



# Florida Department of Environmental Protection

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## ENVIRONMENTAL RESOURCE/MITIGATION BANK PERMIT MODIFICATION

**Permit 0140969-001**, issued 2/18/00  
Tetra Tech EC, Inc.  
c/o Mr. Jonathan Weiss  
759 S. Federal Highway, Suite 314  
Stuart, Florida 34994

**Project:** Loxahatchee Mitigation Bank  
**Modification Number:** 0140969-096  
**Modification Date:** December 1, 2011  
**Expiration Date:** Perpetual  
**County:** Palm Beach

This permit is issued under the authority of Part IV of Chapter 373, F.S., and Title 62-342, Florida Administrative Code (F.A.C.). The activity is not exempt from the requirement to obtain an Environmental Resource Permit. Pursuant to Operating Agreements, 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. 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 conduct the work attached hereto or on file with the Department and made a part hereof. This permit is 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.

**PROJECT DESCRIPTION:**

The Loxahatchee Mitigation Bank (LMB) was established on 1,263 acres in Palm Beach County, in accordance with permit 0140969-001, issued February 18, 2000. The permittee is under contract with the South Florida Water Management District (SFWMD), who owns the property and will assume the long-term management. This major modification of the permit updates figures and specific conditions for clarity and to reflect changes in mitigation targets and permit conditions, principally based on additional topography and hydrology data. The project is designed to enhance degraded eastern Everglades mosaic habitat by constructing perimeter levees with water control structures to improve hydrology and water quality, by eradicating exotic and nuisance vegetation, and by establishing a long-term management program including exotic species management and prescribed fires. The work implemented under this permit generates credits to be used as mitigation within the service area for unavoidable wetland impacts to freshwater herbaceous and forested wetlands typical of this eastern Everglades mosaic. The site's varying topography and hydroperiods are expected to support a mosaic of vegetation communities including forested wetlands (dominated by cypress, pond apple, red maple) and freshwater marshes, ranging from long-hydroperiod muck soils with sawgrass and emergent marsh plants to short hydroperiod sandy soils with a more diverse community of marsh plants and grasses. The bank is allocated 520.4 herbaceous and 121.2 forested freshwater credits, for a total of 641.6 potential credits.

**PROJECT LOCATION:**

The activity is located in Palm Beach County, approximately 1 mile west of U.S. 441, between S.R 806 (Atlantic Ave.) and S.R. 808 (Glades Rd.), directly east of the Loxahatchee National Wildlife Refuge Water Conservation Area 1, Sections 14, 23, 26 and 35, Township 46 South and Range 41 East, and Section 2, Township 47 South and Range 41 East, Class III, Waters (Figure 1 in Attachment A) and has a mitigation service area (MSA) consisting of portions of Martin, Palm Beach and Broward Counties (Figures 13A-D in Attachment A). Additionally, the permittee has entered into an agreement with Broward County that governs the use of the LMB in Broward County.

**GENERAL CONDITIONS: (from original 2/18/00 permit)**

1. All activities authorized by this permit shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit and Part IV, Chapter 373, F.S.
2. During construction, this permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by the Department staff. The permittee shall require the contractor(s) to review the complete permit prior to commencement of the activity authorized by this permit.
3. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction and permanent control measures shall be completed within 7 days after completion of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and berm vegetation has been established. All practices shall be in accordance with the guidelines and specifications described in Chapter 6 of the Florida Land Development Manual; A Guide to Sound Land and Water Management (Department of Environmental Regulation, 1988), unless a project-specific erosion and sediment control plan is approved under this permit. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.
4. The permittee shall notify the Department of the anticipated construction start date within 30 days of the date that this permit is issued. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the Department an "Environmental Resource Permit Construction Commencement" notice (Form No. 62-343.900(3), F.A.C.) indicating the actual start date and the expected completion date.

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5. When the duration of construction will exceed one year, the permittee shall submit construction status reports to the Department on an annual basis utilizing an "Annual Status Report Form" (Form No. 62-343.900(4), F.A.C.). Status Report Forms shall be submitted the following June of each year.
6. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the supplied "Environmental Resource Permit As-Built Certification by a Registered Professional" (Form No. 62-343.900(5), F.A.C.). The statement of completion and certification shall be based on on-site observation of construction or review of as-built drawings for the purpose of determining if the work was completed in compliance with permitted plans and specifications. This submittal shall serve to notify the Department that the system is ready for inspection. Additionally, if deviations from the approved drawings are discovered during the certification process, the certification must be accompanied by a copy of the approved permit drawings with deviations noted. Both the original and revised specifications must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawing. All surveyed dimensions and elevations shall be certified by a registered surveyor.
7. The operation phase (identified in Specific Condition 13 as the completion of construction and submittal of the "as-built" report) of this permit shall not become effective: until the permittee has complied with the requirements of condition (6) above, has submitted a "Request for Transfer of Environmental Resource Permit Construction Phase to Operation Phase" (Form No. 62-343.900(7), F.A.C.), and the Department determines the system to be in compliance with the permitted plans and specifications.
8. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the initiation of the permitted use of site infrastructure located within the area served by that portion or phase of the system.
9. General Condition 9 is not applicable and has been omitted from this permit because the permittee will also be the entity managing the operational phase of the permit. It is retained here only as a placeholder to be consistent with adopted General Condition numbering.

10. Should any other regulatory agency require changes to the permitted system, the permittee shall notify the Department in writing of the changes prior to implementation so that a determination can be made whether a permit modification is required.

11. This permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any activity approved by this permit. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40E-4 or Chapter 40E-40, F.A.C.

12. The permittee is hereby advised that Section 253.77, F.S. states that a person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required lease, license, easement, or other form of consent authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on sovereignty lands or other state-owned lands.

13. The permittee is advised that the rules of the South Florida Water Management District (SFWMD) require the permittee to obtain a water use permit from the SFWMD prior to construction dewatering, unless the work qualifies for a general permit pursuant to subsection 40E-20.302(4), F.A.C., also known as the "No Notice" rule.

14. The permittee shall hold and save the Department harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any system authorized herein.

15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.

16. The permittee shall notify the Department in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of a permitted system or the real property on which the permitted system 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 corrective actions that may be

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required as a result of any violations prior to the sale, conveyance or other transfer of the system.

17. Upon reasonable notice to the permittee, Department authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with the plans and specifications approved by the permit.

18. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the appropriate Department office.

19. The permittee shall immediately notify the Department in writing of any previously submitted information that is later discovered to be inaccurate.

**SPECIFIC CONDITIONS:** Please note that some Specific Conditions further define or substitute for General Conditions 4-9, 12-13, and 18 listed above. In addition, some Specific Conditions below have been updated in this modified permit to reflect the work that has already been accomplished since its original issuance on February 18, 2000. The Specific Condition numbers are the same as the original permit.

**General**

1. The permittee is hereby advised that any activities involving the use of lands of the state must have Board of Trustees consent pursuant to Rule 18-14, F.A.C.

2. If historical or archaeological artifacts at any time within the project site the permittee shall immediately notify the district office and the Bureau of Historic Preservation, Division of Historical Resources.

**Commencement requirements**

3. Commencement notice was provided to the Department of Environmental Protection on 12/21/2001, as required.

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

5. The following requirements were completed prior to construction and credit release: and the submitted to the Department, as required:

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- a. A copy of the recorded clerk-of-the-court certified Conservation Easement was received by the Department as required in Specific Condition 8;
- b. A Qualified Mitigation Supervisor was retained as required in Specific Condition 7; and
- c. Proof of financial responsibility was obtained as required in Specific Condition 9.

6. The mitigation bank permit and this major modification shall be perpetual unless revoked or modified.

7. Project Oversight. The permittee shall retain a Qualified Mitigation Supervisor (QMS) (a person or persons) to oversee all aspects of mitigation bank site implementation, management, monitoring, and corrective actions in this permit until final success criteria are met.

- a. The QMS shall have the responsibility to ensure that the mitigation bank work is conducted in accordance with the permit.
- b. The approved QMS team as of November, 2011, is Kristin Bennett, Brian Proctor and Pat Zuloaga, of Tetra Tech EC, Inc.
- c. Within 30 days of the discharge of any approved QMS, the permittee shall submit the name and supporting documentation of a new QMS to the Department for its review and approval.
- d. The permittee shall have the approved qualified QMS review the conditions of this permit that pertain to environmental improvement to ascertain whether any criteria need to be modified or submitted as a minor modification.

8. Protection and Preservation. The SFWMD property on which the Loxahatchee Mitigation Bank is implemented was preserved and protected in accordance with a conservation easement granted to the Department on 7/31/2000 and recorded on pages 565-580 of Book 11922, Palm Beach County Records. The permittee provided title insurance, legal descriptions and surveys of the conservation easement, as required.

9. Financial Assurance. The permittee shall provide the Department with the financial responsibility mechanisms required by Rule 62-342.700 F.A.C. (September 12, 1995). The permittee shall secure financial assurance for construction activities, monitoring, maintenance and reporting prior to success, and long-term management activities after the bank has reached success.



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- a. The permittee has established the financial assurance for the construction and implementation by Safeco Insurance Company of America surety bond number 6477280 (Bond 1), as modified from time to time, payable into a Standby Trust Account, established September 25, 2000, and currently held by US Bank National Association (account # 4076015072). The amount of Bond 1 is based on the estimated remaining costs for construction, monitoring and maintenance prior to success, and will be released following the determination that the bank has reached success criteria and the perpetual management trust is funded.
- b. The permittee has established the financial assurance for perpetual management by Safeco Insurance Company of America surety bond number 6477279 (Bond 2), as modified from time to time, payable into a Standby Trust Account, established September 25, 2000, and currently held by US Bank National Association (account # 4076015081). The amount of financial assurance shall be adequate to provide interest (at an assumed 6% rate) equivalent to the annualized cost estimate for implementation of the management plan in Attachment I. Bond 2 shall be released when the Trust is funded in cash.
- c. All cost-estimates shall be reviewed and appropriate financial responsibility instrument adjustments shall be conducted every two years in accordance with Rule 62-342.700 (7) F.A.C.
- 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 Account may be withdrawn for use by the permittee or Department-authorized operating entity for long-term management purposes once the mitigation bank has been assessed for final success criteria determination and any associated credit release. Disbursement shall be made by the trustee at the written direction of the Department in accordance with the trust agreement.

**Mitigation Plan** – The project goal is to enhance existing vegetation (Figure 2) and hydrology to an Everglades mosaic of herbaceous and forested wetlands (Figure 3) by hydrology and vegetation enhancements (Specific Conditions 10-13).

10. Construction. Construction features and construction activities are shown in Figure 4, Attachment A. Construction at the site has been completed in accordance with the February 18, 2000 permit conditions, and included:



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- a. Construction of a perimeter berm with water control structures to retain rainfall and a bypass ditch to re-route existing runoff and agricultural discharges offsite:
  - i. Constructed one control structure and one emergency discharge structure on the western bank of the E-1W-N.
  - ii. Improved the western bank of the E-1W-N (northeastern boundary of the bank) to a minimal elevation of 18' NGVD. Extend a composite berm, constructed to elevation 18' NGVD, westward from the northern boundary of this E-1W-N bank improvement to intersect with Levee 40.
  - iii. Constructed a control structure in northeast corner new berm – SE Parcel.
  - iv. Constructed a composite berm around the eastern and southern boundaries of the Southeast Parcel.
  - v. Constructed a 36 ft. wide levee (berm) along the eastern and southern boundaries of the South Parcel.
  - vi. Constructed a bypass drainage ditch system to collect runoff and agricultural discharge of adjacent property owners and re-route it along the eastern and southern boundaries of the South Parcel.
  - vii. Installed erosion protection where pumped agricultural discharge water will discharge into the LWDD Lateral-40.
  - viii. Constructed one emergency discharge structure along the southern border of the South Parcel.
  - ix. Improved the access road adjacent to E-1W-S.
  - x. Constructed a composite berm with a minimum elevation of 18' NGVD to provide a southern barrier to the North Parcel and to protect the LWDD's Horticultural Disposal Area.
  - xi. Removed the road and side ditches that traverse the South Parcel.
  - xii. Planted areas, where necessary, with appropriate vegetation.
- b. In addition to the hydrologic improvements, the following habitat enhancements have been implemented or eliminated as described below:
  - i. Installed appropriate security measures around the perimeter of the Loxahatchee Mitigation Bank.
  - ii. "Mudflat" habitat is no longer required to be constructed.
  - iii. Shallow depression channels are no longer required to be created.
  - iv. Berm slopes and setback areas were stabilized with sod and shall be maintained with herbaceous vegetation by routine mowing.
  - v. Ten wood stork and 3 osprey nesting platforms have been erected in locations determined by the QMS.
- c. "As-built" engineering drawings were provided, construction inspected and credit released in accordance with permit conditions.

11. Turbidity controls. Best management practices for the control of turbidity and erosion were implemented in accordance with the original permit conditions.
12. Exotic vegetation eradication. Initial exotic vegetation eradication has been completed in accordance with original and previously modified permit conditions. However, continued and adaptive management for invasive exotic vegetation is required. The permittee shall submit annual Vegetation Management Plans developed in consultation with the SFWMD and detailing previous management activities. The 2011 Vegetation Management Plan is included as Attachment C. These plans are due annually in January for the year's activities until the site has been determined to have attained final success and the approved long-term management plan and reporting is initiated. The following activities were used or shall be implemented to control vegetation.
  - a. Inundation was implemented to initially treat Brazilian pepper.
  - b. Application of herbicides and mechanical treatments were also used for initial eradication and removal of Brazilian pepper.
  - c. Manual and limited use of aerial herbicide treatments were used to eradicate exotics and nuisance vegetation throughout the site.
  - d. Prescribed burns shall be used to control re-growth of exotic, inappropriate and invasive species, and to promote regeneration of a mosaic of Everglades communities. The fire management plan to be used is detailed in Attachment B and Figure 11.

It is expected that natural recruitment will account for most of the re-vegetation after exotic vegetation removal in most areas. However, in order to meet the vegetation cover and structure success criteria in Specific Condition 21, planting may be required in some areas. The QMS is responsible for determining the area to be planted and the plant materials to be used in order to optimize success and minimize exotic infestation. Re-vegetation activities shall be described in detail in the Annual Vegetation Management Plan, including anticipated quantities, species, and location of where the plantings are anticipated to occur. The Annual Vegetation Management Plan replaces the Re-vegetation Plan of the original permit.

13. Work schedule. Completion of construction activities and attainment of success criteria is expected to occur over a 12-15 year period. The following timetable provides a sequence of activities with both completion date and approximate anticipated dates; however, the dates are relative estimates to be used as guidelines. Determination of success is based on Specific Condition 21, not the anticipated date in the following table.

**Sequence and Estimated Timetable for Construction and Implementation**

<b>Activity</b>	<b>Date</b>
File Conservation Easement	7/31/2000
Financial Assurance for Construction & Implementation and Long-Term Mgmt	9/28/2000
<b>Activity</b>	<b>Date</b>
Submit Pre-Construction Monitoring Report	6/2/2003
Initiate activities	12/26/2001
Submit As-Built Report (by parcel)	South & SE Parcels- 1/14/2002; North parcel: 2/24/2002
Complete Exotics Eradication (by parcel)	South & SE Parcels 12/22/2003; North parcel: 2/28/2002
<b>Short-Term Monitoring and Maintenance Period</b>	
Submit Time Zero Report (after completion of entire bank construction)	Completed 2003
Submit First Annual Report (one year after time-zero report)	Completed Fall 2003
Submit Annual Reports (monitor in fall; report in early following year)	Annually in spring-through year 8
Demonstrate Success Attainment	2016
<b>Start Long-Term Management Period</b>	~ 2016

**Banking Operations**

14. The purpose of this permit is to authorize the permittee to implement a mitigation bank. 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. The permittee understands that its failure to completely and timely comply with all of the conditions of this permit may result in a revocation or suspension of the permit and that the release or withdrawal of mitigation credits may be suspended.

15. 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 withdrawn. Mitigation credits shall again be available for withdrawal if the permittee comes back into compliance.

16. Mitigation Plan and Potential Credits. As a result of the authorized mitigation plan activities, the Loxahatchee Mitigation Bank will result in approximately 870 acres of freshwater marsh and 355 acres of freshwater forested wetlands. About 40 acres of berms, ditches and canals are also located on the site but are not included as part of the preservation or credit assessment area.

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The total number of potential credits was determined prior to permit issuance by an interagency review team (IRT) using the M-WRAP\* methodology, based on several subcategories of existing and anticipated communities, and a Mitigation Bank Suitability Index (MBSI), resulting in 641.60 total credits (see Attachment D). These credits are allocated as 520.40 freshwater herbaceous credits and 121.20 freshwater forested credits typical of eastern Everglades mosaic, as represented in the Project Description. The methodology also accounted for impacts (berm and by-pass ditch construction) to the existing wetland acreage within the project boundaries. The credit release schedule in Specific Condition 18 was intended to correspond to incremental attainment of function; however, credits were not assessed to account for time lag and risk. Rather, a guidance letter provided by the Department on April 29, 2003 recommended that impact assessments add an additional 15% to the functional credit requirement to account for time lag and risk.

17. Ledger. In order to track credit releases and withdrawals, a ledger shall be kept indicating all potential, released, withdrawn and available credits. The current ledger is attached as Attachment F.

18. Credit Release Schedule. Mitigation credits have been or will be released for use according to the following Credit Release Schedule (actual dates in italics):

Credit Release Activity	Release Percent	Est. Timetable	Credits	Associated Specific Conditions
<b>Initial Credit Release</b>				
CE and Financial Assurance	15%	<i>11/13/2000</i>	96.20	8 and 9
<b>Construction Credit Releases</b>				
Construction Completion	12.5%	<i>12/27/2002 &amp; 4/09/2003</i>	80.20	10
Exotic Eradication	12.5%	<i>4/2/2002 &amp; 1/09/2004</i>	80.20	12
<b>Interim Success Attainment<sup>^</sup></b>	Up to 50%	1-10 years after issuance	320.80 total	22
<b>Full Success Attainment</b>	10% <sup>Φ</sup>		64.20 <sup>Φ</sup>	21
<b>Total</b>	100%		641.60	

\* MWRAP - Miller, R.E., Jr and B.E. Gunsalus. 1996. Modified Wetland Rapid Assessment Procedure for Mitigation Banks in Florida. Modified by the Mitigation Bank Review Team Development Workgroup. October 3, 1996 Draft. South Florida Water Management District, West Palm Beach, FL.

<sup>^</sup>Per Specific Condition 22, interim success releases were based on the assumption that a total of 50% of the potential credits would be release incrementally, as 21.4 credits for each year (up to 3) of attainment of each of 5 different criteria categories (*exotic cover, appropriate vegetation cover, vegetation composition, wildlife utilization, and hydrology*). The attached ledger (Attachment F) that shows the interim releases to date.

<sup>Φ</sup>The actual value may be higher if all interim criteria credits have not been released prior to final success, or lower based on final success determination per Specific Condition 21.

All credit releases shall be allocated as "herbaceous" and "forested" in the same ratio as the bank's total potential credits (0.81 herbaceous and 0.19 forested). Credits will be released and debited in increments no smaller than hundredths (0.01).

When a credit release activity has been successfully completed, the permittee or their assigned designee may submit a minor modification request (with fee), along with supporting documentation, for the release of the appropriate number of credits. The Department shall review 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.

19. 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. Minor modification requests shall be submitted only by the bank permittee or their assigned designee within 90 days of the issuance of an impact permit or other regulatory action requiring mitigation credits. The modification request shall include:

- a. a complete list of all Department or Water Management District permits (or other applicable regulatory actions) that require mitigation credits from the Loxahatchee Mitigation Bank,
- b. the permit number, issue date and environmental permit processor/reviewer,
- c. an identification of the number and type of wetland credits required under each of these permits.

Minor modification approvals for credit withdrawal shall be issued only to the bank permittee or their assigned designee. An updated mitigation bank credit ledger sheet shall be included by the Department as an attachment to each minor modification approval for credit withdrawal.

20. Mitigation Service Area. The mitigation service area (MSA) is the geographic area within which adverse impacts may be offset by the bank. The MSA for the Loxahatchee Mitigation Bank includes small portions of southern Martin County and most of Palm Beach and Broward Counties west of the US Highway 1, within the South Florida Water Management District as shown in Figure 13A-D. Because of the ecological importance of the Loxahatchee River and Slough (portions of which are Outstanding Florida Waters and Wild and Scenic River), an area surrounding these waterbodies has been excluded from the MSA (Figure 13B). The MSA shall have an exclusion zone consisting of the north and south forks of the Loxahatchee River to 500 feet beyond the 100 year floodplain or 50 feet beyond the landward extent of wetland (delineated according to Rule 62-340, F.A.C., effective July 1, 1994) contiguous with the Loxahatchee River, whichever is greater (Figure 13C). The exclusion zone above the 100 year floodplain shall not include isolated wetlands or historically isolated wetlands that are currently connected to the Loxahatchee River by artificial means, such as ditch, canal, swale, pipe or culvert. A narrative description of these MSA aspects is provided in Figure 13D. Additionally, the permittee has entered into an agreement with Broward County that governs the use of the LMB in Broward County.

Impacts most likely to be offset in the Loxahatchee Mitigation Bank are those proposed in habitats typical of the historic or disturbed eastern Everglades herbaceous or forested wetland systems. Regulated impacts occurring outside the mitigation service area and which meet the requirements of Section 373.4136, F.S., and Rule 62-342.600, F.A.C. may be eligible to use the bank as mitigation and will be reviewed on a case-by-case basis.

#### **Success Criteria**

21. Final Success. The permittee will take every reasonable action to attain the following success criteria by April 2016. In the event permittee does not achieve final success based on data collected prior to April 1, 2016 (end of water year), the Department will make a final determination of the level of success based on site inspections and data to that point and release all or a portion of remaining potential credits based on criteria below. The Department will also release the permittee from the monitoring requirements and may make any necessary modifications to the long term management plan to ensure that the ecological function of the site is maintained or improved in perpetuity.

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The bank shall enhance or restore freshwater herbaceous marsh and forested wetlands typical of a range of eastern Everglades communities as represented in the Project Description. These success criteria have been established as benchmarks indicative of sustainable herbaceous and forested systems. The bank shall be deemed successful when representative monitoring data and visual inspection indicate that *all* of the following criteria have been met without intervention in the form of artificial manipulation of water levels, eradication of undesirable vegetation (other than the routine maintenance described in Specific Condition 24), or replanting of desirable vegetation, for a period of at least one year following the previous interim success.

Regardless of whether interim criteria have been met in previous years, for final success determination, all criteria (a-h) shall be monitored and meet the objective standards or, as determined by the Department, partially or fully meet the target goal for each category. Water level monitoring shall be conducted each year.

**a. Hydrology-** Monitoring and criteria for hydrology success are established at internal, lower elevations where water levels can be accurately measured, and that data, with topography, can be used to approximate actual hydroperiods across the site (see Figure 6 of Attachment A). The following criteria were developed to demonstrate appropriate hydroperiods to support the Everglades target communities. For final success, these criteria shall be met for at least *three* 12-month periods including one of the three years prior to the request for final success. Seven water level monitoring stations (PN1, PS1, PS2, PS3, PS4, PS5, and PSE1 in Figure 6, Attachment A) shall provide primary data used to demonstrate success. As used in this condition, a "year" is a 12-month period, not necessarily a calendar year.

**Entire site:** All areas within the perimeter levees shall meet wetland determination criteria in Rule 62-340, F.A.C.

**North Parcel:** During any year, the following criteria shall be met at each of the water level recording devices to demonstrate appropriate and fluctuating water levels:

- i. inundation or saturation at or above 14.2 NGVD for at least 150 consecutive days
- ii. a minimum inundation at or above 14.75 NGVD for a 30-day period , and
- iii. water levels shall fall below 14.2 NGVD for at least one 30-day period.



**South and Southeast Parcels:** During any year, the following criteria shall be met to demonstrate appropriate and fluctuating water levels:

- i. inundation or saturation at or above 13.5 NGVD for at least 150 consecutive days
- ii. a minimum inundation at or above 14.2 NGVD for a 30-day period, and
- iii. water levels shall fall below 13.5 NGVD for at least one 30-day period.

To allow for variability in weather, this condition recognizes that not all hydrology targets may be met every year in every location. However, for final success and to provide assurance of sustainability, the preponderance of primary and supplemental monitoring data shall support the annual success targets for most of the period of record since the discontinuation of pumping, including the years immediately preceding final success. The Department may determine partial or complete hydrology success, based on overall performance at the time of final success determination.

**b. Nuisance and exotic species:** Invasive exotic vegetation (based on the 2009 list of Invasive Species by the FL Exotic Pest Plant Council (EPPC), Category I) shall not exceed a total of 1% cover, and nuisance vegetation (EPPC, Category II) shall not exceed a total of 3% cover per acre bank-wide. Because quantitative sampling of 100% of the site is not feasible, percent cover will be determined based on the annual vegetation monitoring data outlined in the Monitoring Plan (Attachment H) and verified by visual observation. It is understood that nuisance and exotic species will be treated on an as needed and/or yearly cycle; however, for the purposes of determining the final success and final credit release, these criteria shall be met after at least one full year with only minor (back-pack spot treatment) maintenance treatments. If the Department determines that this criterion cannot be sustained without more robust annual herbicide treatments, final credit release may be adjusted, as noted in Specific Condition 21.h.

**c. Vegetation Cover:**

- i. **Herbaceous Community (~870 acres):** Representative data shall demonstrate at least 80% cover with appropriate native, non-nuisance herbaceous vegetation classified as obligate or facultative-wet (OBL or FACW), with no greater than 25% total cover by woody shrub species (excluding cypress) in the shrub and groundcover strata. Visual inspections will be used to verify cover in the field.
- ii. **Forested Community (~355 acres):** Representative data shall demonstrate at least 50% cover with appropriate OBL or FACW tree species in the canopy stratum.

For the purposes of this permit, appropriate canopy species include: red maple (*Acer rubrum*), cypress (*Taxodium distichium*), pond apple (*Annona glabra*), sweet bay (*Magnolia virginiana*) red bay (*Persea borbonia*), strangler fig (*Ficus aurea*), and dahoon holly (*Ilex cassine*). In addition, a maximum of 30 acres dominated by mature willow (*Salix caroliniana*) may be counted as a portion of the forested community as long as it meets all the other requirements.

Ground cover shall consist of appropriate native, non-nuisance SAV, OBL, or FACW herbaceous species, appropriate shrub species including, but not limited to, buttonbush (*Cephalanthus occidentalis*), *Myrsine guianensis* or wax myrtle (*Myrica cerifera*) <1.5 m overall height, or canopy seedlings. Groundcover density will vary depending on canopy cover, but combined canopy and groundcover shall exceed 80% (i.e., <20% open water or un-vegetated area).

**d. Plant community composition:** For a success determination, each community shall demonstrate the species diversity and composition typical of natural systems. As an objective measure of that target, and to account for variation within the mosaic of natural communities of the eastern Everglades, the following criteria shall be used:

- i. Herbaceous Community: Representative data indicate: (a)  $\geq 70\%$  of the total ground cover shall be comprised of the species listed in Table A; (b) transect data average  $\geq 8$  of these species; and (c) the cumulative total cover by ruderal or colonizing species identified in Table B shall be  $< 30\%$  or demonstrate a decreasing trend.

**Table A. At least 70% of total groundcover comprised by these species**

Common Name	Scientific Name	Common Name	Scientific Name
Saw Grass	<i>Cladium jamaicense</i>	Royal fern	<i>Osmunda regalis</i>
Maidencane	<i>Panicum hemitomon</i>	Cinnamon fern	<i>Osmunda cinnamomea</i>
Giant Bulrush	<i>Scirpus californicus</i>	Hottentot fern	<i>Thelypteris interrupta</i>
Soft Stem Rush	<i>Scirpus valdivus</i>	Whitetop sedge	<i>Dichromena colorata</i>
Pickerel weed	<i>Pontederia cordata</i>	Muhly Grass	<i>Muhlenbergia spp</i>
Duck potato	<i>Sagittaria spp.</i>	South Fl Bluestem	<i>Schizocyrium spp</i>
Spike rush	<i>Eleocharis spp.</i>	Cord Grass	<i>Spartina bakeri</i>
Arrow arum	<i>Peltandra virginica</i>	Broom Grass	<i>Andropogon spp.</i>
Lizard's tail	<i>Saururus cernuus</i>	Beak rushes	<i>Rhynchospora spp.</i>
Fire flag	<i>Thalia geniculata</i>	Sedges	<i>Cyperus spp.</i>
Saltmarsh aster	<i>Aster subulatus</i>	Plume Grass	<i>Erianthus gigantus</i>
Smartweeds	<i>Polygonum spp.</i>	American Cupscale	<i>Sacciolepis striata</i>
Rushes	<i>Juncus spp.</i>	Yellow-eyed grass	<i>Xyris spp.</i>

Additional species may be proposed for approval with appropriate supporting documentation.

**Table B. Cumulative total <30% by these species or demonstrate decreasing trend**

Ruderal species or nuisance species	<i>Baccharis spp</i> ; <i>Commelina spp</i> ; <i>Echinochloa spp</i> ; <i>Eupatorium spp</i> ; <i>Hydrocotyle umbellata</i> ; <i>Ludwigia repens</i> ; <i>Mikania scandens</i> ; <i>Pluchea rosea</i> ; <i>Ptilimnium spp</i> ; <i>Solanium spp</i> ; <i>Typha</i>
-------------------------------------	--

- ii. Forested Community: Canopy stratum in each forested sampling station is dominated by any one of the following species: red maple (*Acer rubrum*), cypress (*Taxodium distichium*), or pond apple (*Annona glabra*). Willow (*Salix caroliniana*) may comprise the dominant canopy for a maximum of 30 acres. Groundcover is dominated by species not classified as ruderal (see Table B above).

**e. Wildlife Utilization:** The Strazzula Tract marsh and the cypress swamp located in the Loxahatchee Wildlife Refuge were monitored as the reference wetlands for the bank's herbaceous community and forested communities, respectively. The bank shall be determined to be successful if the total number of wetland dependent fish, amphibian, reptile, bird and mammal species, tallied by class and community, recorded during the formal wildlife surveys meet or exceed the number of wetland dependant species monitored in the reference wetlands, as defined in the following table. The bank's final success determination shall require that the criteria, as defined in the following table be met for at least 3 monitoring years, including the final success determination year.

Class	# Wetland Dependent Species	
	Herbaceous	Forested
Fish	4	3
Amphibians	6	7
Reptiles	2	1
Birds	16	3
Mammals	3	3

**f. Acreage:** The ~1,225 acres of wetlands within the perimeter berms shall be determined to be jurisdictional pursuant to Rule 62-340, F.A.C., and the herbaceous and forested community types are within 10% of their target of 870 acres and 355 acres, respectively.

**g. Compliance:** All of the structures in the bank have operated as designed and have required no repairs or maintenance beyond that specified in Specific Condition 24 for at least three years. The permittee has submitted all required reports to the satisfaction of the Department. The perpetual management fund has been fully funded.

**h. M-WRAP Assessment:** Utilizing the monitoring data and reports and in conjunction with the permittee, the SFWMD, and any interested IRT members, the Department shall inspect the site and conduct an M-WRAP analysis to determine that the bank has reached the criteria required to attain the "with bank" scores, as shown in Attachment D, that were used to determine the potential credits for the bank. The M-WRAP score of 3 for the vegetation component requires that the site meet the nuisance and exotic species coverage criteria in Specific Condition 21. b. Should the bank be determined to exceed these coverage criteria, an M-WRAP score of 2.75 would be assigned. The difference between scores of 2.75 and 3 represents 26.4 credits. The final credit release would then be decreased by 26.4 credits.

**22. Interim release criteria.** Progressive environmental enhancement or trending toward success provides environmental lift for which credit may be released incrementally prior to achieving all the final success criteria delineated in Specific Condition 21. Fifty percent (320.8 credits) of the total potential credits are reserved for interim releases as indicated in Specific Condition 18. The interim releases shall be based on the environmental enhancement criteria a-e in Specific Condition 21 above, each of which is assigned a potential of 64.2 credits. Each year that the bank attains any one of the criteria a-e, it will receive one third of that criterion's potential credits (21.4). The next year the criterion is met, it would receive another third, and the third year would net the remaining third of that criterion's credits. To allow for variation in ecological conditions (drought, freeze, storms, etc.), the criteria need not be met continuously for three years. Additionally, the bank may be determined to be fully successful in accordance with Specific Condition 21, without all of the individual criteria, a-e, having three years of success. In the latter case, any credits for an individual criterion not yet released would be added to the final success credit release.

The following table illustrates an *example*, and may not reflect actual attainment sequence

Criteria	Year 1	2	3	4	5
a	X	X		X	(X)
b	X	X	X	(X)	(X)
c			X	X	X
d					X
e	X			X	X
total X's	3	2	2	3	3
credits/year	64.2	42.8	42.8	64.2	64.2

In this example, X indicates that the criterion has been met and a partial credit (21.4) is available. (X) indicates that the criterion was met, but all the available credits for this criterion have already been released. In this example, year 5 would represent final success (provided that all the criteria in Specific Condition 21 were also met), and would receive the 64.2 credit partial release along with all other credits not previously released (the 42.8 credits remaining from criterion d.)

**Management, Monitoring and Reporting**

23. Monitoring and Management during Construction. Monitoring during construction was conducted in accordance with original permit conditions.

24. Management and Maintenance after Construction. The wetlands are expected to be self-sustaining once the exotics are controlled, native vegetation is re-established, and the hydrology is restored. Monitoring data, site inspections and the QMS's professional judgment will dictate the type and frequency of short-term maintenance activities. Bank maintenance activities shall include, but are not limited to:

- a. Conducting prescribed burns to reduce inappropriate woody vegetation and promote herbaceous reproduction using licensed personnel and approved methodologies in accordance with the fire management plan in Attachment B;
- b. Removing exotic vegetation manually or treating with herbicide in accordance with the Annual Vegetation Management Plan (Attachment C);
- c. Removing feral/exotic terrestrial animals such as feral hogs by trapping, and removing aquatic species such as the walking catfish manually or by using approved chemical means to the extent practical;
- d. Planting supplemental wetland vegetation as necessary to maintain the wetland functions and values. Planting information will be included in the Annual Vegetation Management Plan (Attachment C);
- e. Maintaining berms, culverts, and geofabric as necessary to repair washout or weakened areas, remove debris from culverts and control structures, or restore the geofabric's soil stabilization characteristics;
- f. Controlling floating vegetation within the by-pass canal;
- g. Repairing and revegetating berms as necessary to control erosion;
- h. Maintaining staff gauges and piezometers;
- i. Repairing or restoring nesting platforms damaged by storms and wear; and
- j. Maintaining site security (fencing and signage) and inspections (Attachment G).

25. Long-term Management. After the bank has been assessed for final success determination according to Specific Condition 21, the permittee shall initiate the long-term management responsibilities as follows:

- a. Inspecting the site annually, as well as following major storm events, and conducting maintenance to ensure the berm and control structures are in good working order;
- b. Conducting exotic and nuisance plant control, as necessary, to avoid a re-infestation of these species. At no time shall the cover of these species exceed 5% bankwide or 5% in any one 10-acre area prior to commencement of remedial eradication activities;

**MODIFIED PERMIT (December 1, 2011)**  
**Loxahatchee Mitigation Bank**  
**File Number 0140969, Palm Beach County**  
**Page 21 of 22**

- c. Conducting prescribed burns at a frequency and season optimal to promote desirable vegetation and wildlife utilization;
- d. Repairing or restoring any successful nesting platforms; and
- e. Maintaining site security and inspecting for signs of poaching or dumping.

The permittee shall be the responsible party for long-term management until the permit and the perpetual management trust is transferred to the South Florida Water Management District. The permittee shall provide the Department with proof of this transfer. A complete long term management plan is provided in Attachment I.

26. Monitoring. The Department has reviewed the revised Monitoring Plan (Attachment H) and finds it to be adequate to evaluate progress toward restoration goals, identify impacts that may hamper attaining those goals, provide opportunities for scientific assessment of wetland functions and processes, and demonstrate attainment of success criteria. It may be modified further as necessary to adapt to changing conditions with Department approval without a formal permit modification.

27. Status Reports. The permittee shall submit semi-annual status reports each January and July containing the following information regarding the project, including its long-term management status:

- a. The name, authorized representative, signature, and current contact information for the permittee; any agent of the permittee; and QMS individual(s);
- b. Brief description, dates and locations of each management activity completed since the previous report;
- c. A description of problems encountered and solutions undertaken; and
- d. A brief description of the work and management the permittee anticipates commencing, continuing, or completing in the next six months.

28. Annual Reports. The Annual Report is a summary of the yearly monitoring for success and an assessment of the degree to which the bank is attaining success. This report shall be submitted in January after completion of end of growing season vegetation monitoring (September – November) and shall be prepared according to the format required and approved in accordance with Specific Condition 26. This report shall be submitted annually until the Bank site has been determined to be successful or the Department otherwise releases the permittee from these obligations.

The Annual Report that requests a determination of final success in accordance with Specific Condition 21 shall also include the following information:

- a. An updated and high quality aerial photograph of the site;
- b. A summary of all of the previous Annual Reports, including, as appropriate, timeline graphics;
- c. A list of success criteria and documentation of how and when each was attained;
- d. Notation of problems encountered in attaining the success criteria and how the problems were solved, and a notation of any exceptionally successful management activity;
- e. Summary of compliance and/or enforcement submittals or actions during the implementation of the bank; and
- f. Any other information helpful for the continued success of the mitigation.

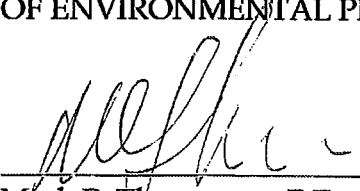
The Report requesting the final success determination shall be submitted to both the Department and the South Florida Water Management District.

29. Compliance. The permittee shall submit documentation of compliance with all permit conditions prior to any credit release.

**List of Attachments:**

- |                                    |                              |
|------------------------------------|------------------------------|
| A. Revised Permit Drawings         | F. Ledger                    |
| B. Prescribed Burn Management Plan | G. Security Measures         |
| C. Vegetation Management Plan      | H. Monitoring Plan           |
| D. M-WRAP Assessment Summary       | I. Long-Term Management Plan |
| E. Mitigation Bank SSI Calculation |                              |

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

  
\_\_\_\_\_  
Mark P. Thomasson, P.E., Director  
Division of Water Resource Management



## **ATTACHMENT A: Revised Permit Figures**

Figure 1 – Location Map (from original permit)

Figure 2 – Existing Vegetation (from original permit)

Figure 3 – Proposed Vegetation (replaces original)

Figure 4 – Hydrology Construction (from original with added notes)

Figure 6 – Topography and Hydrology (new figure)

Figure 11 – Proposed Burn Units (from original permit)

Figure 13a – Mitigation Service Area (from original permit)

Figure 13b – Lox Slough Exclusion Areas (from original permit)

Figure 13c – Lox River Exclusion Areas (from original permit)

Figure 13d – Service Area Boundaries (from original permit)

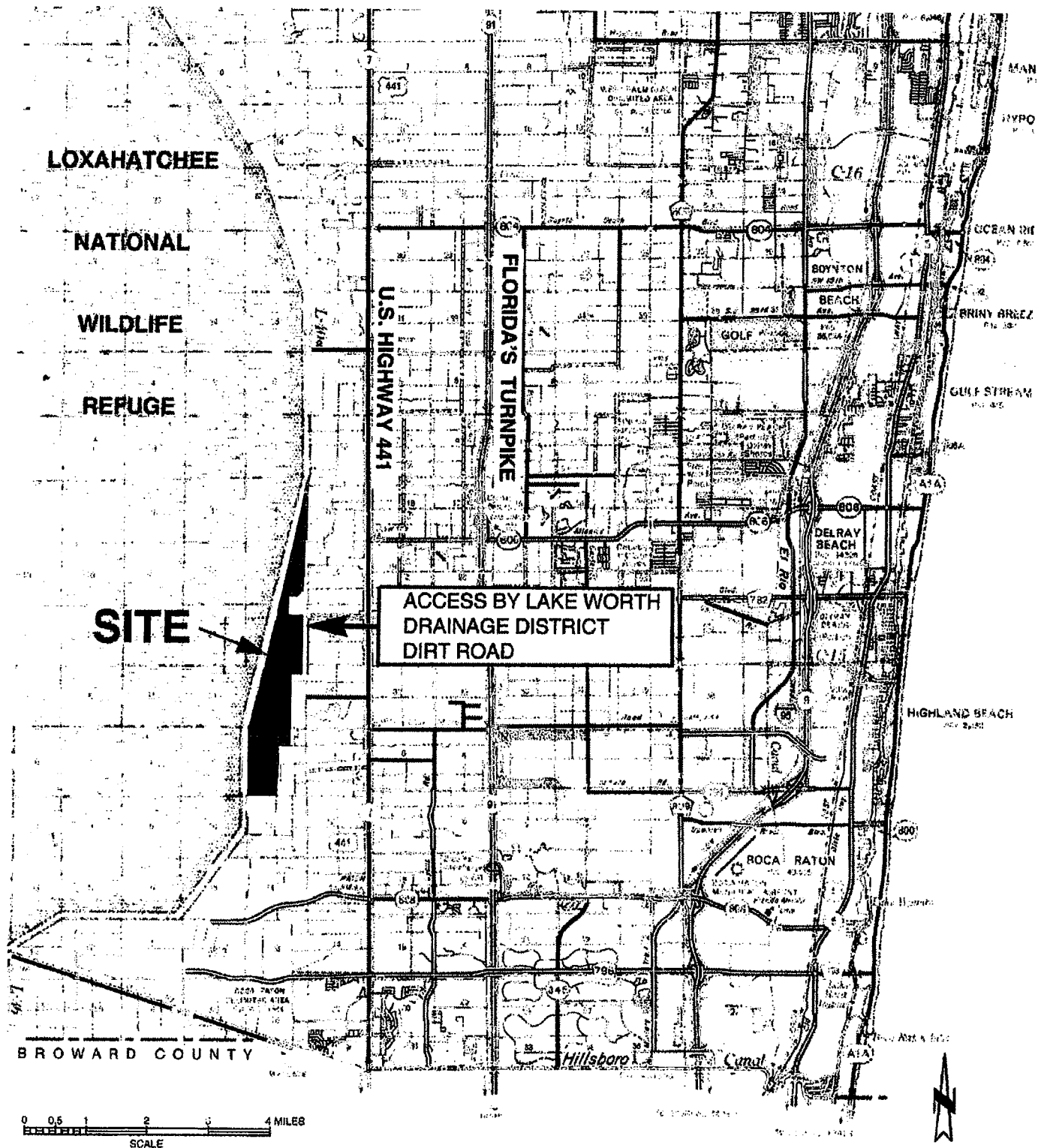
Figures 14 a-c - replaces original Figure 14 -Monitoring Locations

Figure 14a – Vegetation & Wildlife Monitoring Locations

Figure 14b – Hydrology Monitoring Locations

Figure 14c – Supplemental Vegetation Monitoring Locations

Figures 5-10 and 12 of the original permit primarily depict construction and implementation features that have been completed or modified since the February 18, 2000 original permit issuance and are not referenced in the December 1, 2011 modified permit. Figure 6 of the December 1, 2011 modification represents topography and predicted hydroperiods as a result of the mitigation plan.
















Source: FDOT General Highway Map of Palm Beach County  
 Foster Wheeler Environmental Corp.  
 759 South Federal Highway Suite 100  
 Stuart, FL 34994

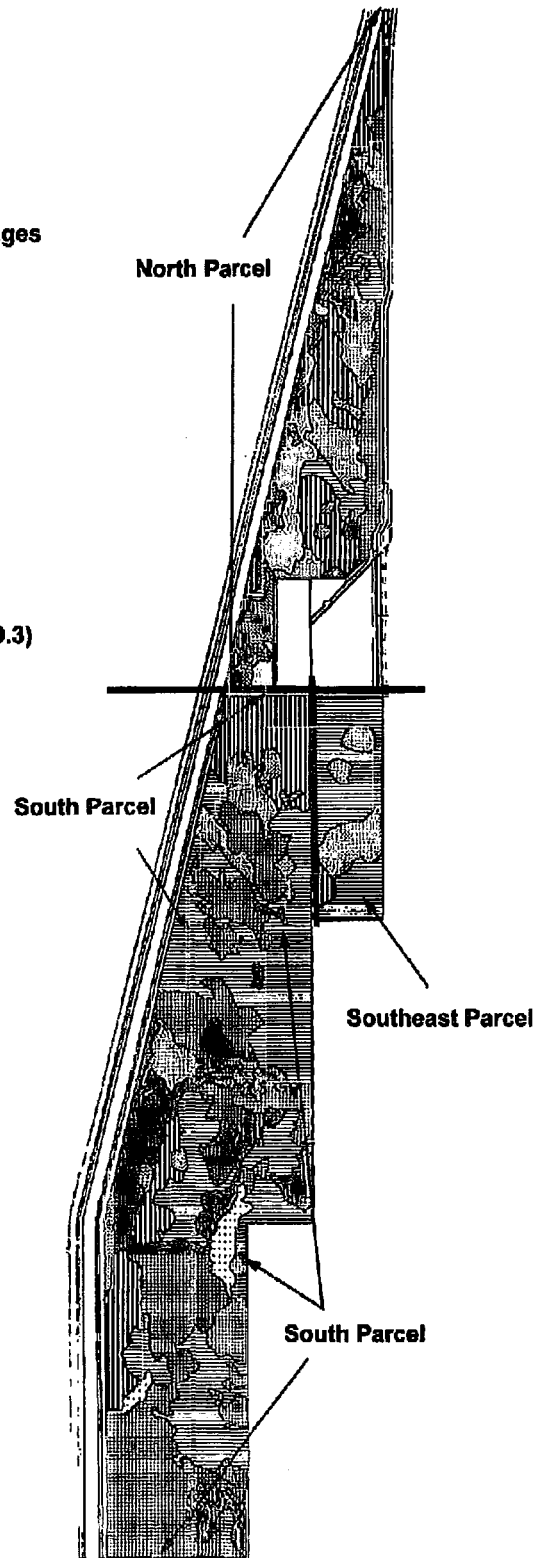
January 28, 2000  
 Perm1rev.tif

# Loxahatchee Mitigation Bank **LOCATION MAP** **FIGURE 1**

Engineering Certificate  
 of Authorization No. 7130

# **Vegetative Classifications and Acreages**

-  **Marsh (3.3)**
-  **Low Density Shrub (22.6)**
-  **Wax Myrtle - (31.4)  
High Density Shrub**
-  **Willow - (76.1)  
High Density Shrub**
-  **Brazilian Pepper (319.4)**
-  **Brazilian Pepper/Mixed (361.6)**
-  **Brazilian Pepper/HD Shrub (169.3)**
-  **Cypress (39.1)**
-  **Cypress/Mixed (52.6)**
-  **Red Maple/Mixed (143.3)**
-  **Pond Apple (20.2)**
-  **Strangler Fig/Mixed (9.9)**
-  **Melaleuca (4.5)**

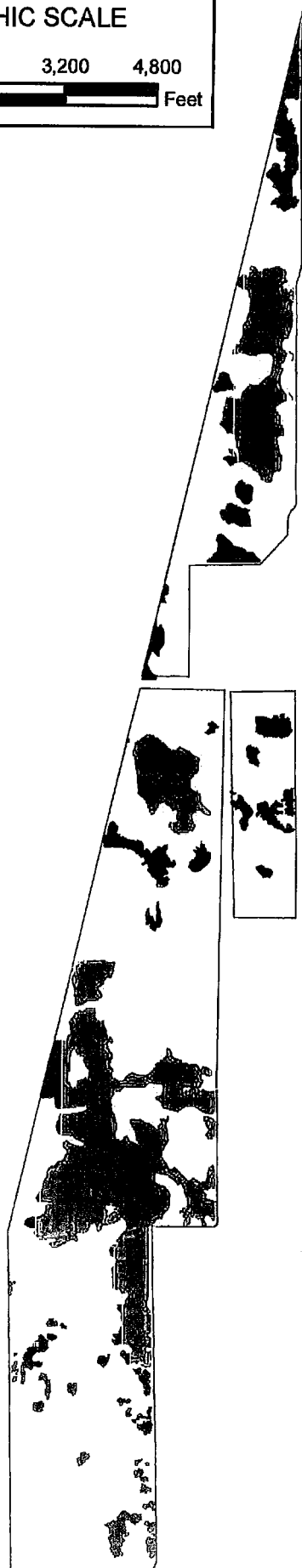
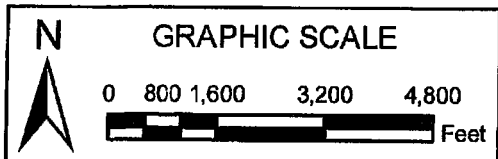


Source: Foster Wheeler Environmental Corp.  
 Suite 100  
 759 South Federal Highway  
 Stuart, FL 34994



## **Loxahatchee Mitigation Bank EXISTING VEGETATION MAP FIGURE 2**

January 28, 2000  
 Perm2revB.tif

Engineering Certificate  
 of Authorization No. 7130



## Legend

-  Herbaceous (~870 acres)
-  Forested (~355 acres)

Note: forested wetlands - community dominated by cypress, pond apple, and red maple  
herbaceous - mosaic of long- to short-hydroperiod marshes - characterized by sawgrass and emergent forbs to a diverse community of grasses, ferns, and forbs

## LOXAHATCHEE MITIGATION BANK

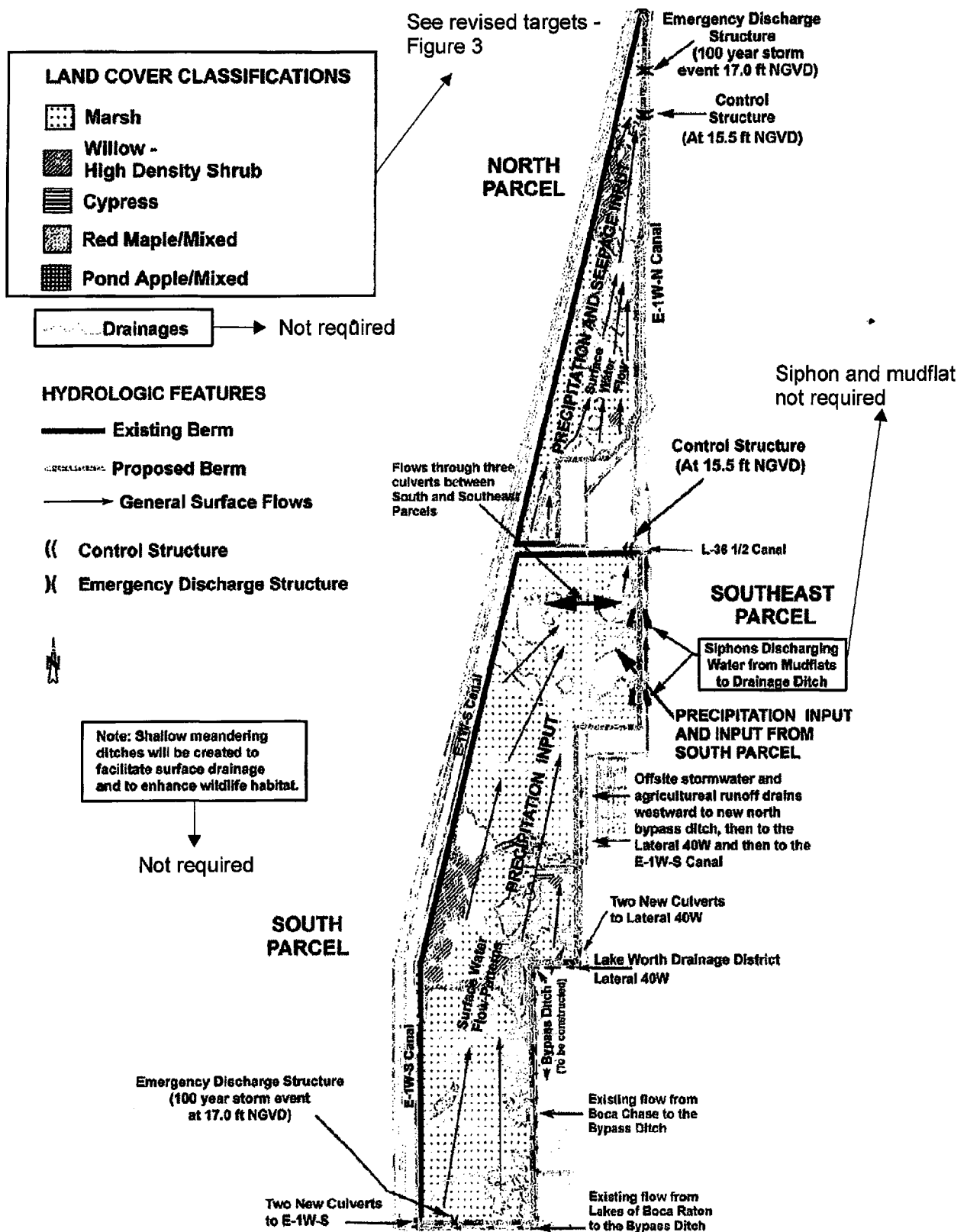
## PROJECTED VEGETATION COMMUNITY DISTRIBUTION MAP

Note: Mapping was performed in September 2009

## FIGURE 3



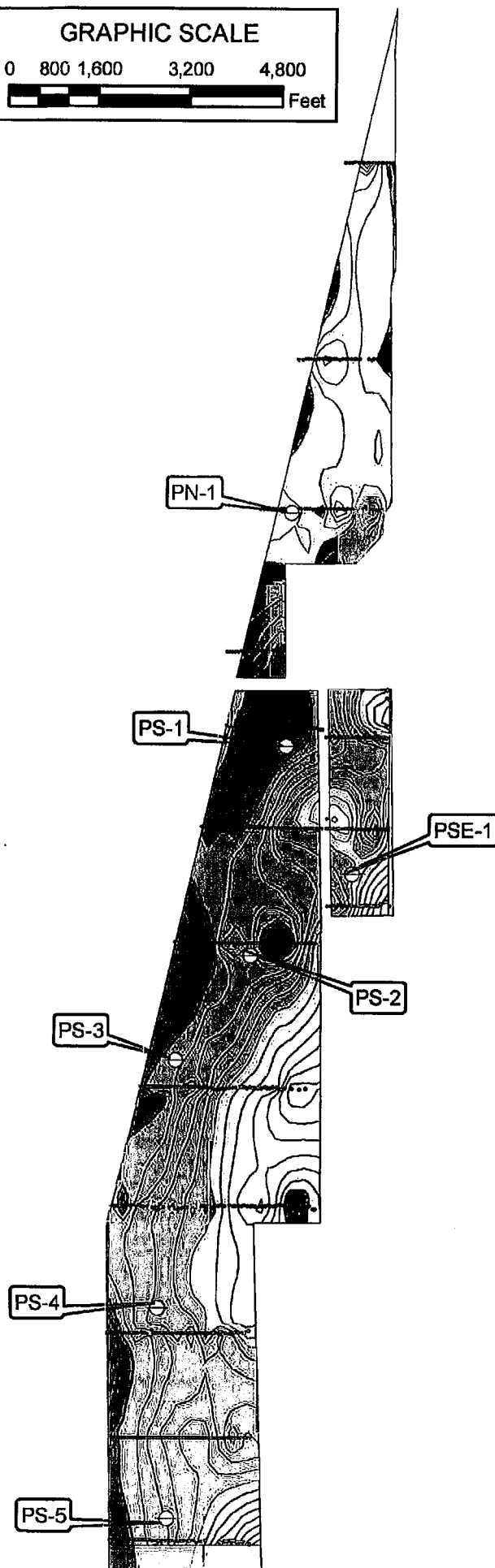
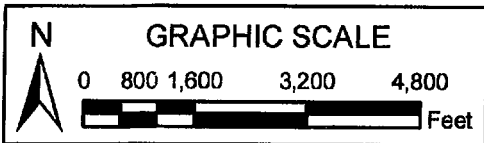
TETRA TECH EC, INC.



Source: Foster Wheeler Environmental Corporation  
759 South Federal Highway Suite 100  
Stuart, FL 34994

February 2, 2000  
Perm4revB.tif

**Figure 4**  
**Loxahatchee Mitigation Bank**  
**HYDROLOGICAL CONTROL FEATURES AND FLOWS**  
(Constructed as drawn except as noted in boxes)



## North Parcel

>14.2' (150 days saturation)

14.0' - 14.2' (150 days inundation)

13.5' - 14.0'

<13.5'

## South Parcel

>14.2' (30 days saturation)

<13.5' (150 days inundation)

13.5' - 14.0' (150 days saturation)

14.0' - 14.2' (30 days inundation)

⊕ Water level monitors

— Topographic contour

• Survey transect points\*

Note: \* Survey transect points are at 50-ft intervals along each of 15 transects

Parcel	Elevation (ft)	Area (acre)	% of Parcel/Bank
North	< 13.5	3.7	1.5
North	13.5 - 14.0	52	21.5
North	14.0 - 14.2	170.7	70.4
North	> 14.2	15.9	6.6
South/southeast	< 13.5	146.9	14.8
South/southeast	13.5 - 14.0	590.9	59.7
South/southeast	14.0 - 14.2	122.9	12.4
South/southeast	> 14.2	129.9	13.1
All	< 13.5	150.6	12.2
All	13.5 - 14.0	642.9	52.1
All	14.0 - 14.2	293.6	23.8
All	> 14.2	145.8	11.8

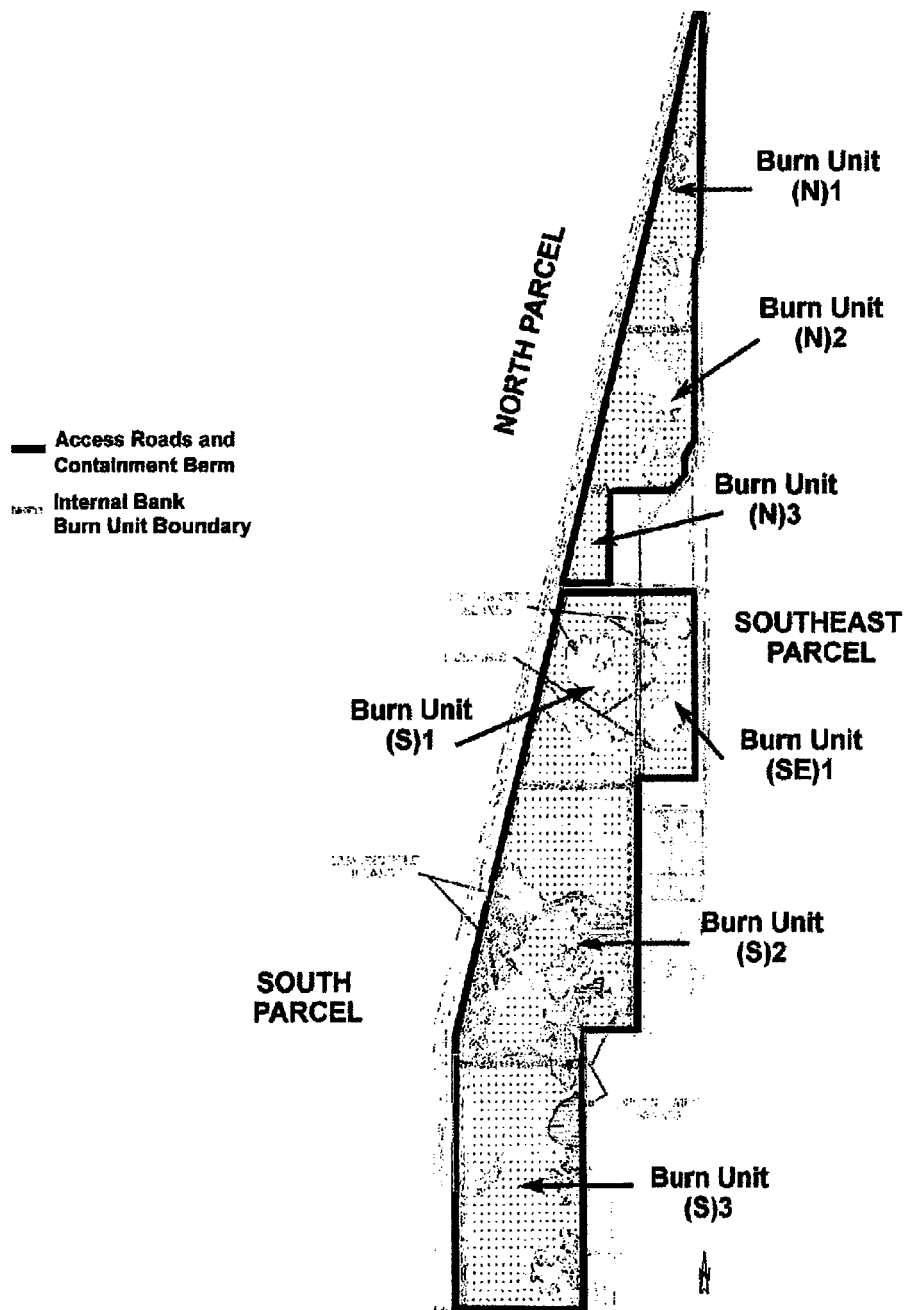
LOXAHATCHEE MITIGATION BANK

TOPOGRAPHY AND HYDROPERIOD

FIGURE 6



TETRA TECH EC, INC.



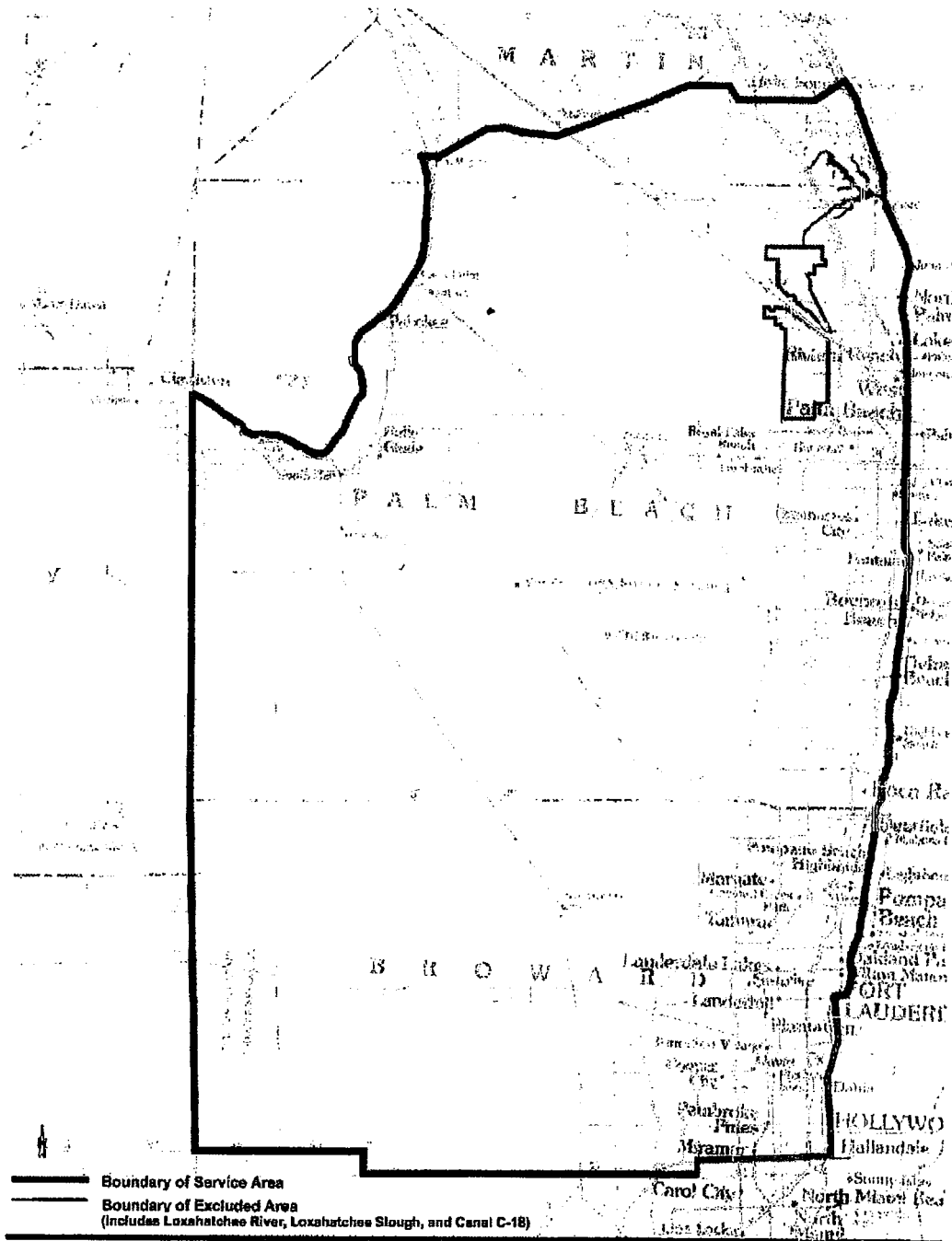
Source: Coteleur Hearing  
 Foster Wheeler Environmental Corp.  
 759 South Federal Highway Suite 100  
 Stuart, FL 34994

January 28, 2000  
 Perm11revB.tif

**Loxahatchee Mitigation Bank**  
**PROPOSED MAINTENANCE BURN PROGRAM**  
**FIGURE 11**

Engineering Certificate  
 of Authorization No. 7130





**Loxahatchee Mitigation Bank**

**MITIGATION BANK SERVICE AREA**

**FIGURE 13A**

Engineering Certificate  
of Authorization No. 7130

Note: Text description on Figure 13D

**Loxahatchee Slough  
Natural Area**

**West Palm Beach  
Water Catchment Area**



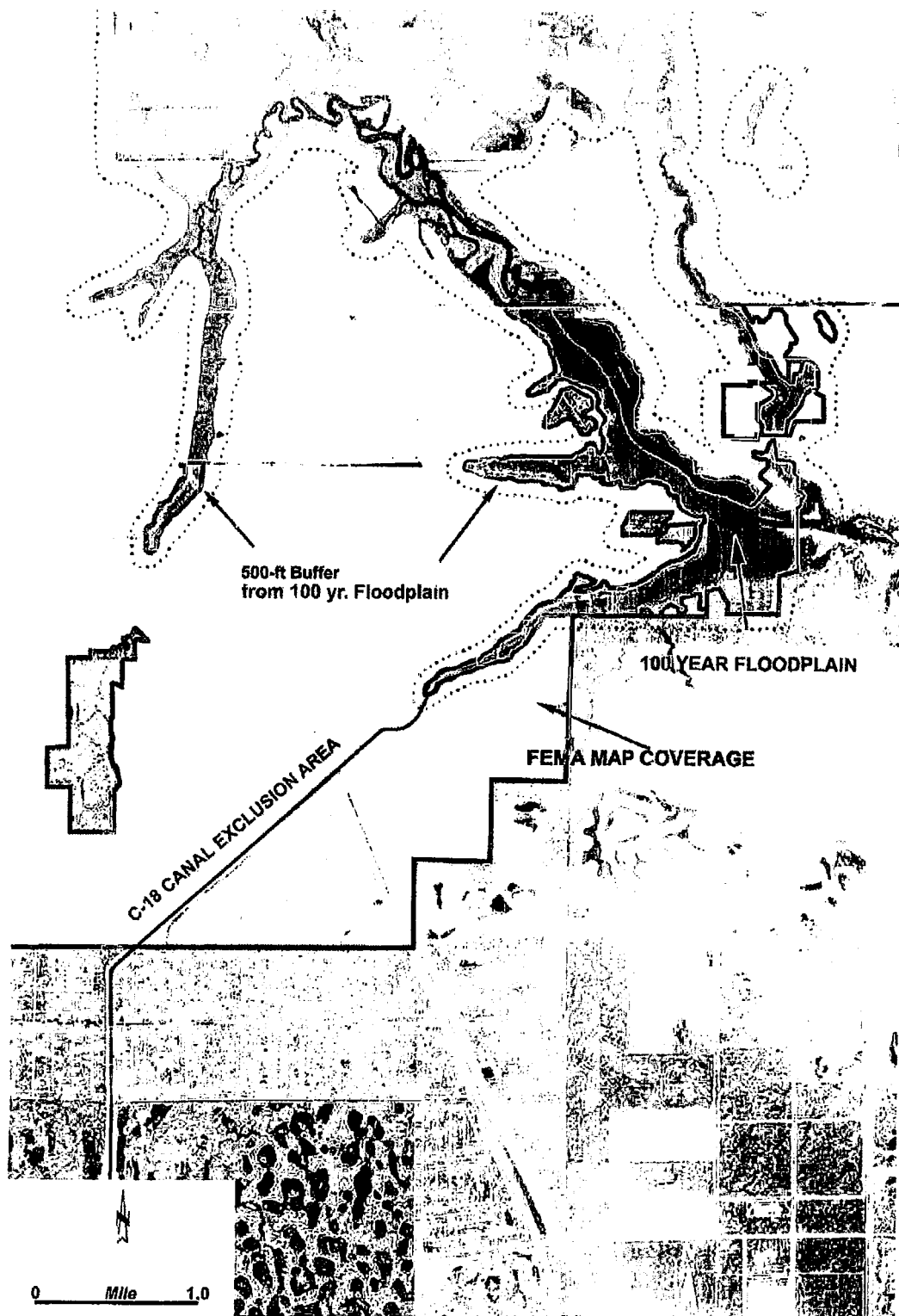
Sources: Foster Wheeler Environmental Corp.  
759 South Federal Highway Suite 100  
Stuart, FL 34994;  
Dept. of Environmental Resources Management  
Palm Beach County (1998)

January 28, 2000  
Perm13Brev.tif

**Loxahatchee Mitigation Bank  
LOXAHATCHEE SLOUGH EXCLUSION AREAS  
FIGURE 13B**

Engineering Certificate  
of Authorization No. 7130

Note: Text description on Figure 13D



Source: Foster Wheeler Environmental Corp.  
759 South Federal Highway Suite 100  
Stuart, FL 34994

January 28, 2000  
Perm13Crev.tif

**Loxahatchee Mitigation Bank  
LOXAHATCHEE RIVER AND  
ASSOCIATED EXCLUSION AREA  
FIGURE 13C**

Engineering Certificate  
of Authorization No. 7130

Note: Text description on Figure 13D

### **Service Area Boundary (Figure 13A)**

The northern boundary of the Service Area is located in Martin County. Starting at the intersection of SR 708 and US1, follow SR 708 west to where it intersects with SR 76, then follow SR 76 to the St. Lucie Canal. Follow the St. Lucie Canal to the Herbert Hoover Dike, which surrounds Lake Okeechobee. Follow the Herbert Hoover Dike south and then west around the Lake to the point that intersects the Palm Beach/Hendry County line. Follow the Palm Beach County line south until it reaches the Broward County Line. Follow the Broward County line south to the southwest corner of the County, then head east along the Broward/Dade County line until it intersects US1. Follow US1 north for the eastern boundary until it intersects SR 708.

### **Exclusion Area Boundaries**

#### ***Loxahatchee Slough (Figure 13B)***

The Loxahatchee Slough Natural Area, estimated to be 10,329 acres, located in north central Palm Beach County, will be excluded from the Mitigation Service Area. The area encompassed by this County Managed Natural Area lies north of SR 710 where it intersects Northlake Boulevard (Palm Beach County Department of Environmental Resources Management: Map of Natural Areas and Preserves in Palm Beach County, 1998). Another portion of the Loxahatchee Slough Natural Area is located just south of 710 and north of Northlake Boulevard. A portion of the Loxahatchee Slough adjoining the Natural Area will also be excluded. This additional exclusion area is located south of SR 710 and includes the West Palm Beach Water Catchment Area. The Water Catchment Area is an approximately 19-square mile wetland system that stores and purifies water for the City of West Palm Beach.

#### ***Canal C-18 (Figure 13B)***

Canal C-18, from the Loxahatchee River to the northern extent to the Loxahatchee Slough, is excluded from the Loxahatchee Mitigation Bank.

#### ***Loxahatchee River (Figure 13C)***

The Loxahatchee River Exclusion Area includes the Loxahatchee River proper, including the North and Southwest Forks, and the area up to 500 feet beyond the limits of the 100- year flood zone, or 50 feet beyond the landward extent of wetlands (delineated according to Rule 62-340 FAC) contiguous with the River, whichever is greater. The 100-year flood zone is delineated in the Federal Emergency Management Agency (FEMA) National Flood Insurance Program, Flood Insurance Rate Maps (FIRM) for Martin and Palm Beach Counties (Community-Panel Numbers 120161-0340C, -0485B, -0505E, 120192-0102B, -0105B, -0106B, and -0108B). The Exclusion Area above the 100-year floodplain shall not include isolated wetlands nor historically isolated wetlands that are currently connected to the River by artificial means, such as ditch, canal, swale, pipe or culvert.

Source: Foster Wheeler Environmental Corp.  
759 South Federal Highway Suite 100  
Stuart, FL 34994;

Dept. of Environmental Resources Management,  
Palm Beach County (1998)

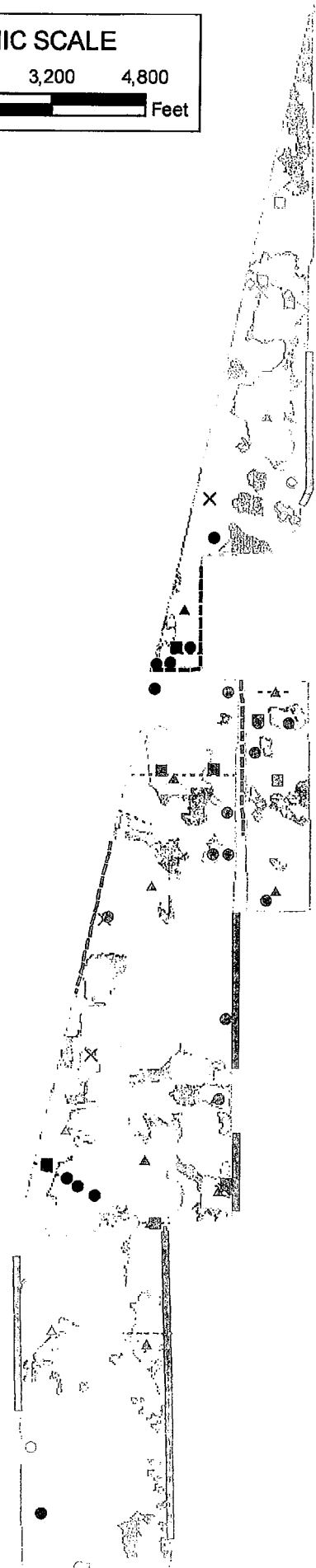
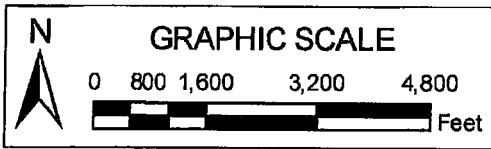
January 28, 2000  
fig13Drev2.doc

Loxahatchee Mitigation Bank

### **BOUNDARIES OF THE MITIGATION BANK SERVICE AREA AND EXCLUSION AREAS**

**FIGURE 13D**

Engineering Certificate  
of Authorization No. 7130



# Legend

- ▲ Avian sampling stations
- × Drift fence locations
- Fish sampling locations
- MWRAP scoring locations
- Night spotlight belt transect
- Avian Belt Survey
- ..... Vegetation Transects
- Herbaceous
- ▨ Forested

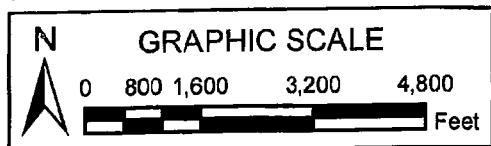
LOXAHATCHEE MITIGATION BANK

VEGETATION AND WLDLIFE  
MONITORING LOCATIONS

FIGURE 14a

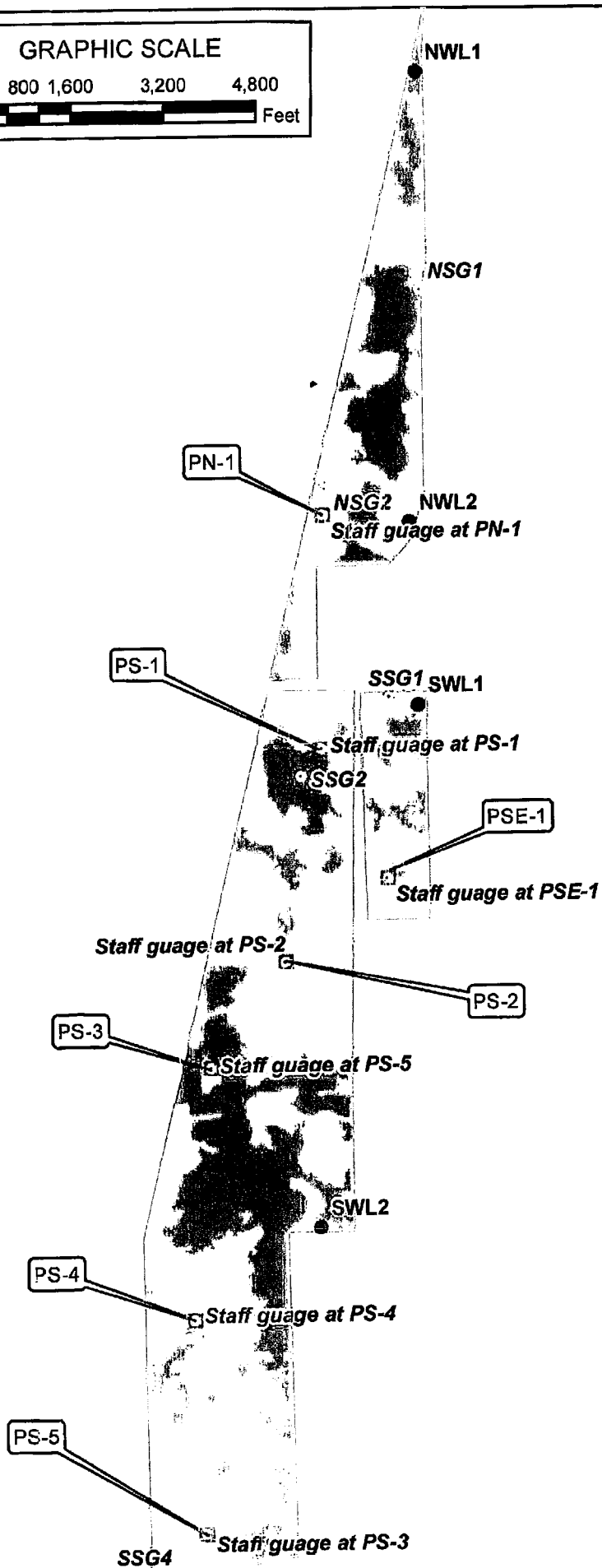


TETRA TECH BC, INC.



## Legend

- Staff gauges for monitoring support
- Water level monitors for success
- Original water level monitors
- Forested
- Herbaceous



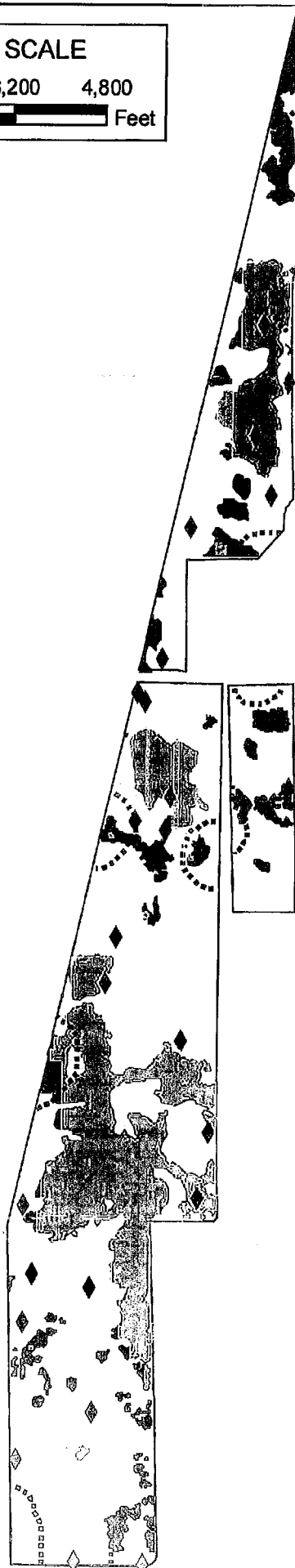
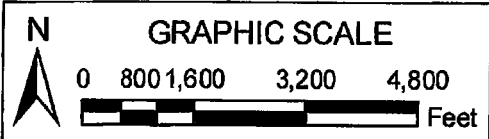
LOXAHATCHEE MITIGATION BANK

HYDROLOGY  
MONITORING LOCATIONS



FIGURE 14b



TETRA TECH



## Legend

- ◆ Random quantitative point\*
- ..... Qualitative transects\*
-  Forested
-  Herbaceous

\* Sample transects and points do not represent permanent sampling locations. Sample locations depicted in this figure are randomly selected annually.

LOXAHATCHEE MITIGATION BANK

SUPPLEMENTAL VEGETATION  
MONITORING LOCATIONS

FIGURE 14c



TETRA TECH EC

Date: 10/31/11

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## **ATTACHMENT B: Prescribed Burn Management Plan**

### **Introduction**

This Fire Management Plan is a component of the Mitigation Banking Instrument (MBI) and DEP Permit for the Loxahatchee Mitigation Bank (Bank). The fire management goal for the Bank is to use fire to control exotics and promote vegetation communities typical of the Everglades mosaic. To meet these goals, prescribed fire will be implemented during the permit implementation and long term management on a typical schedule of 4-10 years after community establishment/stabilization following intensive exotic vegetation eradication activities. Burn units (Figure 11) will range in size from 50 to 300 acres. Establishment of control lines and prescribed fire operations will be conducted from airboats, with ground support from existing dikes.

**Burn Plans** - The Department will be notified when an individual burn is being planned and a prescription is prepared. Individual burn plans will be closely coordinated with the SFWMD and the Manager of the National Wildlife Refuge with burn prescriptions authorized by the Florida Forest Service (FFS). In addition to the required smoke and safety requirements necessary for obtaining a FFS burn authorization, the following considerations will be addressed in the development of specific plans and prescriptions.

- Initial burns will be implemented to favor fuel and woody shrub reduction with minimal impacts to planted vegetation, canopy trees, or soils.
- Subsequent burn goals will also include willow reduction, woody shrub and seedling encroachment into herbaceous communities. Promotion of seeding and soil conditions for establishment of appropriate herbaceous vegetation is desired.
- Burn Units may be combined. Contiguous burn units will be separated by ignition and prescription plans and/or by soft lines (chemical lines, airboat trails or other water lines, mowing) rather than by plow lines, which are only to be used in emergency, safety situations.
- Burns will be planned to avoid any nesting of wading bird rookeries, eagles, or other threatened or endangered (T&E) species. Burn impacts to T&E plant and animal species will be avoided.
- The smoke sensitive areas adjacent to the Bank include residential communities to the east and south, and U.S. 441/State Road 7 and two electrical transmission lines to the east. Smoke impacts to these areas will be avoided by burning under favorable wind conditions. LMB will periodically coordinate with residential communities to keep them abreast of burn information and plans.

**Burn Reporting** - Within 1 week following a prescribed or wildfire, the Permittee shall provide a brief report with dates, location and effect of the fire. A more detailed report of burn results shall be included in the following semi-annual status report.

**ATTACHMENT C - VEGETATION MANAGEMENT PLAN 2011**



**TETRA TECH EC, INC.**

## 1.0 Introduction

This Vegetation Management Plan for the Loxahatchee Mitigation Bank (Bank) was finalized after review from the South Florida Water Management District (SFWMD) and after reviewing Section 2.1.2 of the Mitigation Banking Instrument and Specific Condition 12 of the Environmental Resource Permit No. 0140969-001. The purpose of this plan is to provide the regulatory agencies information regarding Tetra Tech EC, Inc.'s (TtEC) strategy for vegetation maintenance activities in 2011. Although time frames have been specified in this plan, they may be altered due to weather, site conditions, etc.

## 2.0 Vegetation Management Activities Conducted to Date

In 2002, initial exotics eradication commenced in the North Parcel. Successive treatments have occurred throughout the Bank on an annual basis. Several treatment methods have been utilized dependent on target species and desired outcome. Chemical, manual and mechanical treatments, flooding, and fire have been used to reduce and control exotic vegetation throughout the Bank. The successes of these aggressive vegetation management activities performed during previous years led to a reduced level of vegetation maintenance in 2010. Continuing exotics and nuisance vegetation control activities were planned with activities highly dependent on recurring species and appropriate conditions. A summary of the eradication activities performed during 2010 are presented below.

- Manual maintenance edge treatments—25-50 feet inboard of berms and levees—of all parcels.
- Manual edge treatments targeting exotic species (*Panicum repens*)—25-50 feet inboard of berms and levees—of all parcels; approximately 10 acres treated.
- Manual herbicide application in marsh communities (southern parcels) for treatment of nuisance and exotic species (*Typha* sp., *Ludwigia* spp., etc); approximately 805 acres treated.
- Manual herbicide application in forested communities (southern parcels) for treatment of nuisance and exotic species (*Senna* spp., *Ludwigia* spp., etc); approximately 8 acres treated.
- Windrow biomass reduction within the southern parcels.
- *Cladium jamaicense* (10,000), *Pontederia cordata* (7,300), *Sagittaria latifolia* (7,600), and *Panicum hemitomon* (10,550) were planted throughout the southern parcels.

## 3.0 Vegetation Management Activities Planned for 2011

A series of vegetation management activities are planned for 2011, including the continuation of manual ground herbicide applications on an as-needed basis, manual biomass reduction, and planting of desirable species. In addition, expanded willow (*Salix caroliniana*) vegetation will be reduced in an effort to restore marsh habitat in the North, South, and Southeast parcels. The activities schedule for 2011 is illustrated in Table 3-1. Several herbicide treatment methods are planned, with both herbicides and application methods tailored to particular species and seasonal

conditions. Herbicides will be applied according to manufacturers' label recommendations. The application methods to be used, depending on site conditions, include frill and girdle, basal bark, stump application, and foliar application.

### **3.1 Exotic and Nuisance Vegetation Monitoring (all parcels)**

Inspections have been conducted since the completion of initial eradication and will continue to determine treatment needs. The purpose of these inspections is to provide documentation of the eradication progress and exotic/nuisance vegetation management techniques, such as prescribed burns, herbicide applications, or plantings. Inspections will, at a minimum, be performed quarterly in an effort to identify early-on the areas that require maintenance. Eradication measures will expeditiously be implemented in those areas.

### **3.2 South and Southeast parcels Maintenance Plan**

Ongoing forested and herbaceous community maintenance and edge treatments will continue on a quarterly or as-needed basis throughout 2011. Regular exotics inspections will be conducted for identification of problem areas (exotic vegetation recruitment). As problem areas are encountered, corrective actions will be initiated. Aerial herbicide application is no longer an option as copious desirable vegetation has recruited throughout the southern parcels' herbaceous communities. Herbicide ground applications will target exotic and nuisance species such as Brazilian pepper, climbing cassia, Oldworld climbing fern, Caesar weed, para grass, guinea grass, primrose willow, cattail, etc. that has either recruited, re-sprouted, or did not succumb to previous eradication efforts.

### **3.3 North Parcel Maintenance Plan**

The North Parcel is scheduled for a maintenance sweep during May/June 2011. This manual herbicide treatment will target *Melaleuca*, climbing cassia, Brazilian pepper, Old World climbing fern; cattails and primrose willow. It is expected that the North Parcel may require maintenance sweeps every 12 to 24 months. The frequency and locations requiring treatment will be determined by inspections. Desirable vegetative recruitment and coverage remains high; thus, no planting events are anticipated in the North Parcel for 2011.

## **4.0 Planting**

Approximately 35,450 plants (duck potato, pickerelweed, sawgrass, and maidencane) were planted in the South and Southeast Parcels during 2010. Plots were selected based on soil and hydrologic conditions. Planted units were distributed throughout the planting areas based on their preferred moisture regime. The planting efforts of 2008-2010 appear to have been successful thus far, as indicated by the establishment and subsequent expansion of individual planting units into surrounding areas. Planting of herbaceous groundcover (duck potato, pickerelweed, sawgrass, maidencane, etc.) will continue on an as-needed basis in 2011. Additionally, sawgrass will be planted in the southern parcels; an estimated 200,000 plants will be planted in 2011.

Table 3-1: Schedule of 2011 Eradication Activities

Activity	March	April	May	June	July	August	September	October	November	December
Task 1 Biomass reduction - South Parcel										
Task 2 Prescribed burn - Southern parcels										
Task 3 Manual herbicide applications - Southern parcels' marsh polygons										
Task 3 Annual maintenance sweep - Southern parcels' forested polygons										
Task 4 Annual maintenance sweep - North Parcel										
Task 5 Edge treatments - Southern parcels										
Task 6 Bypass ditch treatments - Southern parcels										
Task 7 Exotics inspections - Bank-wide										
Task 8 Planting										
Task 9 Annual vegetation monitoring										
Annual Report preparation										

Notes:



One day Task  
Multiple day Task

# ATTACHMENT D - CREDIT AND MWRAP ANALYSIS SUMMARY

(Note: This is the summary table to November 13, 2000 permit modification )

## Loxahatchee Mitigation Bank

### Credit Type Analysis

Parcel	North	East	South	Totals
Acres	260.57	97.90	897.61	1256.08
<b>Herbaceous (Marsh, LD Shrub, Mud Flats)</b>				
Without Bank Proportionate Score	0.45	0.36	0.26	
With Bank Proportionate Score	0.72	0.69	0.70	
Delta	0.27	0.33	0.44	
Functional Credits	70.53	32.38	390.68	493.59
MBSI	0.06	0.06	0.06	
SS Credits	4.20	1.93	23.25	29.37
Total Credits	74.73	34.30	413.93	522.96
<b>Hardwoods (Willow, Red Maple, Pond Apple, Cypress)</b>				
Without Bank Proportionate Score	0.19	0.18	0.14	
With Bank Proportionate Score	0.25	0.26	0.24	
Delta	0.06	0.08	0.10	
Functional Credits	16.56	7.37	90.78	114.71
MBSI	0.06	0.06	0.06	
SS Credits	0.99	0.44	5.40	6.82
Total Credits	17.54	7.81	96.18	121.53
<b>Other (Ditches, Berms &amp; Canal)</b>				
Without Bank Proportionate Score	0.00	0.00	0.001	
With Bank Proportionate Score	0.00	0.00	0.00	
Delta	0.00	0.00	-0.001	
Functional Credits	0.00	0.00	-1.00	-1.00
MBSI	0.06	0.06	0.06	
SS Credits	0.00	0.00	-0.06	-0.06
Total Credits	0.00	0.00	-1.06	-1.06
<b>Summary Totals</b>				
Functional Credits	87.09	39.75	480.46	607.30
MBSI	0.06	0.06	0.06	
SS Credits	5.18	2.36	28.59	36.13
Total Credits	92.27	42.11	509.05	643.43
Mitigation Credits Needed for Impacts Outside the Bank	1.14	0.01	0.71	1.86
<b>Adjusted Total Credits</b>				<b>641.57</b>

ATTACHMENT D (cont.)

Loxahatchee Mitigation Bank

MWRAP Functional Assessment "With Bank" Summary Sheet

5/12/2000

North Cell

Polygon Category / Community Type	Community Type Acres	% of Assmt Area	MWRAP Parameters				MWRAP Score	Proportional MWRAP Score
			Wildlife	Vegetation	Hydrology	Water Qual		
Marsh	139.20	0.534	3.0	3.0	3.0	2.75	0.979	0.523
LD Shrub	51.50	0.198	3.0	3.0	3.0	2.75	0.979	0.194
Willow	12.01	0.046	3.0	3.0	3.0	2.75	0.979	0.045
P Apple	0.24	0.001	3.0	3.0	3.0	2.75	0.979	0.001
RM Mixed	54.89	0.211	3.0	3.0	3.0	2.75	0.979	0.206
Cypress	0	0.000					0.000	0.000
Cypress Mix	0	0.000					0.000	0.000
Mud Flats	0	0.000					0.000	0.000
Access Roads	0	0.000	0	0	0	0	0.000	0.000
Ditches	0	0.000	0	0	0	0	0.000	0.000
Berms & 15 Setback	2.73	0.010	0	0	0	0	0.000	0.000
<b>Totals</b>	<b>260.57</b>	<b>100%</b>						<b>0.969</b>

East Cell

Polygon Category / Community Type	Community Type Acres	% of Assmt Area	MWRAP Parameters				MWRAP Score	Proportional MWRAP Score
			Wildlife	Vegetation	Hydrology	Water Qual		
Marsh	58.40	0.597	3.0	3.0	3.0	2.75	0.979	0.584
LD Shrub	0	0.000		0.0			0.000	0.000
Willow	0	0.000		0			0.000	0.000
P Apple	0	0.000		0			0.000	0.000
RM Mixed	25.76	0.263	3.0	3.0	3.0	2.75	0.979	0.258
Cypress	0	0.000		0			0.000	0.000
Cypress Mix	0	0.000		0			0.000	0.000
Mud Flats	11.10	0.113	3.0	2.50	3.0	2.75	0.938	0.106
Access Roads	0	0.000	0	0	0	0	0.000	0.000
Ditches	0	0.000	0	0	0	0	0.000	0.000
Berms & 15 Setback	2.64	0.027	0	0	0	0	0.000	0.000
<b>Totals</b>	<b>97.90</b>	<b>100%</b>						<b>0.948</b>

South Cell

Polygon Category / Community Type	Community Type Acres	% of Assmt Area	MWRAP Parameters				MWRAP Score	Proportional MWRAP Score
			Wildlife	Vegetation	Hydrology	Water Qual		
Marsh	637.30	0.710	3.0	3.0	3.0	2.75	0.979	0.695
LD Shrub	0.00	0.000					0.000	0.000
Willow	59.75	0.067	3.0	3.0	3.0	2.75	0.979	0.065
P Apple	18.84	0.021	3.0	3.0	3.0	2.75	0.979	0.021
RM Mixed	57.58	0.064	3.0	3.0	3.0	2.75	0.979	0.063
Cypress	36.01	0.040	3.0	3.0	3.0	2.75	0.979	0.039
Cypress Mix	45.60	0.051	3.0	3.0	3.0	2.75	0.979	0.050
Mud Flats	0.00	0.000					0.000	0.000
Access Roads	14.91	0.017	0	0	0	0	0.000	0.000
Ditches	13.01	0.014	0	0	0	0	0.000	0.000
Berms & 15 Setback	14.61	0.016	0	0	0	0	0.000	0.000
<b>Totals</b>	<b>897.61</b>	<b>100%</b>						<b>0.933</b>

## ATTACHMENT E: Mitigation Bank Suitability Index (MBSI) Calculation

PARAMETERS		SCORE
<b>ESTABLISHED WATERSHED ISSUES:</b> The mitigation bank will result in identifiable ecological benefits to established watershed issues recognized to be critical to the watershed of the Bank.		3
Yes.....		3
No .....		0
<b>LANDSCAPE MOSAIC COMPATIBILITY:</b> The ecological communities present at the mitigation bank site blend seamlessly with the adjacent native communities and that relationship is expected to remain in perpetuity.		1
Site will blend seamlessly on 95–100% of its perimeter .....		3
Site will blend seamlessly on 67–95% of its perimeter .....		2
Site will blend seamlessly on 25–66% of its perimeter .....		1
Site will blend seamlessly on <25% of its perimeter .....		0
<b>THREATENED AND ENDANGERED SPECIES:</b> Establishment of the mitigation bank improves the status of federal and/or state listed threatened or endangered species.		1
Increases population of one or more listed species .....		3
Meets identified task within a recovery plan or provides protection to candidate species .....		2
Attracts species to the site.....		1
Maintains the status-quo .....		0
<b>EXPANSION OF SCARCE HABITATS:</b> The landscape contains ecological features considered to be unusual, unique or rare in the region and is of sufficient size.		3
Yes.....		3
No .....		0
<b>ADJACENT LAND USES:</b> The Bank will result in identifiable ecological benefits to adjacent lands or waters of regional importance such as State/National Park, State/National Forest, SWIM, OFW, AP, refuges and lands managed for conservation.		3
Yes.....		3
No .....		0
<b>STRATEGIC HABITAT CONSERVATION AREA (SHCA):</b> The Bank site is within or will result in identifiable benefits to the GAP analysis designating lands essential to providing the land base necessary to sustain populations into the future.		0
Yes.....		3
No .....		0
<b>AQUIFER RECHARGE AREA:</b> The site includes lands that have been identified as having significant aquifer recharge potential See Aquifer Recharge reference sheet for specific scoring criteria .....		1.5 0-3
<b>TOTAL</b>		<b>12.5</b>
MBSI COMPUTATION 12.5                      MBSI = (TOTAL÷MAXIMUM POSSIBLE) (0.1) + 1.0		1.1



**ATTACHMENT F**  
**Loxahatchee Mitigation Bank Ledger**  
**as of December 1, 2011**

Freshwater Herbaceous Wetlands: Total Credits Assigned = 520.40

<u>Release Mod./</u> <u>Impact Permit</u>	<u>Permit</u> <u>Date</u>	<u>Issuing</u> <u>Agency</u>	<u>Ledger</u> <u>Modification</u>	<u>Credits</u> <u>Added</u>	<u>Credits</u> <u>Used</u>	<u>Balance</u>
<b>Credit Release</b>	<b>N/A</b>	<b>DEP</b>	<b>11/13/2000</b>	<b>78.03</b>		<b>78.03</b>
50-04600-P	3/15/2001	SFWMD	4/13/2001		2.79	75.24
50-04215-P-02	4/12/2001	SFWMD	4/26/2001		6.40	68.84
50-04796-P	3/15/2001	SFWMD	5/14/2001		0.44	68.40
50-00633-S-03	5/11/2001	SFWMD	5/22/2001		0.32	68.08
50-04852-P	5/10/2001	SFWMD	6/8/2001		0.90	67.18
50-00633-S-02	3/9/2001	SFWMD	6/8/2001		0.97	66.21
50-04893-P	6/14/2001	SFWMD	7/31/2001		10.82	55.39
50-04344-P	7/25/2001	SFWMD	7/31/2001		0.51	54.88
50-04763-P	3/15/2001	SFWMD	8/27/2001		0.08	54.80
50-00610-S-02	6/5/2001	SFWMD	9/5/2001		1.00	53.80
50-00422-S-02	6/12/2001	SFWMD	9/5/2001		13.49	40.31
50-04849-P	4/13/2001	SFWMD	9/12/2001		0.20	40.11
50-05061-P	9/13/2001	SFWMD	10/18/2001		3.38	36.73
50-05107-P	10/11/2001	SFWMD	11/6/2001		10.23	26.50
06-03326-P	10/11/2001	SFWMD	11/6/2001		2.30	24.20
50-05319-P	3/14/2002	SFWMD	3/18/2002		17.44	6.76
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>4/2/2002</b>	<b>8.10</b>		<b>14.86</b>
50-05252-P	5/2/2002	SFWMD	5/10/2002		5.60	9.26
50-00548-S-73	6/13/2002	SFWMD	6/28/2002		1.30	7.96
50-05461-P	7/11/2002	SFWMD	8/12/2002		1.02	6.94
50-05627-P	10/4/2002	SFWMD	11/12/2002		0.54	6.40
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>12/27/2002</b>	<b>50.29</b>		<b>56.69</b>
50-05541-P	10/10/2002	SFWMD	1/8/2003		4.67	52.02
50-05718-P	12/12/2002	SFWMD	1/8/2003		1.00	51.02
50-05585-P	12/12/2002	SFWMD	1/8/2003		6.00	45.02
50-00548-S	12/12/2002	SFWMD	1/13/2003		5.70	39.32
50-05719-P	12/12/2002	SFWMD	1/23/2003		2.00	37.32
50-0193521-001	6/26/2002	DEP	2/14/2003		0.92	36.40
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>4/9/2003</b>	<b>14.76</b>		<b>51.16</b>
50-00618-S-36	2/13/2003	SFWMD	4/25/2003		0.71	50.45
50-0209017-002	4/22/2003	DEP	5/13/2003		0.17	50.28
50-05719-P	8/8/2003	SFWMD	8/20/2003		7.00	43.28
50-06031-P	8/14/2003	SFWMD	9/23/2003		2.71	40.57
50-06078-P	9/11/2003	SFWMD	10/6/2003		4.83	35.74
50-06153-P	10/10/2003	SFWMD	11/14/2003		0.34	35.40
50-06032-P	11/7/2003	SFWMD	11/24/2003		2.65	32.75
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>1/9/2004</b>	<b>56.94</b>		<b>89.69</b>
50-06249-P	1/15/2004	SFWMD	5/10/2004		2.00	87.69

**ATTACHMENT F**  
**Loxahatchee Mitigation Bank Ledger**  
**as of December 1, 2011**

<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>6/17/2004</b>	<b>17.36</b>		<b>105.05</b>
50-06209-P	4/14/2004	SFWMD	7/28/2004		0.91	104.14
50-01819-S-03	4/14/2004	SFWMD	8/24/2004		0.87	103.27
06-04239-P	11/3/2004	SFWMD	11/19/2004		0.13	103.14
06-04218-P	11/10/2004	SFWMD	12/1/2004		26.05	77.09
50-03925-P	12/22/2004	SFWMD	1/6/2005		0.26	76.83
50-06732-P	1/12/2005	SFWMD	2/11/2005		1.42	75.41
50-00610-S-13	1/12/2005	SFWMD	2/11/2005		1.08	74.33
50-02564-S-02	2/9/2005	SFWMD	5/13/2005		1.00	73.33
50-00010-W	11/10/2004	SFWMD	5/26/2005		2.57	70.76
50-00610-S-12	3/9/2005	SFWMD	6/23/2005		0.38	70.38
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>6/30/2005</b>	<b>17.36</b>		<b>87.74</b>
50-01329-S-20	7/13/2005	SFWMD	8/10/2005		1.50	86.24
50-00548-S	7/21/2005	SFWMD	8/10/2005		0.35	85.89
50-07050-P	8/4/2005	SFWMD	8/31/2005		0.32	85.57
50-06984-P	7/13/2005	SFWMD	11/22/2005		0.87	84.70
50-06983-P	8/10/2005	SFWMD	12/12/2005		0.51	84.19
50-07085-P	9/14/2005	SFWMD	2/3/2006		1.11	83.08
6-235299-001&2	5/27/2005	DEP	2/3/2006		0.25	82.83
50-05422-P	11/9/2005	SFWMD	2/14/2006		1.59	81.24
50-07220-P	1/11/2006	SFWMD	3/3/2006		4.50	76.74
50-07173-P	11/18/2005	SFWMD	3/14/2006		0.15	76.59
50-00610-S-14	1/11/2006	SFWMD	3/14/2006		0.21	76.38
50-07040-P	3/23/2006	SFWMD	4/19/2006		1.25	75.13
50-07243-P	2/8/2006	SFWMD	5/5/2006		0.24	74.89
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>5/23/2006</b>	<b>17.36</b>		<b>92.25</b>
50-06078-P Mod	4/11/2004	SFWMD	6/21/2006		(2.06)	94.31
06-01401-S-09	6/28/2006	SFWMD	8/28/2006		0.50	93.81
DF06-1013 EPD	8/15/2006	Broward	8/28/2006		0.08	93.73
50-06978-P	7/13/2005	SFWMD	9/27/2006		26.00	67.73
50-00610-S-16	8/9/2006	SFWMD	9/27/2006		2.08	65.65
50-07306-P	5/10/2006	SFWMD	10/19/2006		2.45	63.20
50-07631-P	12/14/2006	SFWMD	1/30/2007		3.25	59.95
50-07593-P	11/9/2006	SFWMD	3/23/2007		0.88	59.07
50-07686-P	3/15/2007	SFWMD	4/20/2007		1.00	58.07
50-07775-P	3/15/2007	SFWMD	5/10/2007		2.90	55.17
06-01835-S-32	3/15/2007	SFWMD	5/10/2007		1.09	54.08

**ATTACHMENT F**  
**Loxahatchee Mitigation Bank Ledger**  
**as of December 1, 2011**

<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>7/16/2007</b>	<b>17.36</b>		<b>71.44</b>
50-00761-S-05	3/15/2007	SFWMD	7/30/2007		0.54	70.90
50-07889-P	6/14/2007	SFWMD	8/15/2007		4.53	66.37
50-07465-P	8/9/2006	SFWMD	8/27/2007		13.24	53.13
50-07787-P	4/12/2007	SFWMD	11/6/2007		14.58	38.55
50-00610-S-19	6/27/2007	SFWMD	11/6/2007		0.22	38.33
50-00422-S-02	1/11/2007	SFWMD	11/6/2007		1.60	36.73
50-07602-P	11/9/2006	SFWMD	2/26/2008		0.72	36.01
50-08380-P	2/15/2008	SFWMD	2/26/2008		0.36	35.65
50-03763-P	4/19/2007	SFWMD	4/24/2008		0.51	35.14
DF05-1113	11/30/2006	Broward	4/24/2008		0.20	34.94
50-08121-P	11/15/2007	SFWMD	4/24/2008		1.56	33.38
50-07161-W	2/26/2008	SFWMD	5/14/2008		0.43	32.95
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>6/19/2008</b>	<b>17.36</b>		<b>50.31</b>
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>6/19/2008</b>	<b>17.36</b>		<b>67.67</b>
50-08263-P	4/22/2008	SFWMD	6/20/2008		5.24	62.43
06-0284234-001	3/26/2008	Broward	6/20/2008		0.38	62.05
50-06709-P	11/24/2004	SFWMD	9/9/2008		0.39	61.66
50-00444-W	5/15/2008	SFWMD	9/9/2008		2.19	59.47
50-08644-P	8/14/2008	SFWMD	9/9/2008		1.74	57.73
DF07-1164	6/13/2008	Broward	9/9/2008		0.22	57.51
50-07887-P	6/1/2007	SFWMD	11/12/2008		0.30	57.21
DF06-1065	3/26/2008	Broward	11/12/2008		0.11	57.10
50-01184-S-09	1/13/2009	SFWMD	2/9/2009		1.05	56.05
50-03987-P-03	1/13/2009	SFWMD	2/9/2009		0.62	55.43
50-06078-P	6/11/2009	SFWMD	6/30/2009		4.30	51.13
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>7/1/2009</b>	<b>17.36</b>		<b>68.49</b>
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>7/1/2009</b>	<b>17.36</b>		<b>85.85</b>
50-081778	2/12/2009	SFWMD	1/22/2010		2.76	83.09
50-04265-P	11/2/2005	SFWMD	4/1/2010		4.52	78.57
50-09272-P	12/15/2009	SFWMD	6/29/2010		0.20	78.37
50-02592-S	4/27/2010	SFWMD	6/29/2010		0.87	77.50
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>7/7/2010</b>	<b>17.36</b>		<b>94.86</b>
<b>Credit Release</b>	<b>n/a</b>	<b>DEP</b>	<b>7/7/2010</b>	<b>17.36</b>		<b>112.22</b>
50-09195-P	11/17/2009	SFWMD	11/29/2010		0.67	111.55
06-05222-P-CA	12/21/2009	SFWMD	11/29/2010		0.33	111.22
06-05415-P	5/15/2008	SFWMD	7/12/2011		1.86	109.36

**ATTACHMENT F**  
**Loxahatchee Mitigation Bank Ledger**  
**as of December 1, 2011**

Freshwater Forested Wetlands: Total Credits Assigned = 121.20

<u>Release Mod./</u> <u>Impact Permit</u>	<u>Permit</u> <u>Date</u>	<u>Issuing</u> <u>Agency</u>	<u>Ledger</u> <u>Modification</u>	<u>Credits</u> <u>Added</u>	<u>Credits</u> <u>Used</u>	<u>Balance</u>
Credit Release	N/A	DEP	11/13/2000	18.17		18.17
50-0172062-001	9/7/2000	DEP	12/29/2000		0.10	18.07
50-04796-P	3/15/2001	SFWMD	5/14/2001		2.00	16.07
50-04763-P	3/15/2001	SFWMD	8/27/2001		0.98	15.09
50-00422-S-02	6/12/2001	SFWMD	9/5/2001		10.80	4.29
50-05319-P	3/14/2002	SFWMD	3/18/2002		3.60	0.69
Credit Release	n/a	DEP	4/2/2002	1.90		2.59
50-05461-P	7/11/2002	SFWMD	8/12/2002		1.44	1.15
Credit Release	n/a	DEP	12/27/2002	11.71		12.86
Credit Release	n/a	DEP	4/9/2003	3.44		16.30
50-00618-S-36	2/13/2003	SFWMD	4/25/2003		0.45	15.85
50-02638-S	7/10/2003	SFWMD	8/5/2003		5.75	10.10
50-05719-P	8/8/2003	SFWMD	8/20/2003		3.00	7.10
41-0166697-001	3/6/2001	DEP	10/6/2003		6.20	0.90
Credit Release	n/a	DEP	1/9/2004	13.26		14.16
Credit Release	n/a	DEP	6/17/2004	4.04		18.20
06-0228274-001	6/16/2004	DEP	6/22/2004		0.15	18.05
50-06370-P	4/14/2004	SFWMD	1/4/2005		1.94	16.11
50-06590-P	10/13/2004	SFWMD	1/14/2005		1.16	14.95
50-06732-P	1/12/2005	SFWMD	2/11/2005		1.36	13.59
50-06666-P	3/9/2005	SFWMD	4/29/2005		0.79	12.80
50-00610-S-12	3/9/2005	SFWMD	6/23/2005		0.83	11.97
Credit Release	n/a	DEP	6/30/2005	4.04		16.01
50-03723-P-05	6/8/2005	SFWMD	11/11/2005		12.50	3.51
50-00610-S-14	1/11/2006	SFWMD	3/14/2006		0.30	3.21
50-07243-P	2/8/2006	SFWMD	5/5/2006		1.45	1.76
Credit Release	n/a	DEP	5/23/2006	4.04		5.80
Credit Release	n/a	DEP	7/16/2007	4.04		9.84
50-07889-P	6/14/2007	SFWMD	8/15/2007		0.59	9.25
50-07465-P	8/9/2006	SFWMD	8/27/2007		1.31	7.94
50-07584-P	11/9/2006	SFWMD	11/6/2007		0.39	7.55
50-04151-P	12/4/2006	SFWMD	11/6/2007		0.80	6.75
50-07433-P	7/12/2006	SFWMD	4/24/2008		5.01	1.74
50-07161-W	2/26/2008	SFWMD	5/14/2008		0.08	1.66
Credit Release	n/a	DEP	6/19/2008	4.04		5.70
Credit Release	n/a	DEP	6/19/2008	4.04		9.74
50-00444-W	5/15/2008	SFWMD	9/9/2008		0.98	8.76
50-06666-P	9/11/2008	SFWMD	11/12/2008		0.67	8.09
Credit Release	n/a	DEP	7/1/2009	4.04		12.13
Credit Release	n/a	DEP	7/1/2009	4.04		16.17
50-0291103-001	11/19/2008	DEP	8/24/2009		0.52	15.65
50-04265-P	11/2/2005	SFWMD	4/1/2010		0.85	14.80
Credit Release	n/a	DEP	7/7/2010	4.04		18.84
Credit Release	n/a	DEP	7/7/2010	4.04		22.88

## **ATTACHMENT G - Security Measures**

### **General Security**

The bank site will be encompassed with "No Trespassing" signs, as detailed in Florida Statutes Chapter 810.011(5)(a). The bank site will also be monitored by a security patrol on a monthly basis. This patrolling will occur during both the initial maintenance and monitoring period and the long-term management. During this patrol, security personnel will check for evidence of poaching or dumping, as well as the condition of fencing, gates and signs.

### **North Parcel**

There are two gated vehicular entry points to the North Parcel (see attached figure "Security Measures"). The first is through the gated Levee 40 (Gate 1) located within the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge) near the Boat Ramp area. The second point of entry is gated (Gate 4), just west of the intersection of State Road 7 and the L-36 ½ canal/levee. The L-36 ½ is managed by the Lake Worth Drainage District (LWDD) and public access is prohibited. In the North Parcel, the eastern perimeter is bounded by the E-1W-N canal. This canal is also managed by the Lake Worth Drainage District (LWDD) and public access is prohibited. The proposed soil cement berm commencing at Levee 40, running parallel to E-1W-N and travelling south and west around LWDD's horticultural disposal area and terminating at the Levee 40 will be gated at points of entry. These gates will remain locked at all times. The western perimeter of the bank site coincides with the eastern boundary of the Refuge and Levee 40. "No Trespassing" signs along the western boundary of the Bank will provide notice to the public using the Levee 40. The intersection of Levee 40 and Lateral (L-) 36½ is gated (Gate 2), making unauthorized travel improbable. Additionally, there is a gate on the south side of the bridge crossing L-36½ (Gate 3). The boat ramp used for ecological monitoring located northeast of LWDD's horticultural disposal area will be gated and secured at all times.

### **South Parcel**

Gate 4, approximately 1 mile east of the bank site and west of State Road 7, provides the only vehicular entry point to the South Parcel. The South Parcel is bounded on the west by the E-1W-S and on the north by the L-36½ which are under the control of LWDD and public access is prohibited. The southern border is contiguous with the Saturnia housing development. Saturnia is fenced along this perimeter. The eastern border has three interfaces:

- Florida Power & Light (FPL) Broward-Corbett Transmission Line- This right of way is controlled by FPL and access is limited to those parties in possession of a right of way use agreement.

- Boca Chase housing development - Most of the homes of this community are separated from the site by water (lakes and canals). The rest of the homes are adjacent to the property with no physical separation.
- Lakes at Boca Raton housing development - The homes of this community are separated from the site by a wooden fence.

The proposed earthen berms along the eastern and southern borders will be gated at possible points of entry. These gates will remain locked at all times. It is highly unlikely that unauthorized entry will occur along the eastern and southern borders due to this proposed system of ditch and berm.

### **Southeast Parcel**

The northern boundary of this parcel, like the South Parcel, is adjacent to the L-36½, which is under the control of LWDD and public access is prohibited. The western border is met by FPL's Broward-Corbett Transmission Line. This right of way is controlled by FPL and access is limited to those parties in possession of a right of way use agreement. The eastern and southern borders are separated by a soil cement berm, which will be gated at possible points of entry. These gates will remain locked at all times.

Gate #	General Location	Controlling Entity	Schedule
1	Levee 40 within ARM Lox NWR near boat ramp and parking lot	South Florida Water Management District	This gate is locked at all times.
2	East of Levee 40, West of Horticultural Disposal Area	Lake Worth Drainage District, FPL	This gate is locked at all times.
3	South of L-36½, North side of access road	Lake Worth Drainage District	This gate is locked after 3:30 pm weekdays and all day weekends and holidays.
4	West of State Road 7, South of L-36½	Lake Worth Drainage District, FPL	This gate is locked after 3:30 pm weekdays and all day weekends and holidays.

## **Attachment H - Monitoring Plan (as of December 2011)**

### **INTRODUCTION**

This plan revises and updates the monitoring plan included in the original permit issued February 18, 2000. The revisions are based on evolving site conditions and improved understanding of monitoring techniques and results, as well as the physical and ecological dynamics of the site. Activities that have been completed or that are no longer relevant to the current site conditions have been deleted or modified as appropriate. However, to account for an understanding of previous monitoring reports and overlapping conditions, some references from the original plan will be included or referenced.

### **Overall Mitigation Bank Plan**

The restoration and enhancement efforts for the Bank address both hydrology and vegetation management activities to promote the reestablishment of a mosaic of Everglades habitats from a highly degraded area within its altered landscape. The mitigation plan includes the following specific restoration goals:

1. Encourage the re-development of wildlife habitats typical of the eastern Everglades mosaic;
2. Preservation and enhancement of the site;
3. Lengthen hydroperiods within the existing topography by retaining rainwater and eliminating its direct drainage into adjacent canals;
4. Enhance water quality by diversion of stormwater and agriculture runoff;
5. Reduce or eradicate extensive exotic and inappropriate vegetation, including Brazilian pepper, melaleuca, and willow thickets present on the site; and
6. Maintain and encourage habitats for rare, threatened and endangered species with additional planting, fire management and nesting platforms.

The permit details the restoration and management activities and provides goals and objective criteria for determining restoration success. Monitoring and site assessment is used to track restoration progress, determine success attainment and inform management decisions.

### **Monitoring Objectives**

Hydrology, vegetation cover (including that of nuisance and exotic species), plant community composition, wildlife utilization, and functional assessment will be monitored. Except as noted in individual category explanations, monitoring will be conducted annually at the end of the growing season (September-December) until the Department determines final success and releases the permittee from annual monitoring requirements. Annual reports shall be provided in January of year following monitoring.

### **Hydrology Monitoring**

Original hydrology monitoring included water level recorders and gauges mostly distributed along perimeter locations. Information from these sites, additional data from reference areas, and a 2008 topographic survey of the site invalidated some of the assumptions that were the basis of the original success criteria. First, there was an assumption of a uniform flat topography within the site at 14 ft. NGVD. Further, there was an assumption that water levels within the perimeter levees would be controlled by the levee discharge control elevation. Finally, criteria were developed using water conservation area data for a sawgrass marsh that was artificially impounded at (~10 mo. inundation). The additional information indicated that the site's topography varied from about 14.2 to <13.5, generally sloping to the west, with internal variation. Thus, the expectation of a uniform hydroperiod was incorrect. Further, because the site lies along the interface between historic pinelands and sawgrass marsh, so only portions of the site would be expected to have typical long hydroperiod marsh hydrology. Finally, while the levees retard surface water runoff, water is not held within the levees (as a bathtub), but fluctuates with the surrounding ground and surface water levels that are often lower than the ground elevation of much of the site.

Therefore, the 2011 permit modification water level criteria and monitoring sites are designed to measure the areas within the interior where the marsh would be most similar to the reference and the bank's original target, and assume a variation across the site dependent on topography and proximity to perimeter canals. Water level targets are based on appropriate inundation relative to more realistic ground elevations rather than levee control elevation. Permit Figure 6 provides topographic data, and Figure 14B provides the original and current monitoring sites.

Water level data is collected from the five continuous water level recorders installed in five piezometers (PN1, PS-N, PS-M, PS-S and PS-E) and eleven staff gauges (Figure 14B). Additionally, water level and soil saturation data will be collected during vegetation sampling and MWRAP scoring activities (Figure 14A). Water levels are recorded daily and downloaded monthly from the piezometer sites. Staff gauge readings and M-WRAP station hydrology, collected episodically during field events, provide additional information to support the overall monitoring of site function.

Water level data shall be reported as hydrographs by water year (May 1 to April 30) for the period of record (for credit release requests). To simplify graphs for presentation, hydrograph data may be averaged for each month and presented as a point; however, full data results and hydrographs shall be provided. Hydrographs shall also provide the ground elevation of each piezometer and a line representing the important target levels (13.5, 14.2 and 14.7). Hydrology reports shall also provide gauge and water depth data collected during annual monitoring and other sampling events.



## **Vegetation Monitoring**

Vegetation monitoring will include qualitative, quantitative and photographic assessments of the herbaceous and forested wetland systems.

### ***Quantitative Sampling***

Quantitative sampling will use a modified line-intercept method along sampling transects shown on Figure 14A. Transects are divided into 20-m sampling stations. In total, about 50 sampling stations will be monitored for each of the two basic communities – herbaceous marsh and mixed forest. Each station is categorized as herbaceous or mixed forest. Mixed forest stations are further divided into types depending on dominant canopy. For each station, groundcover is measured within a 1 m<sup>2</sup> quadrat at the end of the station; shrub cover is ‘canopy’ (of shrub species) intersecting along a 10 m portion of the transect line; tree cover is canopy (of tree species) intersecting along any portion of the 20m line. Vegetation is identified to species, and further labeled as exotic, category I and II, UP, FAC, FACW, OBL or SAV.

In addition to these transect sampling stations, quantitative sampling was expanded in year seven and thereafter. That sampling is hereby formalized into the plan as follows. Four additional 20-m sampling stations in ordinal directions from 25 randomly generated points (total of 100 stations) will supplement the transect stations. Annual reports will include the location of the points and will report data from these points both separately from and pooled with transect data.

Other incidental information to be noted and recorded on data sheets: water depth; naturally recruited vegetation; seedlings, saplings and vegetative growth by rhizome; stressed and diseased vegetation; wildlife observations and signs.

### ***Qualitative Sampling***

Qualitative sampling will also begin in sampling year nine (following the 2011 major modification of the permit) and thereafter to provide the maximum amount of qualitative information over the largest variable area to document success, inform management activities, and assess the representativeness of quantitative data. Ten semi-random 1,000’ transects will be assessed for each monitoring event: 3 in the north parcel, 2 in the southeast parcel and 5 in the south parcel. The start point of each transect will be randomly selected prior to each monitoring event, and the transect will generally proceed to the interior of the bank. A map showing the actual location of each transect will be provided with the monitoring report.

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

1. Identify the community type of the point (herbaceous or forested) – this data will also supplement aerial interpretation of community mapping.

2. Herbaceous cover will be systematically estimated within ~2 meter radius to record total ground cover estimate, the dominant species (1-3), total number of species; the proportion of the cover of dominant species; proportion of rooted herbaceous vs. rooted shrub stems in the cover.
  3. Total shrub cover (area shaded by shrub species) within a 3 meter radius will be estimated and dominant species listed.
  4. Tree species, number and size (either dbh or seedling height) of trees rooted within a 5 meter radius will be listed, including visible seedlings.
  5. Within a 3 m radius, record species and cover of any exotic vegetation observed.
  6. Data from these points will be compiled for each community type per sampling event and extrapolated to total cover, and relative cover of species within strata.
- In addition, along the entire length of the transect, the following assessments are noted:
7. 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.
  8. Signs of wildlife usage.
  9. Locations of nuisance species and listed species observed will be GPS located and mapped.
  10. Management notes, including fuel loads, hog damage, planted material survival, aberrant conditions such as drought or flooding, anticipated management needs (planting, herbicide, fire, etc.)

Quantitative transect data will be summarized in reports and other incidental information from these transects will be addressed in reports as follows:

- compare with quantitative data to 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, such as exotic infestation, hog damage, vegetation loss to disease, herbicide, weather, etc. and appropriate solutions.

### ***Photo Documentation***

Ground level photos provide useful documentation of data and will be part of all site visits and annual monitoring. In addition, several permanent photo stations are established to track changes over time. These permanent photo stations are established along the vegetation transects. One photo station per community type along each transect will be selected, as well as one station within MWRAP scoring locations not covered by transects. For each report, the period of record photos will be provided for the selected permanent photo stations. In addition, typical ground and aerial oblique photos will be provided for each significant community expression, as well as photos to demonstrate particular or notable attributes. A rectified aerial photo shall be provided for final success (within 2 years of the final monitoring).

### **Vertebrate Monitoring**

The Bank met the interim success criteria for wildlife (as described in the July 16, 2004 modification) in 2004, 2005 and 2006, using methods provided in the original permit's monitoring plan. Formal vertebrate monitoring has not been conducted since 2006 although significant wildlife encounters have been documented (e.g., nesting bald eagles) and mammal usage of the Bank will be documented by direct observation of the individual animals or their sign during other routine sampling events. The same wildlife monitoring protocol documented in that monitoring plan and those monitoring reports shall be used for determination of final success.

### **MWRAP Scoring**

The MWRAP<sup>1</sup> protocol of wetland assessment was used for credit determination and serves as a general balance for other success criteria and overall restoration success. Further it ensures the use of a variety of locations throughout the bank as points to evaluate overall function at that site. These MWRAP stations, identified on Figure 14C, are the same scoring locations used during permitting, and will be scored annually. MWRAP scores for each site will be recorded and available electronically; however, for reporting, scores will be averaged across all stations for each parameter, and may be further reported by parcel.

### **Analyses and Reporting**

Data from the various sampling methods will be compiled in a variety of data files for each of the monitoring activities. In ArcView, an Avenue script will be designed that will link each monitoring location to its corresponding data file, such as an Excel spreadsheet, a Word document, or an image file. This linking will enable ready availability of data for access and analysis by community type, monitoring location, monitoring type, vertebrate class, sampling event, parcel, or other criteria as available. This will allow for identification of trends and needs for the continued monitoring and maintenance activities. The data may be provided on request by the Department, but will be analyzed and condensed for reporting as described for each parameter above and as shown in previous annual reports.

All reports shall provide an executive summary, a brief summary of sampling methods, maps, photos and figures to allow the reader to understand the data presented, summary results tables for each parameter (as well as supplemental data in electronic files), and an analytical discussion of the results and assessment of each parameter and overall performance of the bank. In addition the final report will contain a map showing location and acreage summary of communities derived from aerial photography and ground-truthing.

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<sup>1</sup> MWRAP - Miller, R.E., Jr and B.E. Gunsalus. 1996. Modified Wetland Rapid Assessment Procedure for Mitigation Banks in Florida. Modified by the Mitigation Bank Review Team Development Workgroup. October 3, 1996 Draft. South Florida Water Management District, West Palm Beach, FL.

## **Attachment I – Long Term Management Plan**

### **A. Introduction**

Significant restoration activities were initiated on the Bank site to restore lost ecological function. Once success is achieved, wetlands on the site are expected to be nearly self-sustaining. Attainment of all success criteria and release of final credits will initiate the long-term management phase of the Bank. Implementation of the long term management plan will ensure the Bank's biological and hydrological functions are not degraded. Implementation of the long-term management plan will be the responsibility of the permittee's Qualified Mitigation Supervisor (QMS). It is anticipated that Tetra Tech EC, Inc. will be the permittee until the site has attained success and all the credits are sold. At that time, it is anticipated that the permit and responsibility for implementation of the long-term management plan will be transferred to the South Florida Water Management District through an official permit transfer. The long-term management program consists of the following elements:

1. Signage, fencing and site security
2. Vegetation Management
  - Exotic and nuisance plant control
  - Mowing berms and levees
  - Vegetative shredding
  - Prescribed burning
3. Maintenance of berms, water control structures, by-pass canal
4. Hydrologic monitoring
5. Wood stork and osprey nesting platforms inspection, maintenance and repair
6. Feral animal control

#### **1. Signage, Fencing, and Site Security**

Security concerns include illegal access, dumping and poaching. Unauthorized access can lead to environmental damage at the site. Maintaining the integrity of signs, locks and gates is essential to ensure the continued security of the site. These facilities will be visually inspected on a semi-annual basis and repaired/replaced as necessary. It is important to maintain the required no trespassing signs in order for law enforcement to enforce the no trespassing laws.

Routine surveillance will be conducted by the management entity. Additionally, patrols for illegal access, dumping and hunting will be combined with these inspections. If unauthorized access or other activity is documented, the violations will be reported to the FFWCC law enforcement officers, the USFWS or the Palm Beach County Sheriff's office, whichever is most appropriate and immediately available.

## **2. Vegetation Management**

### **a. Exotic and Nuisance Plant Monitoring and Control**

Due to exotic and invasive species at adjacent properties and a potential exotic seed bank within the soils at the site, exotic and invasive vegetation at the Bank must be monitored and controlled in perpetuity. All Category I and Category II species as listed by EPPC for the 2009 list will be eradicated; however, specific species of concern include *Melaleuca* (*Melaleuca quinquenervia*), Brazilian pepper (*Schinus terebinthifolius*), torpedo grass (*Panicum repens*) and Old World climbing fern (*Lygodium microphyllum*). The goal of this task is to ensure that coverage by exotic and nuisance invasive vegetative species is maintained at <5% coverage in any 10 acre area.

Inspections for exotic and nuisance vegetation species will be performed by helicopter annually and by land semi-annually. Land inspections will include visual observation from the berms/roads and along random pedestrian transects throughout the Bank. In general, spot treatments (hand pulling, back-pack herbicide application) may occur during the inspection, but observations will also be used as the basis to determine if more intensive remedial action is necessary. All herbicide treatment methods will use appropriately labeled herbicides and avoid damage to the non-target species.

### **b. Mowing Berms and Levees**

Controlling overgrowth of vegetation on levees and berms is necessary for the visual engineering inspections of these constructed features. Mowing will occur approximately quarterly (10-14 weeks depending on growth).

### **c. Vegetation Management and Shredding**

Although anticipated to be managed by prescribed fire and limited herbicide treatment, some shredding, cutting, or other manipulation of vegetation may be necessary to control hardwoods in the herbaceous areas, especially willow. Shrub cover is restricted to <25 percent aerial coverage in herbaceous areas, and willow cover is restricted to a maximum of 30 acres of the forest community.

### **d. Prescribed Burns**

Prescribed burns will be implemented in accordance with the detailed Fire Management Plan (Attachment C) included in the permit. Fire will be used to control woody shrubs, exotic and nuisance plants, and promote regeneration of grasses and sedges in transition areas, with portions of the site anticipated to be burned on an ~5 year return cycle. The fire plan provides for the use of prescribed fire as a tool to maintain the wetland quality of this wet prairie-slough-sawgrass-tree island mosaic.

The following table provides a summary of management activities and schedules.

Task	Description	Schedule	
		Inspection	Maintenance
Security	Inspection/repair of "No-trespassing" signs, fencing, gates and locks; trespassing, dumping and report to authorities as appropriate.	Semi-annually	As needed
Exotic Plant Species Monitoring & Control	Visual inspection from all berms and random walkpaths for of exotics (in site and canal).	Semi-annually	
	Manual and herbicide spot treatments within bank and along berms.		As needed
	Helicopter surveys for exotics, hog damage, trespass or dumping	Annually	As needed
	Boat or truck-sprayer herbicide treatment of canals		Expected semi-annually
Prescribed Fire	Assess fuel loads and appropriateness burning and conduct prescribed burn	Annually	Anticipate ~5+3 year rotation
Berm and Structure Maintenance	Engineer inspection for berm and structure integrity: evidence of erosion, weakened berms, debris in culverts, unstable/eroding geofabric, roadways, canals and structures.	Annually	As needed
Hydrology	Monitor ground and surface water levels and maintain staff gages and piezometers	Semi-annually	As needed
Nesting Platforms	Inspect and rebuild osprey and wood stork nesting platforms	Annually	As needed, ~5 - 10 yr. expected
Reporting	Jan. and July report to DEP of all inspection, treatment & management activities, with dates and maps; data table/graphs, as appropriate; overall site condition, problems, anticipated management activities	Semi-annual	

#### D. Adaptive Management

Although listed activities are expected to be adequate to maintain and enhance site conditions, adaptive management based on comprehensive evaluation of significant environmental data is likely to adjust management strategies to adapt to a changing environment. This management plan should be reviewed and updated, with the Department's written approval, every five years. Further regional or extreme climatic events may require altered management strategies. Whenever the permittee or SFWMD finds it necessary to alter the management plan, the Department shall be contacted and advised regarding proposed alterations to determine if a permit modification is necessary.

**STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
NOTICE OF PERMIT MODIFICATION ISSUANCE**

The Department of Environmental Protection gives notice of its issuance of a major modification of the Loxahatchee Mitigation Bank Permit #140969-001 (modification #140969 -096) to Tetra Tech EC, Inc., c/o Jonathan Weiss, 759 South Federal Highway, Suite 314, Stuart, FL 34994. The modification revises the configuration and description of the target communities and associated success criteria, hydrology criteria, and some monitoring protocol. In addition, this modification updates all permit documents to account for completed work and previous modifications.

The project site is located in Palm Beach County, approximately 1 mile west of U.S. 441, between S.R 806 (Atlantic Ave.) and S.R. 808 (Glades Rd.), directly east of the Loxahatchee National Wildlife Refuge, Sections 14, 23, 26 and 35, Township 46 South and Range 41 East, and Section 2, Township 47 South and Range 41 East, Class III Waters.

The permit modification is available for public inspection during normal business hours at the Department's Office of Submerged Lands and Environmental Resources, Bob Martinez Building, 2600 Blair Stone Road, MS 2500, Tallahassee, FL, 32399-2400 or can be requested by calling (850) 245-8492 or emailing [Vicki.Tauxe@dep.state.fl.us](mailto:Vicki.Tauxe@dep.state.fl.us).

A person whose substantial interests are affected by the changes to this permit may petition for an administrative proceeding (hearing) in accordance with Sections 120.569 and 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, within 21 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Sections 120.569 and 120.57, Florida Statutes.

The Petition shall contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is located; (b) A statement of how and when each petitioner received notice of the Department's action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action (changes to the conditions placed on this permit); (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action (changes to the conditions

placed on this permit); (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action (changes to the conditions placed on this permit); and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action.

Persons whose substantial interests will be affected by the changes to the permit have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 21 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Sections 120.569 and 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Mediation is not available.