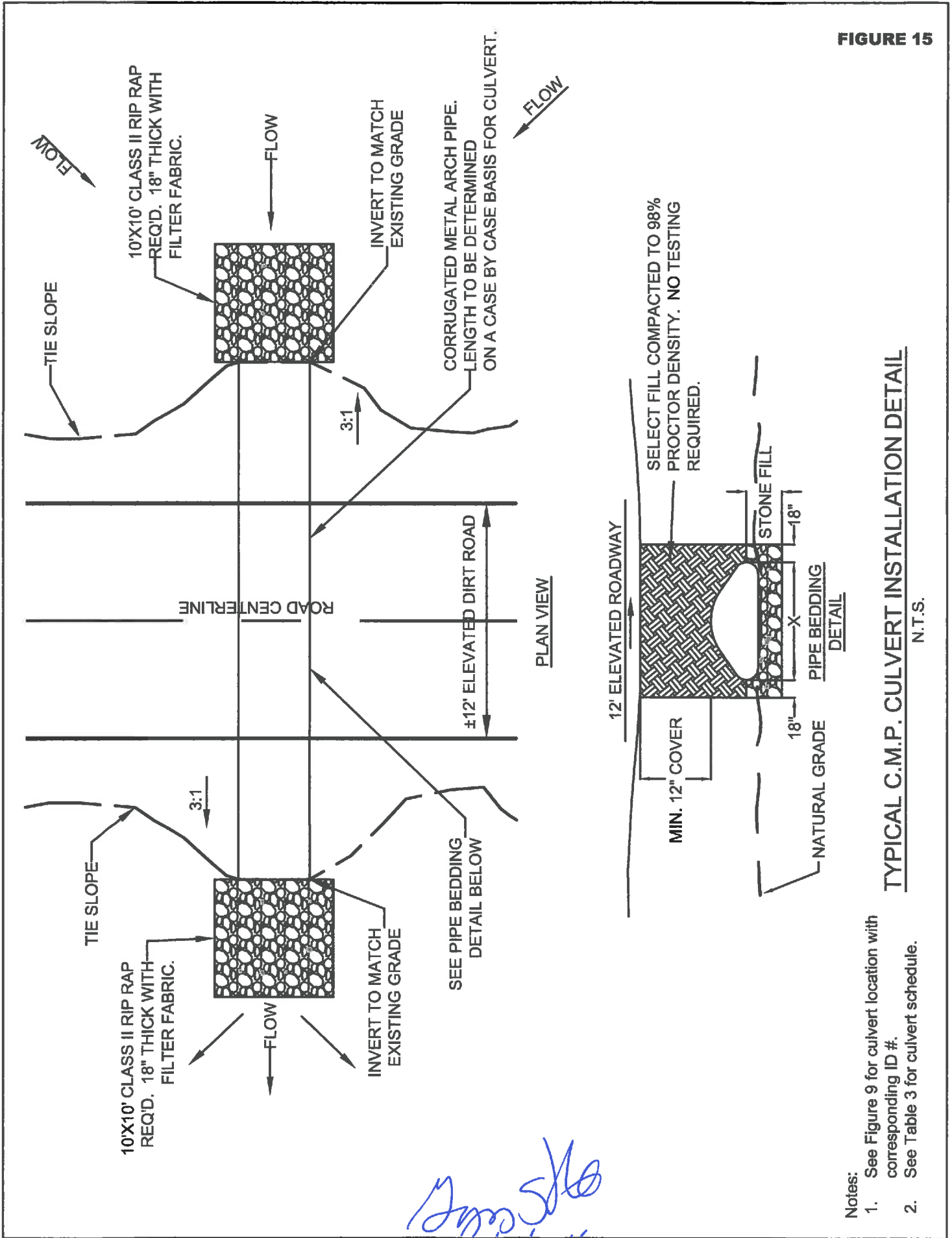
3

NATURAL GROUND

FILL AREA (TO NATURAL GROUND)

NATURAL GRADE

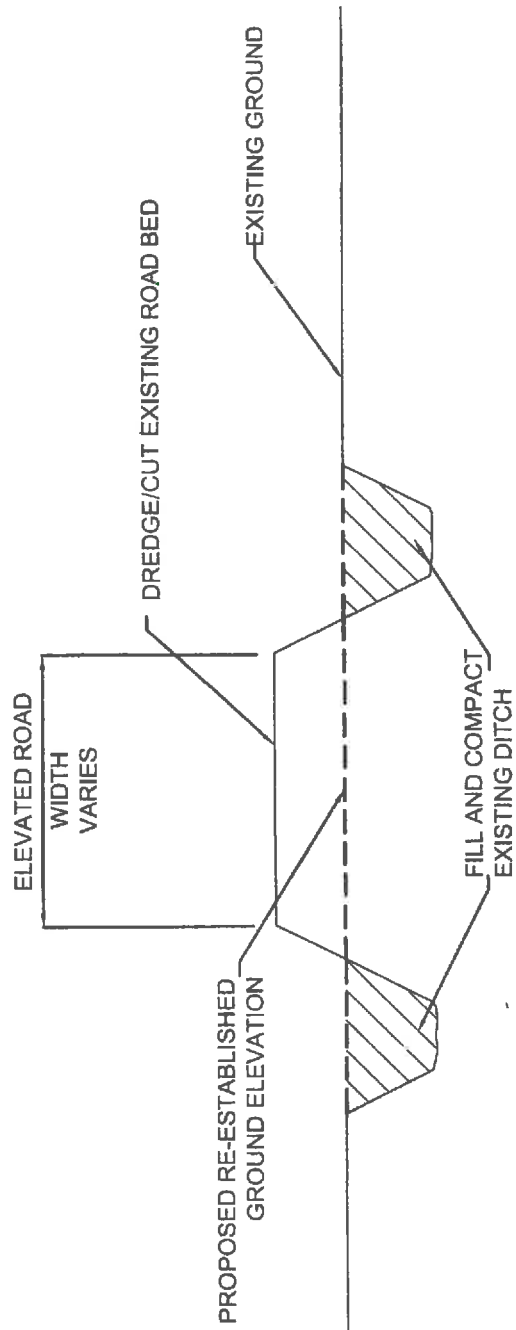
FIGURE 15



TYPICAL C.M.P. CULVERT INSTALLATION DETAIL

N.T.S.

FIGURE 16



NOTES:

1. REMOVAL OF ROAD SHOULD RESTORE ORIGINAL DRAINAGE. USE EXISTING GROUND FOR TIE ELEVATIONS ALONG THE ROADWAY. REMOVE ANY CULVERTS.
2. ESTABLISH SEEDING AND MULCHING IMMEDIATELY AFTER WORK IS COMPLETED.
3. SEE FIGURE 16 FOR ROAD REMOVAL LOCATIONS.

ROAD REMOVAL DETAIL
N.T.S.

Young Shale
8/12/11

Attachment B – Target Community Descriptions

History and Current Condition

St Marks Mitigation Bank (SMMB) is near the Gulf Coast and thus has an extremely high water table with most of the site being classified as wetland. The site is quite flat with minimal changes in elevation ranging from 13' to 16' above sea level (based upon LIDAR Data and spot engineering surveying). The site has two broad, connected and braided depression sloughs (labeled Slough Swamp in permit), and several other connected depressions (labeled Cypress/Mixed Hardwoods). Between these depression areas are slightly elevated areas with sandy, poorly drained soils overlying limestone. These elevated areas were planted in slash pine with moderate bedding in the late 1980's. Classification systems vary greatly in the nomenclature, variously focusing on the canopy or groundcover, but most agree that the structure is typically open pine canopy with a dense and diverse pyrophytic groundcover of herbaceous species, low shrubs and palmetto, with little mid-story. In the permit (assessment, management and criteria), these flats are called either Mesic Flatwoods or Wet Prairie/Wet Flatwoods, depending on whether they are upland or wetland.

Because of the very slight topographic contours within the SMMB and the historic disturbance for timber production, the delineation between community types tends to be more of a diverse mosaic. Within a walking transect are areas that might be called bog, wet prairie, sawgrass marsh, hydric pine, mesic pine, etc. with a lot of overlap. There are several areas of relatively intact wiregrass that escaped bedding, but most are small (less than 10 m. in diameter) and principally on the eastern third of the site. Areas where planted slash pine density is slightly lower (wetter – poor growth) are visible on the aerial, and these tend to retain more wiregrass – also at the edges nearer the road – where there is better light. Sawgrass is also a fairly common component throughout the site, especially in the recently logged areas of the Slough and Cypress/Mixed Hardwoods. There are a number of wetland trees within the pine plantation – principally water oak, sweetgum, but also maple, sable palm, and a few gum and bay – again indicating the mosaic expression of community boundaries.

Cypress was historically logged from this site at least once, and was logged again in the early 1990's. A portion of the slough not logged in the 1990's retaining appropriate forest structure comprises the "Intact Slough Swamp" assessment area, and will be preserved as such. Recent logging produced the "Timbered Slough Swamp" assessment area, where "cherry-picked" cypress were removed and many other wetland canopy trees were also felled in the process. These areas exhibit coppice and seedling growth of slough trees, native, non-nuisance groundcover including sawgrass, and if preserved from future impacts, appear to be on a trajectory of full recovery, except that cypress would be under-represented without supplemental planting.

Another expression of forested wetlands is found between the higher, fire-maintained flats and the deeper slough. These areas are forested with pond cypress and, depending on the fire return interval, a variety of other wetland hardwood canopy species. This Cypress/Mixed Hardwoods assessment area has been impacted by timber operations and adjacent silviculture and by fire suppression. The community is found either in depressions within the flats or in transition areas bordering the slough.

Target Communities: Mesic Flatwoods

As indicated earlier, nomenclature for the native community on the flats varies depending on the density of pine and shrubs and on hydrology, and there is overlap. Principle community delineation is between upland and wetland as defined in Rule 62-340, F.A.C., with the upland described as Mesic Flatwoods. Mesic Flatwoods are characterized by a relatively open canopy of tall pines and a dense layer of grasses, forbs and bracken fern (*Pteridium*), and low shrubs and saw palmetto. Slash pine (*Pinus elliottii*) will dominate on this site until the longleaf pine (*Pinus palustris*) matures as a co-dominant. The herbaceous groundcover is predominantly grasses, including wiregrass (*Aristida stricta* var. *beyrichiana*), dropseeds (*Sporobolus curtissii*, *S. floridanus*), panicgrasses (*Dichanthelium* spp.), and broomsedges (*Andropogon* spp.), bracken ferns, and a large number of flowering forbs. Characteristic shrubs include saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), as dominants, and also coastalplain staggerbush (*Lyonia fruticosa*), and fetterbush (*Lyonia lucida*). Rhizomatous dwarf shrubs, usually less than two feet tall, are common and include dwarf live oak (*Quercus minima*), runner oak (*Q. elliottii*), shiny blueberry (*Vaccinium myrsinites*), Darrow's blueberry (*V. darrowii*), and dwarf huckleberry (*Gaylussacia dumosa*).

On the St. Marks Mitigation Bank the following species are anticipated:

<i>Andropogon virginicus</i>	<i>Ilex glabra</i>	<i>Quercus minima</i>
<i>Aristida beyrichiana</i>	<i>Ilex vomitoria</i>	<i>Quercus nigra</i>
<i>Aristida palustris</i>	<i>Lyonia lucida</i>	<i>Rubus</i> spp.
<i>Berchemia scandens</i>	<i>Myrica cerifera</i>	<i>Serenoa repens</i>
<i>Diospyros virginiana</i>	<i>Pinus elliottii</i>	<i>Smilax laurifolia</i>
<i>Gaylussacia frondosa</i>	<i>Pinus palustris</i>	<i>Smilax walteri</i>
<i>Gelsemium sempervirens</i>	<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	<i>Toxicodendron radicans</i>
<i>Hypericum hypericoides</i>	<i>Pterocaulon pycnostachyum</i>	<i>Vaccinium myrsinites</i>

The following photos would be representative of the target mesic flatwoods.



Representative wetland pine flatwoods



Wet Prairie/Wet Flatwoods

The native wetland community on the flats is described as Wet Prairie/Wet Flatwoods because pine density will vary throughout this assessment area, and minimal or absent pine cover is not considered in the permit success criteria, provided other parameters are met. Most of the criteria focus on the development of groundcover that represents the density and assemblage that will provide a consistent fuel source to carry fire evenly across the site and shape the ecotone. The overstory is expected to be a relatively open canopy of slash pine, longleaf pine, with a varying number of cabbage palms (*Sabal palmetto*) and cypress, with a sparse or absent midstory interspersed within a groundcover of hydrophytic grasses, herbs, and low shrubs.

Groundcover is typically dense and dominated by a diverse assemblage of fire adapted herbaceous grasses and herbs including wiregrass (*Aristida stricta* var. *beyrichiana*), redbud panic grass (*Panicum rigidulum*), bushy bluestem (*Andropogon glomeratus*), cypress panic grass (*Dichanthelium dichotomum*), blue maidencane (*Amphicarpum muhlenbergianum*), bluestems (*Andropogon spp.*), longleaved threeawn (*Aristida palustris*), toothache grass (*Ctenium aromaticum*), cutover muhly (*Muhlenbergia expansa*), coastalplain yellow-eyed grass (*Xyris ambigua*), Carolina redroot (*Lachnanthes caroliana*), beaksedges (*Rhynchospora spp.*), foxtail club-moss (*Lycopodiella alopecuroides*), yellow butterwort (*Pinguicula lutea*), and a number of meadowbeauties (*Rhexia spp.*), nutrushes (*Scleria spp.*). This site also has an appreciable amount of sawgrass (*Cladium*) in depressions. Wiregrass is often described as a keystone species; however, because of past management practices, and also in response to the buffered limestone/coastal high water tables, wiregrass may be replaced in dominance by other fire adapted grasses, but should be a component throughout the community type.

Shrub cover will vary, with wetter areas near the Cypress/Mixed Forest having a higher density of scattered pond cypress (*Taxodium ascendens*), sweetbay (*Magnolia virginiana*), swamp bay (*Persea palustris*), loblolly bay (*Gordonia lasianthus*), red maple (*Acer rubrum*), and swamp titi (*Cyrilla racemiflora*). On the drier end of the spectrum, and where there has been a history of disturbance, wax myrtle (*Myrica cerifera*), saw palmetto (*Serenoa repens*), gallberry (*I. glabra*) are common along with inkberry (*Ilex coriacea*), fetterbush (*Lyonia lucida*), titi, (*Cyrilla racemiflora*, and *Cliftonia monophylla*), sweet pepperbush (*Clethra alnifolia*). Although less common, red chokeberry (*Photinia pyrifolia*), and azaleas (*Rhododendron canescens*, *R. viscosum*) are found onsite. The shrub cover growth form should be low (<1.5 m) and open such that herbaceous groundcover is still a significant component of the overall understory.

In the SMMB, the bulk of this combined Wet Prairie /Wet Flatwoods community type will be found as a diverse mosaic of pyrophytic groundcover underlying a variable density of pine, cypress and other wetland canopy trees.



Representative wet pine flatwoods



Target species within Wet Prairie/ Wet Flatwoods on the SMMB include:

<i>Aletris lutea</i>	<i>Euthamia graminifolia</i> var. <i>hirtipes</i>	<i>Pinus elliotii</i>
<i>Andropogon capillipes</i> Nash	<i>Gratiola pilosa</i>	<i>Pluchea rosea</i> / <i>foetida</i>
<i>Andropogon glomeratus</i>	<i>Helianthus heterophyllus</i>	<i>Polygala lutea</i>
<i>Andropogon perangustatus</i>	<i>Helenium pinnatifidum</i>	<i>Polygala crenata</i>
<i>Andropogon virginicus</i>	<i>Hypericum brachyphyllum</i>	<i>Proserpinaca pectinata</i>
<i>Anthraenantia rufa</i>	<i>Hypericum crux-andaea</i>	<i>Quercus nigra</i>
<i>Aristida beyrichiana</i>	<i>Hypericum fasciculatum</i>	<i>Rhexia alifanus</i>
<i>Aristida palustris</i>	<i>Hypericum hypericoides</i>	<i>Rhynchospora miliacea</i>
<i>Asclepias lanceolata</i>	<i>Hyptis alata</i>	<i>Rhynchospora rariflora</i>
<i>Asclepias longifolia</i>	<i>Hypoxis juncea</i>	<i>Rhynchospora</i> spp.
<i>Aster dumosus</i>	<i>Ilex glabra</i>	<i>Rubus</i> spp.
<i>Bartonia verna</i>	<i>Ilex myrtifolia</i> Walt.	<i>Rudbeckia graminifolia</i>
<i>Berchemia scandens</i>	<i>Ilex vomitoria</i>	<i>Sabatia macrophylla</i>
<i>Bidens</i> sp.	<i>Ipomea</i> sp. (<i>hastate</i>)	<i>Saccharum baldwinii</i>
<i>Bigelovia nudata</i>	<i>Juncus</i> sp 1	<i>Sagittaria graminea</i> var. <i>chapmanii</i>
<i>Centella repanda</i> (Pers.) Small	<i>Juncus</i> sp 2	<i>Schoenus nigricans</i>
<i>Cephalanthus occidentalis</i>	<i>Juncus</i> sp 3	<i>Scleria</i> sp
<i>Chaptalia tomentosa</i>	<i>Lachnanthes caroliniana</i>	<i>Serenoa repens</i>
<i>Cladium jamaicense</i>	<i>Liatris spicata</i>	<i>Sisyrinchium</i> sp
<i>Clethra alnifolia</i>	<i>Linum</i> sp.	<i>Smilax bona-nox</i>
<i>Coccoreopsis falcata</i>	<i>Lobelia glandulosa</i>	<i>Smilax laurifolia</i>
<i>Ctenium aromaticum</i>	<i>Lophiola aurea</i>	<i>Smilax walteri</i>
<i>Dichanthelium aciculare</i>	<i>Ludwigia</i> spp.	<i>Solidago stricta</i>
<i>Dichanthelium acuminatum</i>	<i>Lyonia fruticosa</i>	<i>Sporobolus floridanus</i>
<i>Dichanthelium erectifolium</i>	<i>Marshallia tenuifolia</i>	<i>Stillingia aquatica</i>
<i>Dichanthelium scabriusculum</i>	<i>Mitreola sessilifolia</i>	<i>Styrax americanus</i>
<i>Dichanthelium strigosum</i>	<i>Muhlenbergia expansa</i>	<i>Taxodium ascendens</i>
<i>Dichanthelium</i> spp.	<i>Myrica cerifera</i>	<i>Toxicodendron radicans</i>
<i>Diodia virginiana</i>	<i>Nyssa sylvatica</i> var. <i>biflora</i>	<i>Tridens ambiguus</i>
<i>Diospyros virginiana</i>	<i>Osmunda regalis</i>	<i>Utricularia subulata</i>
<i>Drosera capillaris</i>	<i>Panicum rigidulum</i>	<i>Viola lanceolata</i>
<i>Elytraria caroliniensis</i>	<i>Panicum verrucosum</i>	<i>Xyris ambigua</i>
<i>Erigeron vernus</i>	<i>Paspalum praecox</i>	<i>Xyris caroliniana</i>
<i>Eriocaulon compressum</i>	<i>Persea palustris</i>	<i>Xyris flabelliformis</i>
<i>Eriocaulon decangulare</i>	<i>Photinia arbutifolia</i>	<i>Xyris platylepis</i>
<i>Eupatorium leucolepis</i>	<i>Pinguicula caerulea</i>	<i>Zephyranthes atamasco</i>
<i>Eupatorium mohrii</i>	<i>Pinguicula pumila</i>	<i>Zephyranthes treatiae</i>

Slough Swamp

Slough swamp is a basin wetland vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod. The dominant trees are pond cypress (*Taxodium ascendens*) and swamp tupelo (*Nyssa sylvatica* var. *biflora*). Other typical canopy and subcanopy trees include slash pine (*Pinus elliotii*), red maple (*Acer rubrum*), dahoon (*Ilex cassine*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), swamp laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), green ash (*Fraxinus pennsylvanica*), American hornbeam (*Carpinus caroliniana*), and American elm (*Ulmus americana*). Depending on

the hydrology and fire history, shrubs may be found throughout a basin swamp or they may be concentrated around the perimeter. Common species include Virginia willow (*Itea virginica*), swamp dogwood (*Cornus foemina*), doghobble (*Leucothoe racemosa*), coastal sweetpepperbush (*Clethra alnifolia*), dahoon (*Ilex cassine* var. *myrtifolia*), and buttonbush (*Cephalanthus occidentalis*), along with fetterbush, wax myrtle, and titi. The herbaceous layer is variable with light and hydroperiod, and includes sawgrass, maidencane (*Panicum hemitomon*), chain fern (*Woodwardia virginica*), arrowheads (*Sagittaria* spp.), lizard's tail (*Saururus cernuus*), and others listed below. Vines may be present, greenbrier (*Smilax* spp) and eastern poison ivy (*Toxicodendron radicans*). Epiphytic species such as resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*) and Spanish moss (*Tillandsia usneoides*), (*Tillandsia bartramii*) are common.

<i>Acer rubrum</i>	<i>Liquidambar styraciflua</i>	<i>Pinus palustris</i>
<i>Cephalanthus occidentalis</i>	<i>Ludwigia linearis</i>	<i>Quercus laurifolia</i>
<i>Chionanthus virginicus</i>	<i>Ludwigia repens</i>	<i>Sabal minor</i>
<i>Cladium jamaicense</i>	<i>Magnolia virginiana</i>	<i>Sabal palmetto</i>
<i>Clethra alnifolia</i>	<i>Mikania scandens</i>	<i>Smilax laurifolia</i>
<i>Crataegus</i> sp	<i>Myrica cerifera</i>	<i>Smilax walteri</i>
<i>Cyrilla racemiflora</i>	<i>Nyssa sylvatica</i> var. <i>biflora</i>	<i>Styrax americanus</i>
<i>Hypericum fasciculatum</i>	<i>Osmunda cinnamomea</i>	<i>Taxodium ascendens</i>
<i>Hypericum hypericoides</i>	<i>Osmunda regalis</i>	<i>Utricularia inflata</i>
<i>Itea virginica</i>	<i>Persea palustris</i>	<i>Vitis rotundifolia</i>
<i>Ilex cassine</i>	<i>Pinus elliotii</i>	<i>Woodwardia virginica</i>
<i>Ilex myrtifolia</i> Walt.		



Intact & Timbered (planted cypress) Slough

Cypress/Mixed Hardwoods

Cypress/Mixed Hardwoods is a depression or stringer basin wetland vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod. The most significant difference between this community type and the slough wetlands is the propensity for a greater amount of herbaceous representation and a slightly sparser canopy as a result of occasional to regular fire. However, this ecological gradient of herbaceous representation will start to diminish as distance from the wet prairie/wet flatwoods "edge". Canopy gap areas (such as created through microbursts) would also have increased groundcover until overstory trees filling in the gap.

Expected species and representative Cypress/Mixed Hardwood photos:

<i>Acer rubrum</i>	<i>Ilex cassine</i>	<i>Proserpinaca pectinata</i>
<i>Amsonia tabernaemontana</i>	<i>Ilex myrtifolia</i> Walt.	<i>Quercus laurifolia</i>
<i>Arundinaria tecta</i> (Walt.) Walt. Ex Muhl.	<i>Itea virginica</i>	<i>Rhododendron</i>
<i>Berchemia scandens</i>	<i>Juncus</i> sp	<i>canescens</i>
<i>Campsis radicans</i>	<i>Leucothoe racemosa</i>	<i>Rhynchospora inundata</i>
<i>Carex glaucescens</i>	<i>Liquidambar styraciflua</i>	<i>Rhynchospora miliacea</i>
<i>Carex</i> spp.	<i>Ludwigia linearis</i>	<i>Sabal minor</i>
<i>Cephalanthus occidentalis</i>	<i>Ludwigia repens</i>	<i>Sabal palmetto</i>
<i>Chionanthus virginicus</i>	<i>Ludwigia</i> spp.	<i>Saccharum baldwinii</i>
<i>Cladium jamaicense</i>	<i>Lyonia lucida</i>	<i>Sagittaria graminea</i> var.
<i>Clethra alnifolia</i>	<i>Magnolia virginiana</i>	<i>chapmanii</i>
<i>Crataegus</i> sp.	<i>Mikania scandens</i>	<i>Saururus cernuus</i>
<i>Cyrilla racemiflora</i>	<i>Myrica cerifera</i>	<i>Schoenus nigricans</i>
<i>Dichantherium scabriusculum</i>	<i>Nyssa sylvatica</i> var. <i>biflora</i>	<i>Sideroxylon reclinatum</i>
<i>Dichantherium</i> spp.	<i>Osmunda cinnamomea</i>	<i>Smilax laurifolia</i>
<i>Dicdia virginiana</i>	<i>Osmunda regalis</i>	<i>Smilax tamnoides</i>
<i>Diospyros virginiana</i>	<i>Panicum rigidulum</i>	<i>Smilax walteri</i>
<i>Elytraria caroliniensis</i>	<i>Persea palustris</i>	<i>Stillingia aquatica</i>
<i>Eriocaulon decangulare</i>	<i>Photinia arbutifolia</i>	<i>Styrax americanus</i>
<i>Eupatorium mohrii</i>	<i>Pinus elliotii</i>	<i>Taxodium ascendens</i>
<i>Euthamia graminifolia</i> var. <i>hirtipes</i>	<i>Pinus palustris</i>	<i>Utricularia inflata</i>
<i>Gelsemium rankinii</i>	<i>Pluchea camphorata</i> /	<i>Vitis rotundifolia</i>
<i>Gratiola brevifolia</i>	<i>odorata</i>	<i>Woodwardia virginica</i>
<i>Hypericum fasciculatum</i>	<i>Pluchea rosea</i> / <i>foetida</i>	<i>Zephyranthes atamasco</i>
<i>Hypericum hypericoides</i>	<i>Pontederia cordata</i>	<i>Zephyranthes treatiae</i>
	<i>Proserpinaca palustris</i>	



Freshwater Marsh

There is a small area that was excavated within the slough either for fill or to create a hunting pond. Regardless, the excavation is not deep and has converted to a typical Freshwater Marshes, characterized by herbaceous emergent vegetation that grades into cypress and varying amounts of shrubby coverage at the edge. Typical plants include sawgrass, rushes, arrowhead, pennywort, panicums, saltbush and wax myrtle. Regular and periodic fires are essential to the maintenance of this community.



Literature Sources:

Schwartz, M.W. (1994) Natural Distribution and Abundance of Forest Species and Communities in Northern Florida, *Ecology*, Vol. 75, No. 3, pp. 687-705

Carr, S.C.; Robertson, K.M.; Peet, R.K. (2010) A Vegetation Classification of Fire-Dependent Pinelands in Florida. *Castanea* Vol. 75, No. 2, pp. 153-189.

Florida Natural Areas Inventory (FNAI). 2010. Guide to the natural communities of Florida: 2010 edition. Florida Natural Areas Inventory, Tallahassee, FL

U.S. National Vegetation Classification. <http://usnvc.org>

ATTACHMENT C - PRESCRIBED FIRE MANAGEMENT PLAN

Summary

Prescribed fire on the property seeks to achieve two goals, while operating within safety and prescription constraints. The first is to conduct a fuel reduction and woody debris burn following mechanical harvest and shrub treatments. The second goal focuses on establishing desired fuel conditions for frequent controlled burns that promote the target habitat structure and function in the long-term. A successful burn shall mean that the fire carries over a minimum of 70% of the Mesic Flatwoods and Wet Prairie/Wet Flatwoods community types, extending into the adjacent Cypress/Mixed Hardwoods or Slough Swamp. To assure the best coverage of the fire and appropriate ecotone shaping, most fires will be aerially ignited and no internal fire breaks will be established, except as directed by the burn boss to avoid or control excursions from the prescription.

I. Burning Sequencing

Restoring the fire-dependent ecosystems on SMMB will require an aggressive burning regime targeted toward a 3 year rotation. Monitoring and inspections will dictate the season, intensity and rotation of each fire. However, if a burn is not initiated within 3 years of the previous burn, the Department must be notified.

The following sequence is proposed:

1. Thin planted pine.
2. Allow coarse woody debris to cure, ~ 1 year.
3. Allow shrubs to resprout, ~1 year.
4. Initiate 1st prescribed burn where fuel reduction will be maximized ~1 year.
5. Allow shrubs to resprout and initiate additional mechanical or chemical control of certain shrubs, (1-3 years).
6. Initiate 2nd prescribed burn in season to maximize coverage; 2-3 years.
7. Continue to monitor fuel loads and soil moisture to target complete coverage and response to future fire (2-3 years)

Most burns will be targeted for the early growing season, though not constrained to that season. Frequency will be on average 3 year return interval. If wildfires are within prescription, they will be allowed to burn and count towards burn acres. Ignition techniques will primarily be aerial ignition but ground ignition may be used at the discretion of the burn boss, e.g., grid patterns, heading, flanking, etc. Higher ambient temperatures (>60° F), moderate relative humidity (50% range), lower 20 foot wind speeds of 5 - 10 mph, and a KBDI less than 450 are a preferred range of weather parameters for burning to achieve ideal ecological effects on this property. Ventilation, mixing height, LOVARI, dispersion index, and transport winds will not be as critical for this property though all associations with fire behavior. Input will be sought from FMO of St. Marks National Wildlife Refuge for knowledge of local weather anomalies (such as sea/land breezes) that may impact fire behavior.

II. Site Preparation

Currently the property is broken into four burn units which can further be segmented into smaller areas due to the proximity of natural barriers to fire such as Morrison Branch. Under most conditions, each burn unit will be managed individually. However, it is up to the discretion of the burn boss based on observed fire behavior as to size of area burned.

III. Safety Considerations

Due to its proximity in the landscape St. Marks Mitigation Bank (SMMB) poses few social and political constraints to burning. As such, a great deal of flexibility can be introduced to the prescription and allow a much greater focus on ecological fire effects. Nonetheless, appropriate safety precaution methodology (as outlined on example burn plan) will be followed.

IV. Prescribed Fire Objectives/Standards

A. Performance Standards

Ideal wet and mesic flatwoods will contain little midstory other than the recruitment of pine into the overstory. Initial fuel reduction burns should yield at least 70% of the understory scorched or consumed within the Mesic Flatwoods and Wet Prairie/ Wet Flatwoods community types. To maintain needle cast contribution of 1 hour fuels, average bole scorch will be kept below 20 feet and average crown scorch less than 50%. After the initial burn, subsequent burns will be targeted toward the dryer, early growing season as closely as possible without getting into a burn-ban period. These burns will target maximum scorch of woody shrubs within Mesic Flatwoods and Wet Prairie/ Wet Flatwoods and the maximum growth and flowering response of herbaceous vegetation. There is appreciable palmetto on site, especially in mesic flatwoods, and this will provide appropriate structure and fuel for the reduction of midstory shrubs.

We will not conduct any activities to discourage fire from entering the Cypress/Mixed Hardwoods and Slough swamp, other than targeting soil moisture to discourage burning into the muck of the Slough and deeper portions of the Cypress/Mixed Hardwoods. Expectations are that <10% of the slough will burn. However, much of the Cypress/Mixed Hardwoods community is found in depressions and stringers within Wet Prairie/Wet Flatwoods, and fires are likely to carry through or across these shallow depressions and stringers, especially in the eastern portion of the bank. It would not be surprising if fire burned over 30-50% of the community with little to no detrimental effect on canopy trees.

B. Assessment Methods and Reporting

- 1) Preliminary Report: A few hours following the burn, the QMS and burn boss evaluation is a qualitative assessment of the following parameters:
 - a) percentage of site burned, i.e., 1 hour (grass) fuel consumption;
 - b) woody understory scorch versus consumption;

- c) overstory tree crown scorch, wilting, etc.;
 - d) midstory stem cracking and overstory bole scorch.
 - e) observations such as stump consumption, animal/insect mortality, unburned patches related to vegetation structure, etc. are noted.
 - f) photos that exemplify typical areas and noteworthy elements will document the above assessment.
 - g) This preliminary assessment will be sent to the Department within 30 days of the fire.
- 2) **Success Report:** The initial evaluation will be followed by an assessment of fire coverage and vegetation response by conducting qualitative transects and/or aerial photography that will be included in any request for credit. This assessment will summarize the initial burn boss evaluation, and also add notes and parameters evaluating the coverage and success of the burn in achieving ecological goals, as described in the permit.
- 3) **Damage Report:** Prescribed fires that fall out of prescription and are deemed by the QMS as detrimental to the short-term ecological success (such as complete crown scorch in the Slough Swamp) will be reported to the Department within sixty (60) days. With the help of the Department and IRT, appropriate contingency plans will be made.

St. Mark's River Mitigation Bank

Forestry District: Tallahassee 850-488-1871			Authorization Number:		
Landowner: Westervelt Ecological Services					
Address: 2128 Moores Mill Road, Suite B Auburn, AL 36830			Telephone Number: 334-821-1999		
- LOCATION -					
County: Wakulla/Jefferson		Section	Township	Range	
Latitude			Longitude		
Deg:	Min:	Sec:	Deg:	Min:	Sec:
Acres to Burn:		Distance to Plow:		Previous Burn Date:	
Stand Description:					
Overstory Type:		Understory Type:		Height to Bottom of Crown:	
Fuel Description:			Fuel Model:	Topography and Soil:	
Purpose of the Burn:			Burn Objectives:		
Firing Techniques & Ignition Methods:					
Personnel Needs:			Equipment Needs:		
Maximum Crown Scorch Acceptable:			Passed Smoke Screening System: <input type="checkbox"/> YES <input type="checkbox"/> NO		
List Possible Smoke-Sensitive Areas:					
Special Precautions: KBDI < 650; < 10 DAYS SINCE LAST RAIN					
Adjacent Landowners to Notify:					

Days Since Rain:	Date Burned:	Distance Plowed:
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WEATHER FACTORS	PREFERRED	ACTUAL
Surface Winds	SW, S, SE	
Transport Winds	SW, S, SE > 4mi/hr.	
Minimum Mixing Height	1,700 FT	
Dispersion Index (DAY)	30-75	
Dispersion Index (NIGHT)	NA	
Maximum Temperature	95	
Minimum Relative Humidity	40%	
Fine Fuel Moisture	>6%	
Rate of Spread		
Starting Time	9:00	
Burn Technique	backing; strip head	
Flame Length	<15	
MONITORING & EVALUATION PROCEDURES		
PRE-BURN	BURN	POST BURN

BURN CHECK LIST	
<p>FIRE BOSS: Check each item to indicate compliance.</p> <ul style="list-style-type: none"> <input type="checkbox"/> All prescription requisites met (preparation and day of burn). <input type="checkbox"/> Authorization obtained. <input type="checkbox"/> Adjacent landowners notified within past seven days of plan to burn. <input type="checkbox"/> Local contacts made day of burn to advise (FHP, SO, Fire Dept., media, etc.) <input type="checkbox"/> Smoke screening performed and documented. <input type="checkbox"/> All equipment required on scene and fully operational. <input type="checkbox"/> Each crew member has proper personal gear and clothing. <input type="checkbox"/> Low Visibility Risk Index checked. <input type="checkbox"/> Smoke on the Highway signs in place, if needed. <input type="checkbox"/> Test burn performed and fire behavior within expectations. 	
CREW BRIEFING	
<ul style="list-style-type: none"> <input type="checkbox"/> Objectives of burn. <input type="checkbox"/> Exact area of burn. <input type="checkbox"/> Hazards discussed (volatile fuels, spotting potential, weak points in perimeter lines, terrain features, etc.). <input type="checkbox"/> Crew Assignments made. <input type="checkbox"/> Ignition technique and pattern. Holding method(s). <input type="checkbox"/> Location of extra equipment, fuel, water, vehicle keys. <input type="checkbox"/> Authority and communications. <input type="checkbox"/> Contingencies covered including escape routes or procedures. <input type="checkbox"/> Sources of nearest assistance. Nearest phone and emergency numbers. <input type="checkbox"/> Special instructions regarding smoke management, contact with the public and others. <input type="checkbox"/> Questions. <input type="checkbox"/> Crew members given opportunity to decline participation (is there anything that is going to prevent full physical performance?). 	
Prescription Done by:	Certification Number:
Title:	Date:
CERTIFIED BURN MANAGER SIGNATURE:	

Attachment D – Exotic Species List (www.FLEPPC.org)

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.*

Species names below are linked to corresponding pages in *Identification and Biology of Non-Native Plants in Florida's Natural Areas* (first edition), by Ken Langeland and Kathy Craddock Burks, eds. 1998. University of Florida, Gainesville, 165 pp.

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

<i>Ludwigia peruviana</i>	Peruvian primrosewillow		N, C, S
<i>Luziola subintegra</i>	Tropical American water grass		S
<i>Lygodium japonicum</i>	Japanese climbing fern	N	N, C, S
<i>Lygodium microphyllum</i>	Old World climbing fern	N	C, S
<i>Macleodena unguis-cati</i>	cat's claw vine		N, C, S
<i>Menilaka zapota</i>	sapodilla		S
<i>Melaleuca quinquenervia</i>	melaleuca, paper bark	P, N, U	C, S
<i>Melinis repens</i> (= <i>Rhynchelytrum repens</i>)	Natal grass		N, C, S
<i>Mimosa pigra</i>	catclaw mimosa	P, N, U	C, S
<i>Nandina domestica</i>	nandina, heavenly bamboo		N, C
<i>Nephrolepis cordifolia</i>	sword fern		N, C, S
<i>Nephrolepis brownii</i> (= <i>N. multiflora</i>)	Asian sword fern		C, S
<i>Neyraudia reynaudiana</i>	Burma reed, cane grass	N	S
<i>Nymphoides cristata</i>	snowflake		C, S
<i>Paederia cruddasiana</i>	sewer vine, onion vine	N	S
<i>Paederia foetida</i>	skunk vine	N	N, C, S
<i>Panicum repens</i>	torpedo grass		N, C, S
<i>Pennisetum purpureum</i>	Napier grass		N, C, S
<i>Pistia stratiotes</i>	water-lettuce	P	N, C, S
<i>Psidium cattleianum</i> (= <i>P. littorale</i>)	strawberry guava		C, S
<i>Psidium guajava</i>	guava		C, S
<i>Pueraria montana</i> var. <i>lobata</i> (= <i>P. lobata</i>)	kudzu	N	N, C, S
<i>Rhodomyrtus tomentosa</i>	downy rose-myrtle	N	C, S
<i>Rhynchelytrum repens</i> (= <i>Melinis repens</i>)	Natal grass		N, C, S
<i>Ruellia brittoniana</i> (= <i>R. tweediana</i> misapplied)	Mexican petunia		N, C, S
<i>Salvinia minima</i>	water spangles		N, C, S
<i>Sapium sebiferum</i> (= <i>Triadica sebifera</i>)	popcorn tree, Chinese tallow tree	N	N, C, S
<i>Scaevola taccada</i> (= <i>Scaevola sericea</i> , <i>S. frutescens</i>)	scaevola, half-flower, beach naupaka	N	C, S
<i>Schefflera actinophylla</i> (= <i>Brassaia actinophylla</i>)	schefflera, Queensland umbrella tree		C, S
<i>Schinus terebinthifolius</i>	Brazilian pepper	P, N	N, C, S
<i>Scirpa lacustris</i>	Wright's nutrush		N, C, S
<i>Senna pendula</i> var. <i>glabrata</i> (= <i>Cassia coluteoides</i>)	climbing cassia, Christmas cassia, Christmas senna		C, S
<i>Solanum tamnicense</i> (= <i>S. houstonii</i>)	wetland nightshade, aquatic soda apple	N, U	C, S
<i>Solanum viarum</i>	tropical soda apple	N, U	N, C, S
<i>Syngonium podophyllum</i>	arrowhead vine		N, C, S
<i>Syzygium cumini</i>	jambolan plum, Java plum		C, S
<i>Tectaria incisa</i>	incised halberd fern		S
<i>Thespesia populnea</i>	seaside mahoe		C, S
<i>Tradescantia fluminensis</i>	small-leaf spiderwort		N, C
<i>Urochloa mutica</i> (= <i>Brachiaria mutica</i>)	Para grass		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	Gov. List	Reg. Dist.
<i>Adenanthera pavonina</i>	red sandalwood		S
<i>Agave sisalana</i>	sisal hemp		C, S
<i>Aleurites fordii</i> (= <i>Vernicia fordii</i>)	tung oil tree		N, C
<i>Alstonia macrophylla</i>	devil tree		S
<i>Alternanthera philoxeroides</i>	alligator weed	P	N, C, S
<i>Antigonon leptopus</i>	coral vine		N, C, S
<i>Aristolochia littoralis</i>	calico flower		N, C, S
<i>Asystasia gangetica</i>	Ganges primrose		C, S
<i>Begonia cucullata</i>	wax begonia		N, C, S
<i>Blechnum pyramidatum</i>	green shrimp plant, Browne's blechnum		N, C, S
<i>Broussonetia papyrifera</i>	paper mulberry		N, C, S
<i>Callisia fragrans</i>	inch plant, spironema		C, S
<i>Callistemon viminalis</i>	bottlebrush, weeping bottlebrush		S
<i>Casuarina cunninghamiana</i>	river sheoak, Australian-pine	P	C, S
<i>Cecropia palmata</i>	trumpet tree		S
<i>Cestrum diurnum</i>	day jessamine		C, S
<i>Chamaedorea seifrizii</i>	bamboo palm		S
<i>Clematis terniflora</i>	Japanese clematis		N, C
<i>Cryptostegia madagascariensis</i>	rubber vine		C, S
<i>Cyperus involucratus</i> (<i>C. alternifolius</i> misapplied)	umbrella plant		C, S
<i>Cyperus prolifer</i>	dwarf papyrus		C, S
<i>Dactyloctenium aegyptium</i>	Durban crowfootgrass		N, C, S
<i>Dalbergia sissoo</i>	Indian rosewood, sissoo		C, S
<i>Elaeagnus umbellata</i>	silverberry, autumn olive		N
<i>Elaeagnus pungens</i>	silverthorn, thorny olive		N, C
<i>Epipremnum pinnatum</i> cv. 'Aureum'	pothos		C, S
<i>Ficus altissima</i>	false banyan, council tree		S
<i>Flacourtia indica</i>	governor's plum		S
<i>Hemarthria altissima</i>	limpo grass		C, S
<i>Hibiscus tiliaceus</i> (= <i>Talpariti tiliaceum</i>)	mahoe, sea hibiscus		C, S
<i>Hyparrhenia rufa</i>	jaragua		N, C, S
<i>Ipomoea fistulosa</i> (= <i>I. carnea</i> ssp. <i>fistulosa</i>)	shrub morning-glory	P	C, S
<i>Jasminum sambac</i>	Arabian jasmine		S
<i>Kaianchoe pinnata</i>	life plant		C, S
<i>Koelreuteria elegans</i> ssp. <i>formosana</i> (= <i>K. formosana</i> ; <i>K.</i>	flamegold tree		C, S

<i>paniculata</i> misapplied)			
<i>Leucaena leucocephala</i>	lead tree	N	N, C, S
<i>Landoltia punctata</i> (= <i>Spirodela punctata</i>)	Spotted Duckweed		N, C, S
<i>Limnophila sessiliflora</i>	Asian marshweed	P, U	N, C, S
<i>Livistona chinensis</i>	Chinese fan palm		C, S
<u><i>Melia azedarach</i></u>	Chinaberry		N, C, S
<i>Melinis minutiflora</i>	Molassesgrass		C, S
<i>Merremia tuberosa</i>	wood-rose		S
<i>Murraya paniculata</i>	orange-jessamine		S
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	P	N, C, S
<i>Panicum maximum</i> (= <i>Urochloa maxima</i> , <i>Megathyrsus maximus</i>)	Guinea grass		N, C, S
<i>Passiflora biflora</i>	two-flowered passion vine		S
<i>Pennisetum setaceum</i>	green fountain grass		S
<i>Phoenix reclinata</i>	Senegal date palm		C, S
<i>Phyllostachys aurea</i>	golden bamboo		N, C
<i>Pittosporum pentandrum</i>	Philippine pittosporum, Taiwanese cheesewood		S
<i>Pteris vittata</i>	Chinese brake fern		N, C, S
<i>Ptychosperma elegans</i>	solitaire palm		S
<i>Rhoeo spathacea</i> (see <i>Tradescantia spathacea</i>)			
<i>Ricinus communis</i>	castor bean		N, C, S
<i>Rotala rotundifolia</i>	roundleaf toothcup, dwarf <i>Rotala</i>		S
<i>Sansevieria hyacinthoides</i>	bowstring hemp		C, S
<i>Sesbania punicea</i>	purple sesban, rattlebox		N, C, S
<i>Solanum diphyllum</i>	two-leaf nightshade		N, C, S
<i>Solanum jamaicense</i>	Jamaica nightshade		C
<u><i>Solanum torvum</i></u>	susumber, turkey berry	N, U	N, C, S
<i>Sphagneticola trilobata</i> (= <i>Wedelia trilobata</i>)	wedelia		N, C, S
<i>Stachytarpheta cayennensis</i> (= <i>S. urticifolia</i>)	nettle-leaf porterweed		S
<i>Syagrus romanzoffiana</i> (= <i>Arecastrum romanzoffianum</i>)	queen palm		C, S
<i>Talpariti tiliaceum</i> (= <i>Hibiscus tiliaceus</i>)	mahoe, sea hibiscus		C, S
<i>Terminalia catappa</i>	tropical-almond		C, S
<i>Terminalia muelleri</i>	Australian-almond		C, S
<u><i>Tradescantia spathacea</i></u> (= <i>Rhoeo spathacea</i> , <i>Rhoeo discolor</i>)	oyster plant		S
<i>Tribulus cistoides</i>	puncture vine, burr-nut		N, C, S
<i>Urena lobata</i>	Caesar's weed		N, C, S
<i>Vitex trifolia</i>	simple-leaf chaste tree		C, S
<i>Washingtonia robusta</i>	Washington fan palm		C, S
<i>Wedelia</i> (see <i>Sphagneticola</i> above)			
<i>Wisteria sinensis</i>	Chinese wisteria		N, C
<i>Xanthocoma sagittifolium</i>	malanga, elephant ear		N, C, S

ATTACHMENT E – Planting Plan

In order to attain success criteria and achieve community goals, it is anticipated that additional planting will be required. Planting will be assessed and implemented by management unit, but because timber thinning may take as long as 3 years, the completion of planting over the entire site may take up to 4 years.

Forested Communities

Within one year after harvest and the first prescribed fire in each management unit, the Timbered Slough assessment area shall be planted with pond cypress seedlings, or an alternate schedule may be approved by the Department if it would be more effective. Although the number of trees is calculated by a rate of 200/ac., planting will not be uniform. Certain areas will be targeted for clustered planting, such as those where historic aerials show dense cypress stands, or where there is little natural recruitment, or where hydrologic conditions favor survival. Most trees will be planted on hummock or high spots within the slough. The bulk of the slough planting will be with bare root pond cypress (*Taxodium ascendens*); however, depending on planting stock availability and site conditions, the QMS may determine that ultimate targets may be better achieved by using some containerized cypress or additional tree species identified in the list below. The Cypress/ Mixed Hardwoods areas of each management unit will be planted at the same time as the slough (or other approved schedule) with a mix of wetland tree species as shown in the table below, as directed by the QMS.

Common Name	Scientific Name	Area	#/ac.	Size
Pond Cypress	<i>Taxodium ascendens</i>	sough	200	bare root (or cont)
Pond Cypress	<i>Taxodium ascendens</i>	mixed	20	container
Sweetbay	<i>Magnolia virginiana</i>	mixed	50	container
Black Gum	<i>Nyssa sylvatica/ biflora</i>	mixed	50	container
Red Bay	<i>Persea borbonia</i>	mixed	30	container
Dahoon Holly	<i>Ilex cassine</i>	mixed	30	container
Myrtle-Leaf Holly	<i>Ilex myrtifolia</i>	mixed	20	container
Other tree or shrub species, as necessary, for diversity and seed or fruit production				

Flatwoods

After the initial harvesting of the plantation slash pine and at least 2 prescribed burns, the Mesic Flatwoods and Wet Prairie/Wet Flatwoods communities will be under-planted by longleaf pine (*Pinus palustris*) as containerized seedlings. The Mesic community will be planted at 150/ac., and density will decrease to 100/ac. in the wet prairie/wet flatwoods. Areas of the wet prairie/wet flatwoods that show good recruitment of wiregrass and prairie groundcover (>60%) will not be planted with additional trees, and the QMS may further thin planted slash pine to expand the area of open prairie, which would be considered a desirable inclusion in the mosaic of this open and sparse canopy community.

Both mesic and wetland flatwoods generally have a dense and diverse pyrophytic groundcover of grasses and forbs, often co-dominant with palmetto or shrub components. However, silviculture practices often extirpate or severely depress populations of typical keystone species such as *Aristida beyrichiana*, *Sporobolus floridanus*, *Ctenium aromaticum*, *Andropogon arctatus*, *Andropogon mohrii*, *Muhlenbergia expansa*. Following the initial prescribed fire after pine harvest, the QMS will inspect the site to identify areas where perennial grasses would not be expected to re-establish under the proposed fire regime. The QMS will map significant areas (~5-10 ac.) identified as having <30% (qualitative) relative dominance of perennial grasses, and submit a plan for groundcover augmentation.

Herbaceous groundcover augmentation within these areas may be through direct seeding and/or wiregrass plugging. Viable seed will be collected from onsite or other appropriate donor sites for hand dispersal onto appropriate scarified soils. In addition, wiregrass plugs will be planted on 3' centers in clusters within the deficient areas. As an initial estimate, 150,000 plugs will be added to the flatwoods assessment areas. However, plant survivorship and other natural or seeding recruitment will dictate how much planting will be necessary to attain success criteria and a viable community. While initial assessment and planting plans will be developed following harvest and fire in each management unit, the planting may be more effectively implemented following a second burn and be conducted site-wide or by management unit.

Disturbed areas

Following final grading activities associated with construction, or restoration of food plots and skidder or off-road vehicle trails, bare areas will be seeded and planted, as necessary to prevent erosion and to ensure a vegetation trend toward the target community. Initial vegetation may require inoculation with appropriate topsoils stockpiled from construction fill areas, native annual grass seed, and/or seed collected from appropriate donor sites. In addition, 2,500 wiregrass plugs and 150 long leaf pine seedlings will be planted per acre in Mesic Flatwoods and Wet Prairie/Wet Flatwoods. Slough Swamp and Cypress/Mixed Hardwoods areas will be initially planted with pond cypress seedlings on 10 foot centers.

Within 6 months following each planting event, the QMS shall provide a summary of the species, size, maps, density and dates of the actual plantings. Areas where plantings were concentrated will be shown on a map, as well as areas determined to not require supplemental planting. Any additional documentation of plantings (photos, work and/or order receipts) may be useful in establishing verification of activity completion. Prior to the credit release for the completion of construction and planting, the QMS shall submit a summary of individual planting reports. Additional planting may be required to attain community success criteria.

ATTACHMENT F: Credit Summary

St. Marks Mitigation Bank - UMAM Assessment																
Assessment Area Number	COMMUNITY	AREA (acres)	SCORE						UMAM W/OUT MIT.	UMAM WITH MIT.	DELTA	TIME LAG	P FAC-TOR	RISK	RFG	CREDIT
			LOCATION AND		WATER ENVIRONMENT		COMMUNITY STRUCTURE									
			W/OUT or CUR.*	WITH MIT.	W/OUT or CUR.*	WITH MIT.	W/OUT or CUR.*	WITH MIT.								
1	Timbered Slough	188.00	6.00	10.00	9.00	10.00	6.00	8.00	0.70	0.93	0.23	1.46	0.80	1.00	0.13	24.04
2	Intact Drainage Slough	175.00	6.00	10.00	10.00	10.00	7.00	10.00	0.77	1.00	0.23	1.00	0.90	1.00	0.21	36.75
3	Cypress/Mixed Hardwoods	371.40	6.00	9.00	8.00	9.00	5.00	8.00	0.63	0.87	0.23	1.25		1.00	0.19	69.33
4	Wet Prairie/ Wet Flatwoods	569.40	6.00	10.00	7.00	9.00	4.00	9.00	0.57	0.93	0.37	1.14		1.25	0.26	146.51
5	Mesic Flatwoods	129.60	7.00	9.00	n/a	n/a	3.00	9.00	0.50	0.90	0.40	1.10		1.25	0.29	37.70
6	Freshwater Marsh	3.60	7.00	9.00	8.00	8.00	9.00	9.00	0.80	0.87	0.07	1.00		1.00	0.07	0.24
	Roads	11.65														
	TOTALS	1448.65														314.57

Wet Prairie/Flatwoods Credits : 165.36

Cypress/Mixed Hardwood Credits : 149.21

Credit types were determined based on the two most distinct categories - one characterized by little canopy and short hydroperiod, the other being principally forested with a longer hydroperiod. Credits from mesic flatwoods were divided equally into the 2 credit types, as these uplands support both credit types. The marsh was included in the forested system because it is a small inclusion in that larger system.

Attachment G - Ledger

St. Marks Mitigation Bank Ledger
Permit No. 0295847-001
Month x, 2011

Wet Prairie/Flatwoods: Total Potential Credits = 165.36

Release or Impact Permit	Permit Date	Issuing Agency	Ledger Modification	Credits Added	Credits Used	Balance	Notes
Credit Release	date	FDEP		xx		xx	easement; security; QMS
Project 1	xxxxxxx	FDEP	xx/xx/11		y	xx-y	
Project 2	xxxxxxx	FDEP	xx/xx/11		y	xx-y	

Cypress/Mixed Forest: Total Potential Credits = 149.21

Release or Impact Permit	Permit Date	Issuing Agency	Ledger Modification	Credits Added	Credits Used	Balance	Notes
Credit Release	date	FDEP		xx		xx	easement; security; QMS
Project 3	xxxxxxx	FDEP	xx/xx/11		y	xx-y	
Project 4	xxxxxxx	FDEP	xx/xx/11		y	xx-y	

Attachment H: Flatwood Species List

SPECIES	ABUNDANCE	CURRENTLY PRESENT	ANTICIPATED
<i>Acer rubrum</i>	Common	X	
<i>Aletris lutea</i>	Common	X	
<i>Amspinoa tabernaemontana</i>	Occasional	X	
<i>Andropogon capillipes</i> Nash	Common	X	
<i>Andropogon glomeratus</i>	Common	X	
<i>Andropogon perangustatus</i>	Common	X	
<i>Andropogon virginicus</i>	Common	X	
<i>Anthraenantia rufa</i>	Occasional	X	
<i>Aristida beyrichiana</i>	Abundant	X	
<i>Aristida palustris</i>	Common	X	
<i>Arnoglossum ovatum</i>	Occasional		X
<i>Arnoglossum sulcatum</i>	Occasional		X
<i>Arundinaria tecta</i> (Walt.) Walt. Ex Muhl.	Occasional	x	
<i>Asclepias lanceolata</i>	Common	X	
<i>Asclepias longifolia</i>	Occasional	X	
<i>Aster dumosus</i>	Common	X	
<i>Balduina uniflora</i>	Common		X
<i>Bartonia verna</i>	Common	X	
<i>Bidens</i> sp.	Occasional	X	
<i>Bigelovia nudata</i>	Common	X	
<i>Calopogon barbatus</i>	Infrequent		X
<i>Calopogon tuberosus</i>	Occasional		X
<i>Carex glaucescens</i>	Occasional	X	
<i>Centelia repanda</i> (Pers.) Small	Common	X	
<i>Chaptalia tomentosa</i>	Common	X	
<i>Chrysopsis mariana</i>	Common		X
<i>Cladium jamaicense</i>	Abundant	X	
<i>Clethra alnifolia</i>	Occasional	X	
<i>Cyrilla racemiflora</i>	Occasional	X	
<i>Coreopsis falcata</i>	Common	X	
<i>Coreopsis linifolia</i>	Common		X
<i>Ctenium aromaticum</i>	Abundant	X	
<i>Dichanthelium consanguineum</i>	Occasional	X	
<i>Dichanthelium erectifolium</i>	Common	X	
<i>Dichanthelium scabriusculum</i>	Common	X	
<i>Dichanthelium strigosum</i>	Common	X	
<i>Diodia virginiana</i>	Occasional	X	
<i>Drosera capillaris</i>	Abundant	X	

Attachment H: Flatwood Species List

SPECIES	ABUNDANCE	CURRENTLY	
		PRESENT	ANTICIPATED
<i>Elytraria caroliniensis</i>	Occasional	X	
<i>Erigeron vernus</i>	Common	X	
<i>Eriocaulon compressum</i>	Common	X	
<i>Eriocaulon decangulare</i>	Common	X	
<i>Eupatorium leucolepis</i>	Common	X	
<i>Eupatorium mohrii</i>	Common	X	
<i>Euthamia graminifolia</i> var. <i>hirtipes</i>	Common	X	
<i>Fimbristylis puberula</i>	Occasional		X
<i>Gratiola pilosa</i>	Occasional	X	
<i>Helianthus heterophyllus</i>	Common	X	
<i>Helianthus radula</i>	Common		X
<i>Helenium pinnatifidum</i>	Occasional	X	
<i>Hypericum brachyphyllum</i>	Common	X	
<i>Hypericum crux-andaee</i>	Occasional	X	
<i>Hypericum fasciculatum</i>	Common	X	
<i>Hypericum hypericoides</i>	Infrequent	X	
<i>Hyptis alata</i>	Common	X	
<i>Hypoxis juncea</i>	Common	X	
<i>Ilex coriacea</i>	Occasional	X	
<i>Ilex glabra</i>	Common	X	
<i>Ilex myrtifolia</i> Walt.	Occasional	X	
<i>Juncus polycephalus</i>	Occasional	X	
<i>Juncus scirpoides</i>	Occasional	X	
<i>Lachnanthes caroliniana</i>	Common	X	
<i>Lachnocaulon anceps</i>	Common		X
<i>Leucothoe racemosa</i>	Common	X	
<i>Liatris spicata</i>	Common	X	
<i>Lillium catesbaei</i>	Rare		X
<i>Linum floridana</i>	Common	X	
<i>Liquidambar styraciflua</i>	Common	X	
<i>Lobelia glandulosa</i>	Infrequent	X	
<i>Lophiola aurea</i>	Infrequent	X	
<i>Ludwigia linearis</i>	Occasional		
<i>Ludwigia pilosa</i>	Occasional		
<i>Ludwigia palustris</i>	Occasional		
<i>Ludwigia virgata</i>	Occasional		X

Attachment H: Flatwood Species List

SPECIES	ABUNDANCE	CURRENTLY	
		PRESENT	ANTICIPATED
<i>Lycopus angustifolius</i>	Occasional	X	
<i>Lyonia fruticosa</i>	Common	X	
<i>Lyonia lucida</i>	Occasional	X	
<i>Magnolia virginiana</i>	Common	X	
<i>Marshallia tenuifolia</i>	Occasional	X	
<i>Melanthium virginicum</i>	Rare		X
<i>Mitreola sessilifolia</i>	Common	X	
<i>Muhlenbergia expansa</i>	Common	X	
<i>Myrica cerifera</i>	Common	X	
<i>Myrica heterophylla</i>	Common		X
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Common	X	
<i>Osmunda cinnamomea</i>	Occasional	X	
<i>Osmunda regalis</i>	Infrequent	X	
<i>Oxypolis filiformis</i>	Occasional		X
<i>Panicum rigidulum</i>	Common	X	
<i>Panicum verrucosum</i>	Common	X	
<i>Paspalum praecox</i>	Infrequent	X	
<i>Persea palustris</i>	Common	X	
<i>Photinia pyrifolia</i>	Occasional	X	
<i>Pinguicula caerulea</i>	Occasional	X	
<i>Pinguicula pumila</i>	Occasional	X	
<i>Pinus elliotii</i>	Common	X	
<i>Pinus palustris</i>	Common	X	
<i>Pityopsis graminifolia</i>	Common	X	
<i>Pluchea rosea</i> / <i>foetida</i>	Occasional	X	
<i>Polygala lutea</i>	Common	X	
<i>Polygala crenata</i>	Occasional	X	
<i>Polygala nana</i>	Common		X
<i>Proserpinaca pectinata</i>	Occasional	X	
<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	Common	X	
<i>Pterocaulon pycnostachyum</i>	Common	X	
<i>Rhexia alifanus</i>	Common	X	
<i>Rhexia lutea</i>	Occasional		X
<i>Rhexia petiolata</i>	Common		X
<i>Rhynchospora chapmanii</i>	Common		X
<i>Rhynchospora ciliaris</i>	Occasional		X
<i>Rhynchospora fascicularis</i>	Common		X
<i>Rhynchospora plumosa</i>	Common		X
<i>Rhynchospora rariflora</i>	Common	X	
<i>Rudbeckia graminifolia</i>	Occasional	X	

Attachment H: Flatwood Species List

SPECIES	ABUNDANCE	CURRENTLY PRESENT	ANTICIPATED
<i>Sabal palmetto</i>	Infrequent	X	
<i>Sabatia bartramii</i>	Infrequent		X
<i>Sabatia macrophylla</i>	Infrequent	X	
<i>Saccharum baldwinii</i>	Occasional	X	
<i>Saccharum giganteum</i>	Occasional		X
<i>Sarracenia flava</i>	Occasional		X
<i>Schoenus nigricans</i>	Occasional	X	
<i>Scleria baldwinii</i>	Infrequent		X
<i>Scleria georgiana</i>	Infrequent		X
<i>Scleria pauciflora</i>	Common		X
<i>Serenoa repens</i>	Common	X	
<i>Sisyrinchium angustifolium</i>	Occasional	X	
<i>Smilax laurifolia</i>	Occasional	X	
<i>Solidago stricta</i>	Common	X	
<i>Sporobolus floridanus</i>	Abundant	X	
<i>Stillingia aquatica</i>	Common	X	
<i>Styrax americanus</i>	Common	X	
<i>Taxodium ascendens</i>	Common	X	
<i>Triantha racemosa</i>	Common		X
<i>Tridens ambiguus</i>	Infrequent	X	
<i>Utricularia subulata</i>	Common	X	
<i>Viola lanceolata</i>	Common	X	
<i>Woodwardia virginica</i>	Occasional	X	
<i>Xyris ambigua</i>	Common	X	
<i>Xyris caroliniana</i>	Common	X	
<i>Xyris difformis</i>	Rare		X
<i>Xyris flabelliformis</i>	Common	X	
<i>Xyris platylepis</i>	Common	X	
<i>Zephyranthes atamasco</i>	Occasional	X	
<i>Zephyranthes treatiae</i>	Occasional	X	
<i>Zigadenus densus</i>	Occasional		X
<i>Zigadenus glaberrimus</i>	Occasional		X

ATTACHMENT I - Monitoring Plan

A monitoring plan has been developed to assess the attainment of ecological goals and milestones for the natural community restoration. Monitoring will be initiated in the first fall (September -December) following the completion of harvest in any management unit; however all units will be monitored. This should provide a range of pre- and mid- management starting conditions. After the initial monitoring, monitoring and reporting methods will be reassessed and may be modified. Monitoring will be conducted annually thereafter until the site is determined to have achieved success criteria; however, only qualitative monitoring is required until all management units have been harvested and burned. Thereafter, the entire monitoring protocol will be conducted.

This plan includes:

1. Qualitative transects.
2. Qualitative disturbed sites monitoring.
3. Permanent Quantitative Quadrats
4. Fixed point photographic stations.
5. Aerial photography

Qualitative Pedestrian Transects

The goal of the Qualitative Pedestrian Transects are to provide the maximum amount of qualitative information over the largest variable area to document the success of the restoration and management activities and to assess how representative the quantitative data is. Twelve semi-random 1,000' transects will be assessed for each monitoring event: 2 transects in the Mesic Flatwoods; 5 transects in Wetland Pine Flatwoods/Wet Prairie; 3 transects in Cypress/Mixed Hardwoods; and 2 transects in Slough Swamp. The start point of each transect will be randomly selected prior to each monitoring event, and the transect will proceed in the best direction to remain in that community, as currently mapped. A turn will be made at the mapped edge of the community if necessary to complete the transect. Figure 1 shows a typical depiction of the qualitative transects with the understanding that these will change over time. A map showing the actual location of each transect during each monitoring event will be provided with each report.

For each transect, observations will be recorded at 4 points (quarters) along the transect. The intent is to stand at the points and observe what is visible within a radius of the point, as follows:

1. Herbaceous cover will be systematically estimated within ~2 meter radius to record total cover estimate, the dominant species (1-3) and their proportion of the cover; proportion of rooted herbaceous vs. rooted shrub stems in the cover.

2. Total shrub cover (area shaded by shrub species) within a 3 meter radius will be estimated and dominant species listed.
3. Tree species, number and size (either dbh or seedling height) of trees rooted within a 5 meter radius will be listed, including visible seedlings and planted trees.
4. Data from these points will be compiled for each community type per sampling event and extrapolated to total cover, relative cover and tree counts/ac.

In addition, along the entire length of the transect, the following assessments will be noted:

5. Health and reproductive status of vegetation, cover estimates, dominant species, recruitment of new species, hydrologic condition, and general condition with respect to target community type.
6. Signs of wildlife usage.
7. Locations of nuisance species and listed species observed will be GPS located and mapped.
8. Estimates of burn coverage and notable effects (eg. woody debris consumption, shrub or herbaceous response, tree scorch, etc.);
9. Management notes, including fuel loads, hog damage, planted material survival, aberrant conditions such as drought or flooding, anticipated management needs (planting, herbicide, fire, etc.)

Each transect will be accompanied by a data sheet. In addition, several "typical" photos will be taken, along with photos of notable observations such as listed or exotic species, hog damage, areas not properly mapped, areas in need of intense management, etc. The purpose of the qualitative information is to provide a visual monitoring of the events over a prolonged period, evaluate how representative quantitative data is, assess the degree to which communities are attaining success, assess the mapping and criteria for communities, evaluate management activities and needs, identify potential problems and appropriate solutions. Reports will address these topics supported by field observations.

Disturbed Areas

In addition to the qualitative transects, the disturbed areas will be monitored qualitatively. All sites targeted for spot restoration as identified in Figure 7 of the permit, will be routinely inspected during security and management inspections. In addition, at least every other year, these sites will include a detailed monitoring inspection to include for each site: estimates of cover by desirable species, exotic coverage, percent survival of planted material, evidence of erosion, recruitment, management needs, assessment of success and trends and a representative photograph.

Permanent Quantitative Quadrats

The Permanent Quantitative Quadrats (PQQ) provide quantitative data that, along with the qualitative observations, determine attainment of interim and final success. Twelve permanently marked and GPS located 200 x 100 foot quadrats will be assessed for each monitoring event: 2 transects in the Mesic Flatwoods; 5 transects in Wetland Pine Flatwoods/Wet Prairie; 3 transects in Cypress/Mixed Hardwoods; and 2 transects in Slough Swamp (1 each in Timbered and Intact). Quadrats will be located to the greatest degree possible to cover a uniform representation of the community being sampled (ie. transitional zones between communities will be avoided).

Quadrat data: The following data will be recorded for the whole quadrat:

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. between 1" and 4".
3. List of exotic or nuisance species in overall quadrat and estimation of % cover.
4. List of all species within overall quadrat based upon random transects covering the most area as possible

Trees and shrubs: Within each quadrat, four (4) nested quadrats each 20' x 20' will be established for the purpose of determining tree and woody shrub cover (Figure 2). Woody shrubs shall be those as defined in the success criteria of the permit. Percent cover shall be determined using the following interval ranges:

Shrubs - All Communities

Category 1 <30% ; Category 2 30-50%; Category 3 >50%

Trees - Cypress/Mixed Hardwoods and Slough Swamp

Category 1 <50% of FAC, FACW & OBL species

Category 2 51%-69% of FAC, FACW & OBL species

Category 3 ≥70% of FAC, FACW & OBL species

Mast Producing Species - Cypress/Mixed Hardwoods and Slough Swamp

Category 1 <10% Category 2 >10%

Groundcover: Within each 20' x 20' quadrat, four (4) nested 3' x 3' quadrats will be established for the purpose of herbaceous cover. Woody shrubs shall be those as defined in the success criteria of the permit. Percent cover shall be determined using the following interval ranges in the Wet Flatwoods/Wet Prairie and Mesic Flatwoods:

Category 1 1-10%; Category 2 11-45%; Category 3 46-69%;

Category 4 70-90%; Category 5 91-100%

In addition the amount of % bare ground will be recorded to the nearest factor of 10 (10%, 20%, etc.)

Combined Tree/Shrub/Groundcover - Cypress/Mixed Hardwoods and Slough Swamp

Category 1 <80% of FACW & OBL species

Category 2 ≥80% of FACW & OBL species

Line Intercept: The boundary of each 200 × 100 foot quadrat will also be used to establish a line-intercept sampling program. The frequency of review will be 3 foot intervals and will be used to demonstrate density to be compared to the estimates of cover generated in the nested quadrats. Recording shall be by species.

Photo-documentation

In addition to the qualitative transect photos, the following photographic points will be established as follows:

1. Each corner of the permanent quadrat, facing the middle of the quadrat.
2. Ten additional locations showing landscape conditions using permanent orientation and perspective that are outside of the above. These stations will be conveniently located along trails and access and will be sampled quarterly.
3. Aerial photography will be provided as obtained from available public sources, as either oblique or rectified, with no photos provided being more than 2 years old.

Reports

Annual reports will be provided by January 30 following monitoring events. The reports will provide an executive summary/evaluation of success and management, summarize methods, provide location figures, sampling dates and notes on any conditions that affect data; summary data tables of qualitative and quantitative sampling (supported by electronic copies of data sheets and master data tables), representative, illustrative, and notable photos (supported by electronic copies of other required site photos), the most recent aerial photo(s), and a discussion section for each community type that assesses success, management and monitoring.

St. Marks Mitigation Bank

Qualitative Pedestrian Transects

Monitoring Figure 1

 Wetland Bank

Restored Community Types

 Mesic Flatwoods

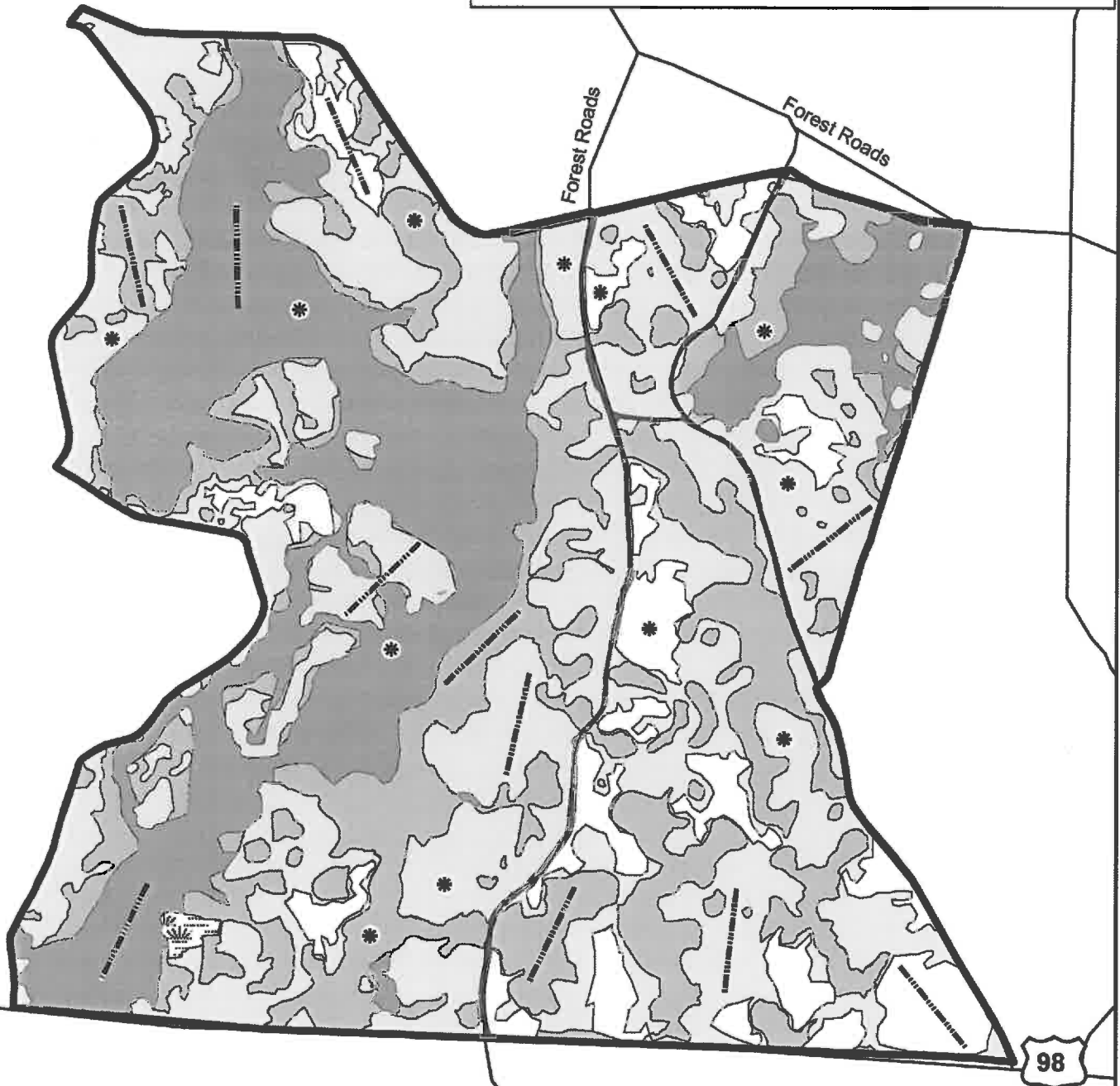
 Wet Prairie/ Wet Flatwoods

 Cypress/ Mixed Wetland Hardwoods

 Slough Swamp

 Roads and Ditches

 Freshwater Marsh



07/07/2011



1,500 750 0 1,500
Feet

 Transects

 Quadrants

