WEST TENNESSEE RIVER BASIN AUTHORITY
STREAM AND WETLAND
IN-LIEU FEE PROGRAM
PROSPECTUS

Submitted To:

US Army Corps of Engineers – Memphis District
US Environmental Protection Agency
US Fish and Wildlife Service
Natural Resource Conservation Service
Tennessee Department of Environment and Conservation
Tennessee Wildlife Resource Agency

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List of Acronyms

CPF	Comprehensive Planning Framework
CWA	Clean Water Act
HUC	Hydrologic Unit Code
ILF	In-Lieu Fee
IRT	Interagency Review Team
MOU	Memorandum of Understanding
NRCS	Natural Resources Conservation Service
PRM	Permittee Responsible Mitigation
RFP	Request for Proposal Process
RIBITS	USACE's Regulatory In-Lieu Fee and Bank Information Tracking System
TCA	Tennessee Code Annotated
TDA	Tennessee Department of Agriculture
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TSMP	Tennessee Stream Mitigation Program
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
TWF	Tennessee Wildlife Federation
USACE	US Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WOTS	Waters of the State
WOTUS	Waters of the United States
WTRBA	West Tennessee River Basin Authority

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1.0 Introduction

This Draft Prospectus aims to describe how the West Tennessee River Basin Authority (WTRBA or, the "Sponsor") would function and serve as a stream restoration In-Lieu Fee (ILF) Program to underserviced areas of west Tennessee.

Currently, there are twenty mitigation banks and ILF Program sites within the proposed service area according to the U.S. Army Corps of Engineers' (USACE) Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS). Of those twenty sites, six are the Tennessee Stream Mitigation Program (TSMP) ILF Program, which was terminated. Of the remaining fourteen programs, five are pending, with incomplete data and program type listed, and the remaining nine sites are all wetland banks. There is a very low availability of stream mitigation credits and a high demand due to increasing growth and development. The current administration is committed to encouraging growth and development in Tennessee to improve opportunity and quality of life for the citizens of Tennessee. Major state and federal projects will continue to develop in the region which will result in unavoidable impacts to Waters of the United States (WOTUS) and Waters of the State (WOTS). There is a high likelihood that these projects will face stream credit shortages with no viable answers on the horizon.

Current federal mitigation guidelines place a preference on the use of ILF Programs and mitigation banks over on-site and permittee responsible mitigation (PRM) sites due to the cumulative benefit that larger planned sites provide to the overall watershed. These programs are better able to address watershed-wide concerns versus PRM sites. With a lack of preferred mitigation options, a growing demand, and a weak credit market in the region, there exists a very real need for viable mitigation options. These conditions will support the operation and success of the Program.

The establishment, use, operation, and maintenance of the Program shall be carried out in accordance with the following authorities:

A. Clean Water Act (33 U.S.C. §§ 1251, et seq.);
B. Rivers and Harbors Act (33 U.S.C. § 403);
C. Fish and Wildlife Coordination Act (16 U.S.C. §§ 661, et seq.);
D. Regulatory Program of the U.S. Army Corps of Engineers (33 C.F.R. Parts 320-330);
E. Compensatory Mitigation for Losses of Aquatic Resources (33 C.F.R. Part 332);
F. Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 C.F.R. Part 230);
G. Memorandum of Agreement regarding Mitigation under the Clean Water Act, Section 404(b)(1) Guidelines between the Department of the Army and the Environmental Protection Agency (February 6, 1990);
H. Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (73 Fed. Reg. 19,594) (Apr. 10, 2008)(incorporated into Army Regulations under 33 C.F.R Parts 325 and 332); and
I. Water Quality Control Act of 1977, Tenn. Code Ann. § 69-3-101, et seq. and the Rules of the Tennessee Department of Environment and Conservation, Division of Water

Resources, Tenn. Comp. R. and Regs. 0400-10-03, et seq., 0400-40-03, and 0400-40-07, et seq.

The mitigation credits generated from these activities will be sold to permittees following established guidelines outlined later in this Prospectus. The purchase of these credits by permittees will offset unavoidable impacts that are authorized through the issuance of USACE and Tennessee Department of Environment and Conservation (TDEC) Permits under Section 401 and 404 of the Clean Water Act (CWA), Section 10 of the Rivers and Harbors Act, and/or the Tennessee Water Quality Control Act. The restoration, enhancement, and preservation of streams and wetlands, also referred to as mitigation projects (or "Projects") in the region will follow the applicable Federal and State mitigation guidelines to generate mitigation credits in the service area presented in this Prospectus.

Pending approval of the Draft Prospectus, a Program Instrument (the "Instrument") will be developed for review by the USACE, TDEC, and the Interagency Review Team (IRT) established for the Program. The Instrument will further detail the program including site selection, monitoring, and other criteria for project performance. The instrument will govern the establishment, operation, and use of the ILF Program sponsored by WTRBA. USACE approval of the Instrument constitutes the regulatory approval required for the West Tennessee River Basin Authority In-Lieu Fee Program to be used to provide compensatory mitigation for Department of the Army permits pursuant to 33 C.F.R. 332.8(a)(l). The Instrument is not a contract between the Sponsor or Property Owner and USACE or any other agency of the federal government. Any dispute arising under the Instrument will not give rise to any claim by the Sponsor or Property Owner for monetary damages. This provision is controlling notwithstanding any other provision or statement in the Instrument to the contrary

The Instrument will provide the Sponsor with authorization to provide mitigation credits to USACE, Memphis District (Corps) and TDEC permittees, upon approval by the District Engineer or USACE' official representative. Approval shall be in the form of a Corp and/or TDEC permit. Authorization to sell credits to Corps and TDEC permittees is contingent on compliance with all of the terms of the Instrument. Permittees that secure credits from the Program are not responsible for Program compliance with the Instrument. The Sponsor does not have the written or implied authority to approve USACE or TDEC permits.

1.1 Purpose and Objectives

The purpose of the proposed In-Lieu Fee Program, sponsored by the WTRBA, is to establish, restore, enhance, and preserve aquatic resources within the WTRBA's jurisdiction, specifically streams. The Program will be used to satisfy compensatory mitigation requirements for permits issued under Section 404 and/or Section 401 of the CWA, 33 U.S.C. §§ 1341, 1344, and/or Section 10 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 403.

The objectives of the ILF Program are to:

1. Offset the permitted, unavoidable impacts to WOTUS and WOTS through stream and wetland restoration, enhancement, and preservation projects in west Tennessee.

2. Provide a watershed-level alternative to mitigation banks in areas where these options do not exist or are insufficient to meet demands in the region.
3. Restore stream, wetland, and floodplain functions to the region in a coordinated approach while generating revenue to sustain conservation efforts into the future.
4. Serve the WTRBA's mission to preserve the flow and function of west Tennessee rivers, streams, and bottomland hardwood habitats.
5. Provide a mechanism and source of revenue for a watershed-level approach to stream restoration projects implemented by the WTRBA to further the agency mission.

1.2 Program Sponsor Qualifications

The WTRBA, created under Title 64, Chapter 1, Part 11 of the Tennessee Code Annotated and administratively attached to TDEC. The purpose of this state entity includes improvement of the WOTS (Tenn. Code Ann. § 64-1-1101(b)(2). These goals are met through improving aquatic resource conditions, while mimicking natural flow and functions, through the best engineering practices available.

The WTRBA is tasked with maintenance, stabilization and preservation of the natural flow and function of the Hatchie, Loosahatchie, Obion, and Forked Deer watersheds. With a full-time staff of fifteen equipment operators, two administrative staff, and seven science and engineering staff, the WTRBA is ideally suited to identify, construct, and maintain stream and wetland projects. An Agency Profile (Appendix A) details the WTRBA qualifications in respect to operating an ILF program. The WTRBA also has the authority to enter supplemental contracts for design, permitting, construction, monitoring, or maintenance for any or all portions of approved projects. The mission of WTRBA as set out in Tennessee Code Annotated Title 64, Chapter 1, fits the goals and model of a successful ILF program through a focus on creating self-sustaining aquatic resources for the benefit and overall health of a watershed.

The Sponsor, being a state entity, is eligible to establish and operate an In-Lieu Fee Program as described in the 2008 Federal Mitigation Rule (33 CFR Part 332 – Compensatory Mitigation of Losses of Aquatic Resources), to offset unavoidable impacts approved through issuance of USACE and TDEC permits through sale of stream credits generated by the Program.

2.0 Program Operation

2.1 Parties

USACE Memphis District

USACE is responsible for consulting with the IRT in accordance with the requirements of 33 C.F.R. 332.8, providing oversight of the Program, and ensuring compliance with CWA Section 404 and the Rivers and Harbors Act Section 10. There is only one Corps District, the Memphis District, to be covered by the Instrument.

Interagency Review Team (IRT)

USACE will form an IRT comprised of USACE (IRT Chair; Memphis District), USEPA, U.S. Fish and Wildlife Service (USFWS), Natural Resources Conservation Service (NRCS), TDEC, Tennessee Wildlife Resources Agency (TWRA), Tennessee Valley Authority (TVA), and other representatives invited by USACE from other federal, state, tribal, and local resource agencies that would have a substantive interest in the establishment and management of the Program. An IRT meeting will be scheduled annually to review reports detailing yearly Program performance, financial and long-term management funding, and project cost accounting, among others. The WTRBA will be responsible for requesting the annual meeting with the IRT.

IRT Members

The IRT members are responsible for advising USACE in assessing monitoring reports, recommending remedial or adaptive management measures, and providing input on credit releases, credit release schedules, and Instrument modifications. The procedures for IRT member review and comment in 33 C.F.R. § 332.8 shall apply. IRT members whose agency has a direct or indirect role in funding, contracting, implementation or other financial involvement with a specific project shall be recused.

West Tennessee River Basin Authority (WTRBA)

The WTRBA, created under Title 64, Chapter 1, Part 11 of the Tennessee Code Annotated and administratively attached to TDEC. Upon approval, the WTRBA will operate an ILF program that provides compensatory mitigation throughout the service area in compliance with the Instrument and applicable federal and state rules, regulations, and guidelines.

Tennessee Department of Environment and Conservation (TDEC)

The Division of Water Resources, within TDEC, has a regulatory authority over WOTS under § 401 of the Clean Water Act, the Tennessee Water Quality Control Act and the Rules of the Water Quality Control Board.

2.2 Service Areas

The service areas proposed for this ILF program will include those drainages constrained on the eastern boundary by the Tennessee River divide, the western boundary by the Mississippi River, and by the Tennessee state line on the northern and southern edges (Figure 1). The proposed service areas include the following Level 3 Ecoregions (Figure 2).

Table 1. Proposed Service Areas for the WTRBA ILF Program.

Service area	HUC 8 Watersheds
Obion Basin	08010202 – Obion 08010203 – South Fork Obion
Forked Deer	08010204 – North Fork Forked Deer 08010205 – South Fork Forked Deer 08010206 – Forked Deer
Hatchie	08010100 – Lower Mississippi – Memphis 08010203 – Lower Hatchie 08010207 – Upper Hatchie 08010209 – Loosahatchie

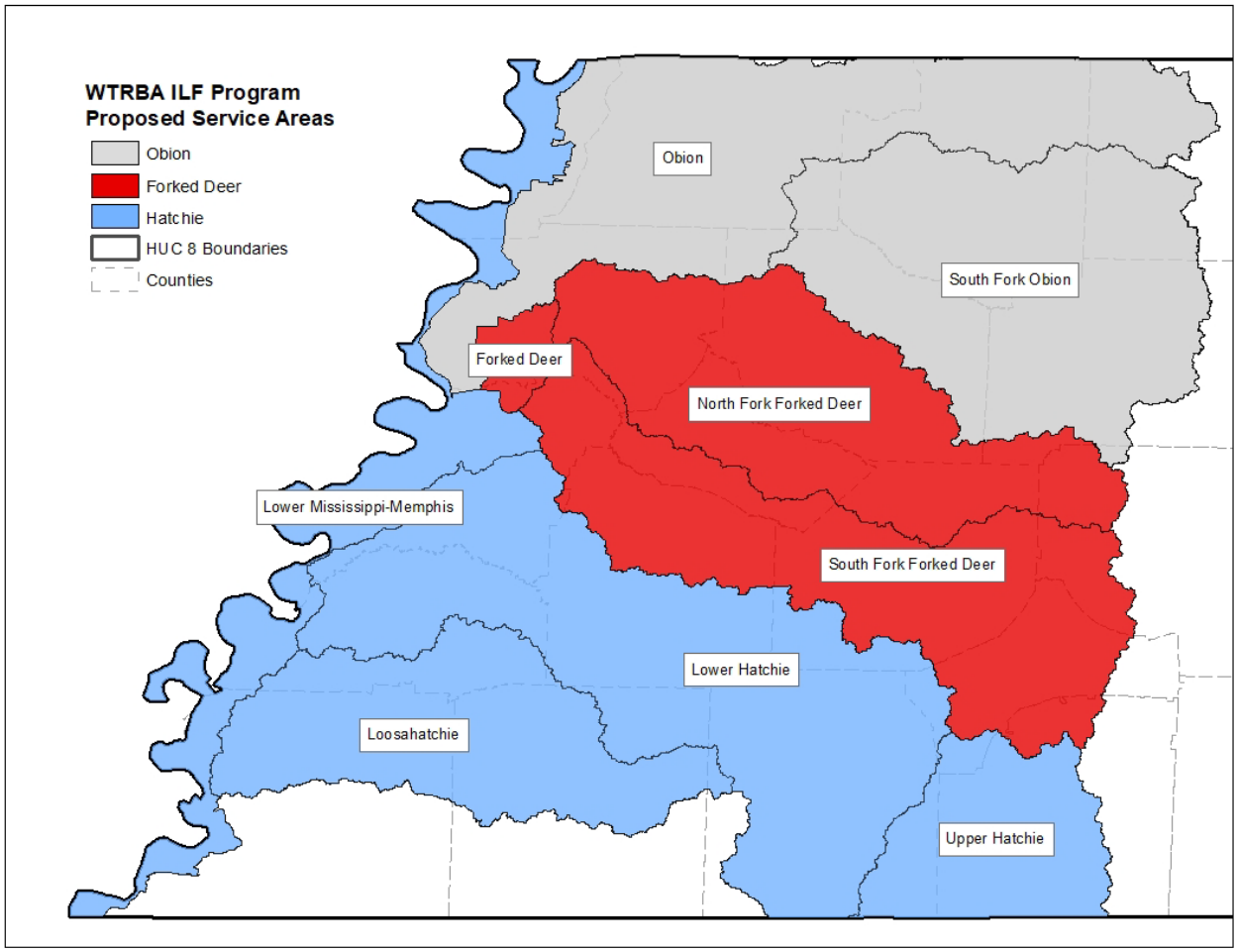

Figure 1. Proposed Service Areas and HUC 8 watersheds within each service area for the WTRBA ILF Program.

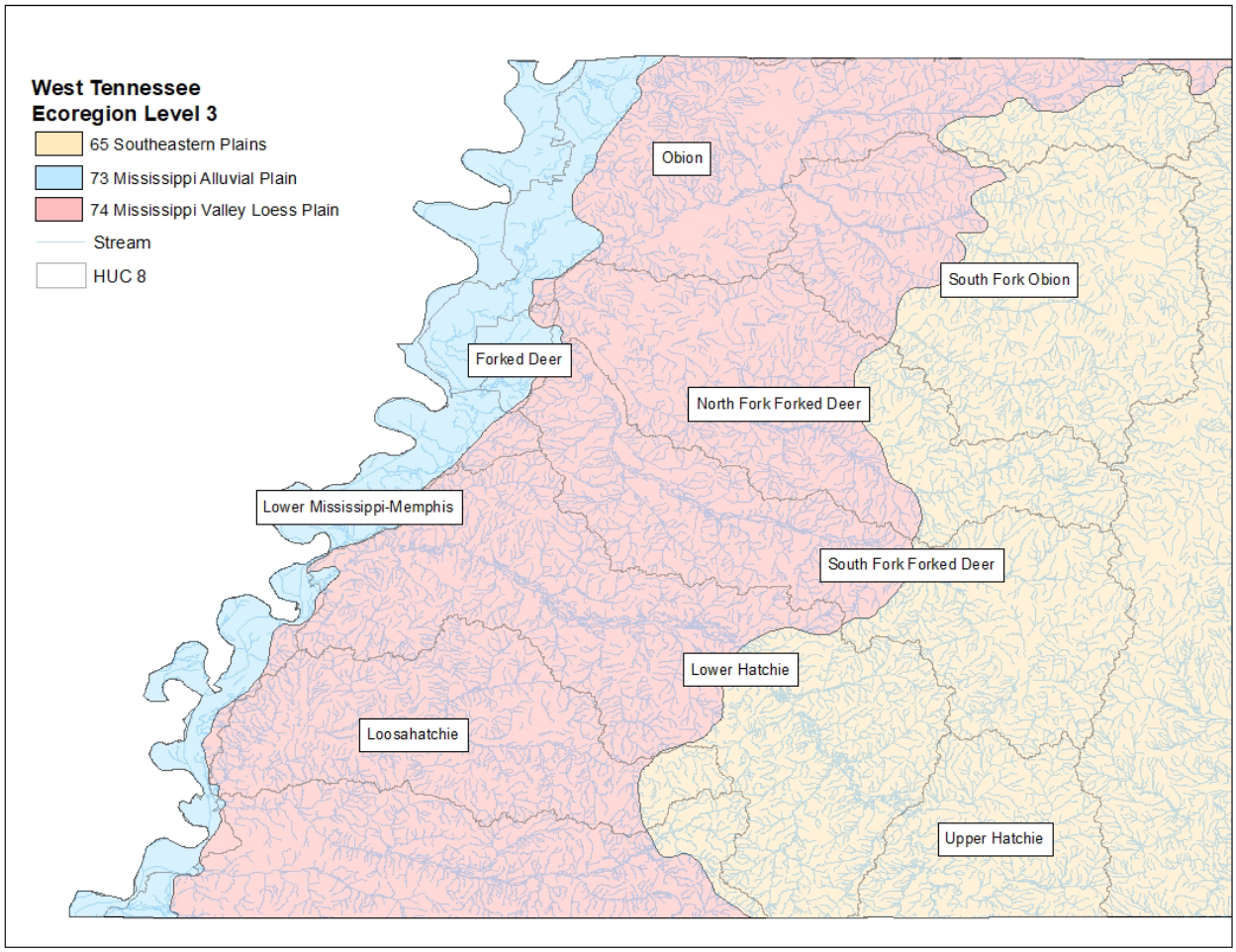

Figure 2. Ecoregion level 3 class distributions in proposed service area for the WTRBA ILF Program.

The service area will be further divided into three separate areas containing the following HUC 8 watersheds (Table 1). Service areas were delineated based on the legal authority given to the Sponsor through Tennessee Code Annotated Title 64, Chapter 1, the general watershed delineation approach, and guidance from the IRT. USGS Hydrologic Unit Codes (HUC) were used to delineate natural drainages. Due to the longitudinal connectivity issues commonly found in streams in the Lower Mississippi Basin in Tennessee, the WTRBA proposes the conjoining of HUC 8 drainages within the same river system, despite being in separate ecoregions. Ecoregion considerations will be made within the Comprehensive Planning Framework (CPF; in Appendix B) for each service area. The northern most service area, "Obion Basin," consist of the entire Obion River Basin system which includes the HUC 8 drainages of Obion and South Fork Obion. The second service area, "Forked Deer," consist of the entire Forked Deer River Basin which includes the following HUC 8 drainages: mainstem Forked Deer, North Fork Forked Deer, and South Fork Forked Deer. The last service area, "Hatchie," includes the Hatchie, Loosahatchie, and Upper Hatchie HUC 8 drainages. All drainages in each service area are part of the same HUC 6 watershed except for Lower Mississippi – Memphis (08010100). The Lower Mississippi-Memphis HUC 8 is included because it is isolated within the state of Tennessee, and regulatory conflicts between state and federal rules severely limit credit options for this watershed. State regulations prevent seeking

credits in adjacent states and the Lower Mississippi-Memphis watershed is 54% in Tennessee and 46% in Mississippi. Omission of this HUC 8 would leave an area of Tennessee ineligible for ILF or nearby banks.

The Sponsor may, on a case-by-case basis determined by the IRT, expand service in Tennessee as a resource to the USACE where existing mitigation programs have become inactive, unfeasible, or have unfulfilled liabilities that require implementation. The Sponsor may develop a proposal and shall use the service areas and credit totals under which previous credits were issued to develop an "implementation plan." The Sponsor shall use partnerships and a qualifications-based selection process to develop the incomplete credits and expend any remaining funds towards stream and wetland restoration.

2.3 Credits

Credits will be generated from projects with IRT-approved mitigation plans. Mitigation projects will be initiated and implemented based on credit needs and sales throughout the proposed service areas. The Sponsor will also utilize cooperative partnerships and agreements with qualified entities including other ILF programs, banks, and private individuals to generate credits and fulfill credit requirements.

Credits will be identified as advance credits or released credits. Advance credits are made available before mitigation projects have been completed. Released credits are generated from mitigation projects when performance measures and milestones have been achieved.

2.3.1 Allocation of Advance Credits

Upon approval of the final Instrument, the Program will be permitted to sell advance credits. Advance credits are those credits available for sale prior to being fulfilled in accordance with an approved project mitigation plan. The Program shall conduct initial physical and biological improvement (e.g., grading and planting) by the third full growing season after the first advance credit for a service area is secured by a permittee. For the purposes of this Program, a growing season is defined as April 1 through November 15.

Initially, the WTRBA requests 10,000 credits for the Hatchie service area, which includes the Hatchie Basin, where development demands are estimated to be greatest (see Appendix B). The Sponsor proposes an initial limit of 5,000 credits for the Obion River Basin service area, and 5,000 credits for the Forked Deer service area.

The programmatic advanced credit amounts are re-evaluated annually to consider the Program's compliance with the Instrument and the 2008 Mitigation Rule or successor regulations, actual credit demand, changes in regulatory guidance regarding calculations of credits and debits, and the Program's demonstrated ability to produce acceptable compensatory mitigation. If the Program sells all its advance credits and it appears likely that it can fulfill a higher number of advance credits within the required time frame, it may apply for an Instrument modification to increase the number of available advance credits. Otherwise, once the Sponsor has reached the limit for advance credits sales, no more advance credits may be sold until credits have been released in accordance with the approved credit release schedule outlined in a project-specific mitigation plan.

Any changes to the Program's advance credit allocation will be submitted for review in accordance with 33 C.F.R. §§ 332.8(d) and (n).

The Sponsor may also accept advance credit sales if the appropriate advance purchase agreements are in place for a purchase from existing, approved stream or wetland mitigation banks that have a scheduled release in advance of the aforementioned credit sale but prior to the deadline for disposition of advance sales ILF funds.

2.3.2 Request for Proposals Process

The Sponsor will develop a Request for Proposals (RFP) process to augment its ability to produce mitigation projects to replace advanced credit liabilities. This process will allow qualified third parties to locate and develop potential projects in areas with identified mitigation needs. All projects developed through the RFP process will adhere to the Program's Comprehensive Planning Framework (CPF) (Appendix B). The Sponsor remains responsible for the implementation, long-term management, and any required remediation of the mitigation activities conducted by third parties through the RFP process or other contracting mechanisms. 33 C.F.R. § 332.8(l)(3).

2.3.3 Credit Sales

The Sponsor may sell or transfer available advance or released credits to USACE and/or TDEC permittees to be used as compensatory mitigation for USACE and/or TDEC permits, upon approval by USACE. The approval will be in the form of a Corps and/or TDEC permit. Once credits have been purchased by a third-party permittee proposing impacts to WOTUS/WOTS, all legal liability for mitigation credits will be passed to the Sponsor and tracked through the approved ledger and accounting practices. At the time credits are purchased, all liability for mitigation fulfillment will be transferred from the permittee to the Sponsor and tracked accordingly in the applicable ledger. Following coordination of the permittee's impacts with the Sponsor, the Sponsor will provide a "Credit Reservation Letter" (template in Appendix C) to the permittee, confirming the reservation of credits from the Sponsor. This letter will be provided by the permittee during application of the permittee's impacts. Once impacts are authorized through the issuance of the applicable permits, copies of which will be submitted by the permittee to the Sponsor, the Sponsor will issue an invoice to the permittee for payment. Upon payment to the Sponsor, all liability of credit fulfillment is officially transferred to the Sponsor.

All applicable transactions, including permit numbers, credit amounts, dates, etc. will be tracked accordingly in the Programs Master Ledger (outlined in Appendix D). Once sold to a permittee, mitigation credits may not be refunded, resold, or transferred to other entities, except with the approval of USACE and/or TDEC. Mitigation credit ledgers shall be updated electronically following approved releases or sales, and reviewed at least annually by the IRT Chair.
The permittee shall provide the Sponsor with sufficient information to account for impacts and the required mitigation for each Corps and/or TDEC permit in which the permittee is approved to purchase mitigation credits from the Sponsor. The documentation should include the following:

i. USACE District and TDEC project managers;
ii. USACE permit number and date of authorization;
iii. TDEC Water Quality Certification (WQC) permit number and date of issuance;

iv. Service Area;
v. Project name;
vi. Permittee information (name, address, phone number);
vii. Project Coordinates (Latitude and Longitude);
viii. Linear feet and/or acres of impacted WOTUS;
ix. Functional or other mitigation units lost, if available;
x. Type of waters impacted;
xi. The number of functional or other mitigation units required of the Sponsor to compensate for impacts, including temporal loss and/or cumulative impacts;
xii. The amount paid to the in-lieu fee program for each of the authorized impacts;
xiii. The date the funds were received from the permittee;
xiv. Other information as deemed necessary by USACE and/or TDEC; and
xv. Other information requested by the Sponsor.

In cases where USACE allows permittees to purchase mitigation credits over time for a single USACE permit (i.e., phased projects), the permittee must provide, in addition to the above documentation, a schedule for each individual mitigation credit purchase and the amount of mitigation credits to be purchased in each installment.

Credits sold or generated prior to a change in the guidelines will be allowed to dispense or generate the outstanding credit balance under the guidance in which the agreement was made.

2.3.4 Credit Costs

Program mitigation credit fees will be determined solely by the Sponsor, and will be subject to change as determined by the Sponsor at their sole discretion. Once a credit is sold or transferred to a permittee, however, its value cannot change. Changes made to the fee costs per unit of credit shall not constitute a modification of the Instrument.

The proposed credit prices are based on a full cost accounting, including costs associated with land acquisition, project planning and design, construction, materials, labor, legal fees, monitoring, remediation or adaptive management measures, program implementation, contingency costs over the life of the project, establishment of a long-term management and protection fund, financial assurances, and program administration.

Stream credits are calculated based on the applicable guidelines approved for use by TDEC and USACE at the time of credit sale.

2.3.5 Fulfillment and Reallocation

As released credits are produced by in-lieu fee projects, they must be used to fulfill any advance credits that have already been provided within the project's service area before any remaining released credits can be sold or transferred to permittees. Once previously-provided advance credits have been fulfilled, an equal number of advance credits are reallocated to the sponsor for sale or transfer to fulfill new mitigation requirements, consistent with the terms of the Instrument. The number of advance credits available to the Sponsor at any given time to sell or transfer to permittees in a given service area is equal to the number of advance credits specified in the

Instrument, minus any that have already been provided but not yet released. 33 C.F.R. § 332.8(n)(3).

Credit fulfillment will include three options:

1. Released credits available for purchase via approved ILF projects developed in advance of needs in area where opportunities arise outside of the watershed approach outlined in this instrument.
2. Advance credit sales where approved ILF projects will be developed following the watershed approach outlined in the instrument. These will be released within the 1-3 year timeframe.
3. Advance credits sold that were previously purchased by the WTRBA ILF Program from a bank credit that will be available within the 1-3 year timeframe (acting as an intermediate for banks with pending releases).

2.4 Compensatory Mitigation Project Credits

2.4.1 Determination of Credits

Mitigation credits generated by individual mitigation projects will be determined as part of the compensatory mitigation plan approval and credit release process. Mitigation credits will be determined in accordance with 33 C.F.R. § 332.8(o). To receive mitigation credits, all projects must have a Corps-approved project mitigation plan that includes all applicable items listed in 33 C.F.R. § 332.4(c)(2)–(14).

2.4.2 Schedule of Credit release

Released credits shall be tied to ecological performance-based milestones. Mitigation sites, other than preservation projects, shall be subject to the following general mitigation credit release schedule:

Table 2. Mitigation credit release schedule for the WTRBA ILF Program.

Phases	Requirements	Percent Credit Released
1	● Signed and approved mitigation plan ● Proof of property ownership, title report, title insurance policy. ● A copy of a signed, approved, recorded Conservation Easement that protects the site in perpetuity is provided to IRT ● Securing of Construction Financial Assurances ● The Sponsor has obtained all permits, authorizations, and other approvals necessary or appropriate to construct, operate, and maintain the bank, including but not limited to those of any IRT agency.	40
2	● Completion of site modifications and planning as shown in the mitigation plan. ● IRT approval of the as-built plan.	30
3	● Submit Year 1 monitoring report.	--
4	● Project on track to successfully meet performance standards in the Year 2. ● Monitoring and adaptive management financial assurances are fully funded. ● Submit Year 2 monitoring report	10
5	● No Year 3 monitoring report required.	--
6	● Submit Year 4 Monitoring report ● Project on track to successfully meet performance standards in the Year 4.	10
7	● Submit Year 5 monitoring report	--
8	● No Year 6 monitoring report required.	--
9	● Submit Year 7 monitoring report ● Any required remedial actions are completed.	10

- Final performance standards have been attained in the 7th monitoring year.
- The bank Sponsor has funded 100% of the long-term management fund amount.

If a project site does not achieve the performance-based milestones specified in the project mitigation plan, the IRT may modify this credit release schedule, including reducing the number of credits. In the case of preservation, 100% of the mitigation credits will be released upon approval of the project mitigation plan and finalization of site protection, including recordation of a permanent site protection instrument (i.e., conservation easement, deed restriction, or other approved legal mechanism). Deviations from these release schedules may be approved by USACE on a case-by-case basis after consultation with the IRT and shall be included in the approved project mitigation plan. Approval of deviations from the above release schedule shall be based on past and current performance, specific site characteristics or factors that would affect risk, or other considerations as determined by USACE.

2.4.3 Credit Release Process

The Sponsor shall submit documentation to USACE demonstrating that the ecological performance-based milestones have been achieved and shall request release of the mitigation credits. USACE, in consultation with the IRT, shall determine whether the milestones have been achieved and the credits can be released for a compensatory mitigation site per 33 C.F.R. § 332.8(o)(9).

2.5 Credit Accounting and Program Credits

2.5.1 Credit Ledger

The Sponsor shall establish and maintain appropriate ledgers in accordance with 33 C.F.R. § 332.8(p)(2). The Program's master ledger is described in Appendix D. If determined necessary by the IRT, the Sponsor may be required to provide additional reporting categories beyond those stated in the Instrument. To track the status of the Program and ensure accurate program accounting, credit ledgers shall be provided to USACE and IRT monthly for review no later than the fifteenth of each month.

2.5.2 RIBITS Credit Ledger

The Sponsor will be responsible for maintaining the ILF credit ledger in the Regional Internet Banking Information System (RIBITS). USACE will provide a username and password for the Sponsor to maintain this ledger. All credit transactions shall be entered into the database after the transaction has occurred or USACE reserves the right to suspend credit sales until sales transactions are deemed current and compliant. RIBITS mandatory information fields include the following:

1. Jurisdiction
2. Transaction Date
3. Client Name

4. Credits Debited
5. Corps Permit Number- Format: LRN/Year/Permit Number
6. Type
7. Credit Classification.

2.5.3 Annual Program Report

The Sponsor shall compile an annual report for the Program in accordance with 33 C.F.R. § 332.8(i)(3). The Sponsor will submit the annual report to USACE and IRT by no later than March 31st for the previous calendar year. The annual report will include the following information (see template in Appendix F):

- Financial Report
- A list of all permits for which ILF Program funds were accepted by service area including:
    - Corps and/or TDEC permit number
    - Service area in which authorized impacts are located
    - Amount of authorized impacts and required compensatory mitigation, by type
    - Amount paid to the Program
    - Date funds were received from the permittee
    - The balance of advance credits and released credits at the end of the report period for each service area
    - Full cost accounting of each project executed during the reporting year, reported separately
    - Overall status of the Program since establishment, including an analysis of the Program's compliance with the requirement that land acquisition and initial physical and biological improvements be completed by the third full growing season after the first advance credit in each service area is secured by a permittee
    - Spatial analysis (i.e. map) of accepted and pending impact projects, as well as the location of existing, proposed, and potential mitigation projects in each service area, stratified by 8-digit HUC.

If the IRT determines, as a result of review of annual reports on the operation of the Program, that the Program is not performing in compliance with the Instrument, the IRT has the authority to take appropriate action to ensure compliance with the Instrument, as further explained in Section VII, which may include suspension of credit sales and other actions authorized under 33 C.F.R. § 332.8(o)(10).

2.5.4 Audits and Instrument Renewal

The Sponsor shall conduct an independent programmatic audit at a minimum of once every five years, the cost of which shall be an administrative expense of the Sponsor. The programmatic audit shall focus on the review of compliance with mandatory, objective Program criteria established by the Instrument and applicable regulations governing ILF programs. The programmatic audit shall be submitted to USACE for review after the five-year anniversary of the executed Instrument. USACE or TDEC may request additional audits if the Program is believed to not be in compliance with the Program Instrument, the 2008 Mitigation Rule, or successor regulations. To coincide with

the programmatic audit, this Instrument will expire five years from its approval date and will require renewal by the Sponsor and IRT.

2.6 Compensatory Mitigation Projects

2.6.1 Draft Prospectus and Mitigation Plan

Individual mitigation projects will be developed through:

1. Service area specific watershed planning as outlined in CPF (see Appendix B).
2. Identification of 303(d) listed streams and other impaired waters or watersheds of interest.
3. Suggestions from other state agencies, such as Tennessee Department of Transportation (TDOT), Tennessee Department of Agriculture (TDA), and the Tennessee Wildlife Resources Agency (TWRA).
4. The regular workings of the Sponsor, interactions with landowners in the region, and efforts to enhance and restore waters under normal agency operations.
5. Recommendations through public outreach and participation.

The Sponsor, and their agents, will be responsible for development of all applicable plans for mitigation projects. The submission of separate and independent site-specific mitigation plans is preferred by the Sponsor to ensure that site to site nuance is directly addressed under the restoration plan. Because each stream, and even individual reaches, can be unique in habitat, ecology, and overall function, site-specific development plans will better identify the appropriate mitigation approach for each project developed by the Sponsor. A mitigation plan will be submitted to the IRT for review and approval and will include all applicable assessments, forms, and other documentation illustrating existing and proposed conditions of an aquatic feature.

2.6.2 General Considerations

The general considerations for compensatory mitigation set forth in 33 C.F.R. § 332.3 shall be the basis for evaluating Program mitigation projects submitted by the Sponsor to USACE for approval.

2.6.3 Approval

USACE' review and approval of addition or expansions of Program mitigation projects, as advised by the IRT, will be considered modifications of the Instrument and will follow the procedures described in 33 C.F.R. § 332.8(d). In general, mitigation projects developed under the Program will be reviewed and approved in accordance with all relevant procedures and requirements in 33 C.F.R. § 332.8. Projects requiring Corps authorization will be approved following current Corps procedure in effect on the date of the proposed modification. The approved mitigation plan for each Program mitigation project will be incorporated into the Appendix of the Instrument.

2.6.4 Implementation

The Sponsor is responsible for the implementation, performance, long-term management, and any required remediation of Program mitigation projects, even if those activities are conducted by other parties. The only exception to this rule is in those instances where the Sponsor purchases mitigation credits from a Corps approved bank in accordance with the Instrument. In those cases, these responsibilities will be transferred to the mitigation bank with appropriate documentation.

2.6.5 Monitoring

The Sponsor is responsible for monitoring Program mitigation projects. Monitoring shall be in accordance with the approved mitigation plan for each mitigation project to ensure performance-based milestones are achieved and to determine if additional measures are necessary to ensure the project is consistent with Program objectives. In general, project-specific mitigation plans will detail the parameters to be monitored, the length of the monitoring period, and the frequency of report submission to USACE. The Sponsor will be responsible for submitting monitoring reports to USACE per the schedule outlined in each mitigation plan. If the Sponsor fails to submit monitoring reports outlined in the project-specific mitigation plan, USACE may take appropriate compliance action. 33 C.F.R. § 332.6(c)(2).

2.6.6 Long-Term Management and Property Ownership

The Sponsor shall be responsible for developing and implementing a long-term protection and management plan for each Program mitigation project. Projects shall be designed, to the maximum extent practicable, to require minimal long-term management once ecological performance standards have been achieved. Long-term management of project sites will be defined in the mitigation plan for each site on an individual basis depending on goals of the site and needs of the Program. All long-term management needs will be addressed in the site-specific mitigation plan and will be based on the best scientifically defensible and available options for the regional and local ecosystem. Any transfer of long-term management responsibilities will be subject to review and approval by USACE and IRT and will follow guidelines established in the CPF (See Appendix B).

The long-term management plan for each mitigation project will be approved by USACE. The approved plan shall identify the party responsible for both the long-term protection and management of the project site. After ecological performance standards have been achieved, the long-term management responsibilities may be transferred from the Sponsor to a land stewardship entity, such as a public agency, non-governmental organization, or private land manager, with USACE's approval. Until the long-term management responsibilities are transferred to another party, the Sponsor will be responsible for long-term management of the mitigation project. The long-term management plan developed for each mitigation project will include a description of anticipated management needs with an annual cost estimate and an identified funding mechanism to cover the annual cost estimate. The funding mechanism shall be in place prior to the final release of credits. The approved mitigation plan will address the financial arrangements and timing of any necessary transfer of long-term management funds to a land stewardship entity.

Property used for a project site can be owned by the Sponsor, or by a third-party, if the Sponsor has secured the proper easements for construction, access, and long-term conservation protections. Project execution will be the responsibility of the Sponsor. Each individual project developed by the Program will include protections in accordance with the 2008 Mitigation Rule and determined on a project-to-project basis. The specific mechanisms will be described in detail in the project development and mitigation plans. Projects developed for the Program will have Conservation Easements to convey property and mitigation restrictions in perpetuity. Credits purchased from banks will be protected under the bank ownership and the conservation easement or restrictions approved for use in the bank site.

2.6.7 Timing of Projects

In general, implementation of the mitigation plan for Program mitigation projects will occur after sufficient funds are available in a service area to undertake a project. Land acquisition and initial physical or biological improvements will be completed by the end of the third full growing season after advance credits are sold in a specific service area. Alternative compensatory mitigation, such as the purchase of mitigation credits from a Corps approved mitigation bank, shall be provided from funds in the Program Account when the Sponsor does not provide sufficient mitigation within three growing seasons after the first advance credit is sold in a service area, unless the Sponsor proposes, and USACE agrees that it would be in the public interest to allow the Sponsor additional time to plan and implement a mitigation project. The Sponsor may identify, design, and/or implement Program mitigation projects in advance of impacts. The timing of implementing project mitigation plans may be affected by IRT consultation, procurement procedures, land acquisition, permitting, compliance with other environmental regulations, and other factors which may lead to USACE's determination that it would be in the public interest to allow the Sponsor additional time to plan and implement Program projects. Alternatively, if USACE determines there is a compensatory mitigation deficit in a specific service area by the third growing season after the first advance credit in that service area is sold and USACE determines it is not in the public interest to allow the Sponsor additional time to plan and implement Program projects, USACE will require the Sponsor to provide alternative compensatory mitigation, which would result in the disbursement of funds to purchase bank credits, solicit RFPs, etc.; suspend credit sales; or refer the noncompliance with the terms of the instrument to the Department of Justice.

2.7 Acceptance of Compensatory Mitigation Responsibilities

The Sponsor agrees to assume all legal responsibility for satisfying the mitigation requirements of permittees who are issued USACE and/or TDEC permits for which mitigation credits are purchased from the Sponsor as compensatory mitigation for impacts authorized by the permit. The permittee shall retain responsibility for providing the compensatory mitigation until USACE has received the appropriate documentation that confirms the Sponsor has accepted mitigation responsibilities and received payment.

The Sponsor shall provide USACE and/or TDEC with documentation confirming the Sponsor has accepted responsibility for providing the required compensatory mitigation for a USACE and/or TDEC permit. This documentation will consist of a letter to the permittee, signed by the Sponsor, identifying the permit number(s), and stating the number and type of mitigation credits that have been secured. The Sponsor shall also provide a copy of this letter to USACE and/or TDEC. Each time the Program accepts fees from a permittee in exchange for advance or released credits, the Program must notify the district engineer of the credit transaction via a credit sale letter (example in Appendix B) within ten days of receiving the fees from the permittee. The credit sale letter must be signed by the Program and dated. A copy of each credit sale letter will be retained in USACE' and the Program's administrative and accounting records for the Program. A draft credit sale letter is included in Appendix. The Sponsor retains the right to refuse to sell credits, temporarily shut down a service area, or suspend credit sales at its discretion.

The Sponsor may purchase mitigation credits from a Corps-approved mitigation bank. In these cases, the instrument(s) governing the mitigation bank shall apply. The Sponsor shall retain

responsibility for providing the compensatory mitigation until USACE has received documentation that confirms the mitigation bank has accepted responsibility for providing the required compensatory mitigation for the respective Corps and/or TDEC permit and received payment.

2.8 Compensation Planning Framework

The CPF for the Program is attached as Appendix B and will be used to direct the selection and implementation of mitigation projects. The CPF also describes the geographic service areas for the Program and their basis. Modification of the CPF is considered a significant modification to the Instrument and will follow the procedures in 33 C.F.R. § 332.8(d).

3.0 Permanent Protection

Each Program mitigation project site (the aquatic habitats, riparian areas, buffers, and upland areas that comprise the overall compensatory mitigation project) will be protected with a real estate instrument or other mechanism, as appropriate, per 33 C.F.R. § 332.7. USACE and TDEC is responsible for the review and approval of site protection methods outlined in each individual mitigation plan.

Unless approved by USACE and TDEC, the Sponsor shall not implement mitigation on areas that will be permanently protected where oil, gas, mineral, timber, or other land use rights or interests are severed from fee ownership, and where such rights could threaten the long-term success or the ecological value of the Program mitigation site.

4.0 Financial Assurances

4.1 Program Account

The Program account will be managed through the State of Tennessee policies and procedures, following all applicable state finance laws. The Program account will be specific to the Sponsor and separate from their operations budget allocations from the State of Tennessee. The Sponsor will accept funds into an account dedicated to activities that support the Program. The Program account is to be used solely for the purposes and benefits of mitigation projects and will be established after the Instrument is approved and before any fees are accepted. Funds the Sponsor accepts from any entities other than permittees or for purposes other than providing compensatory mitigation for impacts to aquatic resources must be kept in accounts separate from the Program account. In addition, all monies generated from the sale or disposal of property, equipment, materials, or other items purchased using ILF funds shall be reimbursed and deposited into the Program account and not diverted for other uses. All interests and earnings accruing to the Program account will remain in the Program account for the purposes of providing compensatory mitigation for Corps and/or TDEC permits. The Sponsor will use these funds in this dedicated account to support the development of mitigation projects in support of the Program, and for the support of the ILF Program. The Program account will be established pending the approval of the Final ILF Instrument and prior to the acceptance of any fees from permittees requesting credits from the

program for authorized impacts. The account will be a dedicated carryover fund, backed by State Law.

4.2 Financial Ledger and Reporting

The Financial ledger will track the financials associated with the Program, including Administrative, Reserve, and Project funds.

1. Administrative Funds

Administrative funds will cover administrative costs of establishing and operating the Program. Such administrative costs may include activities associated with the establishment and operation of the Program, research, planning, and program management. Also included are financial and programmatic audits of the Program. Up to 12% of each credit sold plus 15% any interest accruing on the Program Account shall be used for administrative costs. Any interest the account accrues through the life of the Program can be reinvested into the development of new projects. The ledger shall also include the reporting of annual interest accrued by the Program account and any remission of accrued interest to Tennessee Treasury for funds management.

2. Reserve Funds

Reserve funds will be generated from a contingency of 10% each credit sold plus the proportionate amount of any interest accrued to the Program Account, and will be used for contingency actions related to disasters, long-term management, and site protection. The use of these funds shall be subject to approval from USACE in consultation with the Sponsor, except for minor activities that do not require a permit, such as long-term management plan activities, fence repair, etc. All activities using Reserve funds shall be reported to USACE.

The Reserve shall have a minimum balance equal to $500,000 plus the total amount of the required financial assurances for Program mitigation projects as detailed in their approved Mitigation Plans. The Program may take up to three years to build its Reserve account, with no less than one-third of the required reserve amount being developed during each of the three years. This limit may be adjusted with approval of USACE and will not constitute an instrument modification. Funds more than the limit shall be used by the Sponsor to implement compensatory mitigation projects. Released credits from compensatory mitigation projects funded with excess Reserve funds may be used to fulfill advance credit sales or sold or transferred to permittees. Funds from the sale of these credits shall be deposited back into the Reserve account.

3. Project Funds

Each mitigation project developed as part of the Program will have its own ledger within the Program's master ledger to track funds for project. Fees accepted into the Program will be apportioned by percentage to different account codes and held in reserve to satisfy Program requirements. These requirements include direct costs for development of credits such as surveys, design, real estate, permitting, and construction as well as indirect costs for long-term Program activities such as monitoring, research, overhead cost, and long-Term Maintenance.

Projects will be evaluated on an individual basis; however, in general, the proposed accounting allocations will be as follows:

a) Program Administration (overhead, salaries, equipment, fees, etc.) - 12%
b) Project Development (outreach, design, surveys, real estate, permits, etc.) - 25%
c) Project Construction (earthwork, structures, native species management, materials, etc.) - 30%
d) Project Monitoring (sensors, surveys, research, reporting, data management, equipment, etc.) - 13%
e) Program Maintenance (security, signage, repairs, invasive species/vegetation management, etc.) - 10%
f) Program Contingency and Reserve - 10%

Reporting

In accordance with 33 C.F.R. § 332.8, the Sponsor will submit an annual financial report to USACE and IRT no later than March 31st for the previous calendar year. The annual financial report will include the following:

- Income received in the Program Account
- Disbursements made from the Program Account
- Interest earned by the Program Account (total and separately to the Project, Administrative, and Reserve funds)
- Balance of Administrative funds
- Balance of Project funds and summary of outstanding tasks for approved Program mitigation projects
- Balance of Reserve funds and summary of financial assurance obligations
- A description of Program expenditures from the account, including costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration

All books, accounts, reports, files, and other records pertaining to the Program shall be retained by the Sponsor and made available at reasonable times for inspection by USACE.

Audits

The Sponsor will conduct an independent financial audit of the Program at a minimum of once every five years, the cost of which shall be an administrative expense of the Sponsor.

5.0 Default, Suspension, and Termination

If USACE determines that the Program has failed to provide the required compensatory mitigation within the specified time frame, the Program may be determined to be in default. Default determination could be due to failure to: 1) meet performance-based milestones identified in a

project-specific Mitigation Plan; 2) meet ecological performance standards specified in project-specific Mitigation Plans; 3) submit monitoring reports in a timely manner; 4) establish, maintain, and submit appropriate ledgers and annual reports; 5) report approved credit transactions, 6) complete land acquisition and initial physical and biological improvements by the third full growing season after the first advance credit in that service area is secured by a permittee; and/or 7) otherwise comply with the terms of the Instrument and any approved Mitigation Plans.

If default is determined, USACE will take appropriate action, which may include but is not limited to: suspending Program credit sales, decreasing the allocation of advance credits, requiring adaptive management actions, suspending approval of new mitigation projects, directing funds to alternative mitigation, utilizing financial assurances, terminating this Instrument, referring the non-compliance with the terms of the Instrument to the Department of Justice, or other actions as approved by USACE.

Either USACE or the Sponsor may terminate the Instrument. Termination is effectuated when both the following have occurred:

1. Ninety days' written notice has been provided by the terminating party to the non-terminating Parties; and
2. The Sponsor has fulfilled its legal responsibility to provide any remaining required compensatory mitigation for which advance credits have been transferred, including all associated monitoring and reporting requirements, through one or more of the following options:
    a. If no ILF projects are in development at the time the written notice of termination is transmitted, all funds then existing in the Program Account will be transferred to the closest mitigation bank or other entity acceptable to the applicable IRT members. Under this option, final closure will be deemed to have occurred on the date of transfer of such funds by the Sponsor.
    b. If one or more ILF project(s) is in development at the time the written notice of termination is transmitted, those ILF project(s) will be completed to the extent achievable with monies on deposit in the Program Account, with all remaining funds in the Program Account transferred to the closest mitigation bank or other entity acceptable to the applicable IRT member(s). Under this option, final closure will be deemed to have occurred on the later of (1) the date of transfer of such funds by the Program Sponsor; or (2) the date the last ILF project is completed to the extent achievable with monies on deposit in the Program Account.
    c. If one or more ILF project(s) is in development at the time the written notice of termination is transmitted, the ILF project development contract(s) and associated performance guarantees, along with all related rights and responsibilities pertaining to those ILF project(s) (including but not limited to the budgeted monies for such ILF project(s) existing in the Program Account), will be transferred to another entity or entities acceptable to the applicable IRT members. Under this option, final closure will be deemed to have occurred on the later of (1) the date of transfer of such funds by the Sponsor; or (2) the date the development contract(s) and associated

performance guarantees, along with all related rights and responsibilities of the last ILF project, are transferred to a third party acceptable to the applicable IRT members.

Excess funds remaining in the Program account after the above obligations are satisfied must continue to be used for the restoration, establishment, and enhancement, and/or preservation of aquatic resources and associated upland buffers. USACE shall request the Sponsor to: 1) use these funds to provide further restoration, enhancement, or preservation activities; 2) secure credits from another source of third-party mitigation; or 3) transfer funds to another entity, such as a government agency or non-profit organization dedicated to natural resource management, willing to undertake the requisite compensatory mitigation activities. USACE itself cannot accept directly, retain, or draw upon those funds in the event of a default.

The sponsor agrees that TDEC may bring an enforcement action as prescribed in Tennessee Code Annotated section 69-3-108(g)(4)(E) if the sponsor fails to complete land acquisition and initial physical and biological improvements by the third full growing season after the first advance credit in that service area is secured by a permittee, unless the district engineer for USACE determines that more or less time is needed to plan and implement an ILF project.

6.0 Force Majeure

Any delay or failure of the Program to comply with the terms of this Instrument shall not constitute a default if such delay or failure is primarily caused by any force majeure or other conditions beyond the Program's control. Qualifying natural hazards shall include, but are not limited to: flood; drought; earthquake; tornado; fire; landslide; and effects of climate change on habitat or hydrology. Other conditions beyond the Program's control shall include, but are not limited to: interference by third parties; condemnation or other taking by any governmental body; change in applicable law, regulation, rule, ordinance, or permit condition, or the interpretation or enforcement thereof; any order, judgment, action or determination of any federal, state or local court, administrative agency or governmental body; and/or suspension or interruption of any permit, license, consent, authorization, or approval. The Program shall provide written notice to USACE and IRT if the performance of any in lieu fee project is affected by any such event as soon as it is reasonably practical, documenting why a given event should be considered a force majeure event. The District Engineer, in consultation with the IRT, shall determine whether the event qualifies and recommend the necessary repairs or modifications required at the site or modifications to monitoring requirements or performance standards in the project Mitigation Plan. If such event occurs before the final availability of all credits for a project, the Sponsor shall take remedial action to restore the property to its condition prior to such event, in a manner sufficient to provide adequate mitigation to cover credits that were used for permit requirements prior to such delay or failure to compensate for impacts authorized by USACE and/or TDEC permits. Such remedial action shall be taken by the Sponsor only to the extent necessary and appropriate, as determined by USACE in consultation with the IRT. If such an event prevents a mitigation project from meeting the time requirements established in project Mitigation Plan or this Instrument, USACE may, in its discretion, modify the timeline requirements.

7.0 Points of Contact

The points of contact for written communication among the parties are as follows or as otherwise specified in the future by written notice to all parties:

USACE
U.S. Army Corp of Engineers
Roger Allan
USACE, Memphis District
Regulatory Branch
167 N. Main St. Room B-202
Memphis, TN 38103
Phone: 901 544-3682
Email: Roger.S.Allan@usace.army.mil

Sponsor
West Tennessee River Basin Authority
David Blackwood, P.E., Executive Director
3628 East End Drive
Humboldt, TN 38343
Phone: 731 784-8173
Email: David.Blackwood@tn.gov

8.0 Effective Date

This agreement shall become effective when signed by the Memphis District of USACE and the Sponsor. IRT members are invited to sign this Instrument as an indication of their agreement to the terms of the Instrument. The decision of an IRT member not to sign this Instrument does not negate its effectiveness. USACE retains the final authority for approval of this Instrument.

Appendix A: West Tennessee River Basin Authority Agency Profile

WEST TENNESSEE RIVER BASIN AUTHORITY

AGENCY PROFILE

2022

Table of Contents

I. Purpose & Structure

The West Tennessee River Basin Authority (WTRBA) was created and established in 1996 to preserve the natural flow and function of West Tennessee's streams and rivers through environmentally sensitive stream maintenance. The West Tennessee River Basin Authority, under the administrative control of TDEC and governed by a Board of Directors.

The WTRBA is a State entity with purpose described in Tennessee Code Annotated section 64-1-1101 as:

(a) There is created and established within the department of environment and conservation, the West Tennessee River Basin Authority, referred to as the "authority" in this part.

(b) The authority is created to preserve the natural flow and function of the Hatchie, Loosahatchie, Obion, and Forked Deer River basins through environmentally sensitive stream maintenance. The authority shall also seek to:

> *1. Maintain or stabilize the function of altered streams and rivers for which the expectation of altered drainage is well established because of agricultural or other land uses and for which the restoration of natural stream or river function is not practicable;*
>
> *2. Restore, where practicable, in a self-sustaining manner, natural stream and floodplain dynamics and associated environmental and economic benefits; i.e. restore and conserve fisheries and wildlife habitat, wetlands, water quality and naturally or economically productive bottomland hardwood systems;*
>
> *3. Facilitate the proper interaction of private activities adjacent to or affecting public waters that may be negatively affecting those waters, and*
>
> *4. In general, provide regional and local leadership for the conservation and sustainable utilization of these river basins and the creek and river basins that flow through the counties of Benton, Decatur, and Hardin into the Tennessee River.*

(c) These activities shall be accomplished in the twenty-county area of West Tennessee comprised of Lauderdale, Lake, Dyer, Obion, Madison, Weakley, Henry, Gibson, Carroll, Benton, Decatur, Hardin, Haywood, Crockett, Henderson, Chester, McNairy, Tipton, Fayette, and Hardeman counties.

(d) The authority shall be administered in such a way as to maximize the funds spent on actual work on the river and minimize administrative costs.

(e) As an agency of the state, attached to the department, the authority shall be subject to all laws and regulations applicable to any state department.

The Board of Directors is composed of twenty county mayors, two State Senators, two State Representatives, and one member from each of the following organizations: Farm Bureau, Soil Conservation Districts, Tennessee Wildlife Resources Agency, Tennessee Wildlife Federation, Tennessee Forestry Association, Department of Agriculture, and TDEC. Each Director has the authority to nominate two individuals to serve on an Advisory Board. A list of the Board of Directors and Advisory Board members for Calendar Year 2023 has been included as Exhibit 1.

In accordance with the annual State of Tennessee Budget Cycle, the financial statements and expenditures of the WTRBA contained herein have been reported from July 1, 2020, through June 30, 2021. However, given the seasonal nature of the WTRBA's maintenance and project work schedule, calendar year summaries have been produced for January 1, 2021, through December 31, 2021. Tentative work plans for 2022 have also been reported on a calendar year basis. The WTRBA is a great model of how a governmental agency can work effectively and make a positive impact with limited resources. Its work contributes to the health, welfare, and safety of many Tennesseans. The agency receives significant financial support from local governments, enjoys broad public support, and is resourceful in its approach to procuring outside funding and in-kind services. A small agency with clear objectives, the WTRBA is a highly effective part of the State of Tennessee.

II. Partnerships

WTRBA Partnerships

WTRBA Partnerships

In 2021, the WTRBA continued its work with partners and stakeholders. The WTRBA and partners are working to execute several active and pending grants, work-in-kind projects and other collaborative initiatives.

TN Department of Environment & Conservation

- On behalf of TDEC, the WTRBA is managing the construction aspects of the Lake Page stream mitigation project in Shelby County. TDOT is providing the funding for the project.
- Awarded a LPRF/LWCF/RTP Grant to complete Phase II construction of Middle Fork Bottoms through TDEC's Recreational Education Services (RES) grant program. The grant will be used for trailhead facilities, site furnishings, scenic overlooks and connecting boardwalk.
- The WTRBA Executive Director was appointed in 2020 to serve a three year term on the inaugural Tennessee Greenways and Trails Council.
- While it's hard to classify TDEC as a partner in the "classic" sense, they are the entity that enables the WTRBA to accomplish its mission. None of the WTRBA's successes are possible without a strong and supportive TDEC. The Department, led by Commissioner David Salyers, provides a level of support and advocacy for the WTRBA that lead to many successes in West Tennessee. Additionally, WTRBA staff work closely with several highly professional and dedicated staff within TDEC to share ideas, solve problems, ensure efficient operations and make Tennessee a better place to live, work and play.

TN Department of Economic & Community Development

- Partnered with ECD in the National Disaster Resilience Competition (NDRC) Grant Award. In January 2016 it was announced that the WTRBA was awarded approximately $16 Million for 5 projects in West Tennessee. This funding came through ECD via a Federal Housing and Urban Development Grant. Through the National Disaster Resilience Competition, the State of Tennessee was awarded $45 million; Shelby County was awarded $60 million. This grant opportunity was associated with the historic May 2011 flood and focused on riverine flooding and community resilience. The WTRBA initiated work on these projects in 2017. Construction of all projects is expected to be complete in 2022.
- The WTRBA is currently developing an on-site Stream Mitigation Bank on Mud Creek to provide the necessary credits for potential prospects to the West Tennessee Regional Megasite. The Mitigation Banking Instrument was finalized in 2020 and construction will be initiated in 2022.

TVA

- Partnered with TVA to complete a study on wave action erosion on the Tennessee River below Pickwick Dam to Savannah, TN. The objective is to identify the driving forces of bank erosion and calibrate a cost-benefit model for bank protection.

US Army Corps of Engineers

- The WTRBA serves as project sponsor for the Cypress Creek Ecosystem Restoration Study in Fayette County. This study was completed in 2017. Project implementation will hopefully be initiated in 2022, depending on availability of Federal Funding. In 2018 the USACE and the WTRBA signed a Memorandum of Agreement that allows the WTRBA to expend resources in support of Work in Kind before a Federal Cooperative Service Agreement is executed. The WTRBA is in the process of moving the project forward. In addition to Ecosystem Restoration, other project benefits include infrastructure protection and flood risk reduction.
- The USACE initiated a $100,000 Watershed Scale Ecosystem Restoration Stabilization Study on Piney Creek in Chester and Hardeman Counties which was completed in 2020. Piney Creek is the largest contributor of excessive sediment to the Hatchie River. Excessive sedimentation is the largest threat to the Scenic Hatchie River. Future efforts include grade control structures and stream restoration once funding is made available.
- Initiated a cost-sharing agreement for a feasibility study in 2021 that aims to identify and evaluate alternatives for restoring aquatic and floodplain habitat along a 20-mile corridor from Reelfoot Lake and Lake Isom National Wildlife Refuge to the Obion River.

NRCS

- Initiated ~$4 million in projects through the Regional Conservation Partnership Program (RCPP) and the Mississippi River Basin Healthy Watershed Initiative (MRBI) through the USDA Natural Resources Conservation Service (NRCS). The WTRBA and the NRCS are partnering with TDEC, TDA and The Nature Conservancy to execute these grant agreements. Properties have been identified and easements signed. Projects are in the design phase.
- Participates in quarterly State Technical Advisory Committee Meetings and is working with the NRCS to provide technical support and "on call" services on a variety of conservation projects.
- Entered into a ~$1,000,000 agreement with the NRCS to provide support on several floodplain restoration projects.

- Partnered with TNC $400,000 to initiate a producer led Soil Health Initiative project.
- Initiated work with TDA in the Turkey Creek Watershed via the 319(b) grant program. Approximately $315,000 of funding was awarded for watershed stabilization projects.
- Dedicated $365,000 of ARCF funding for the White Oak WMA stream and wetland restoration project. TWRA has also provided approximately $2.5 MM to complete the work.
- Partnered with the University of Memphis for $400,000 in ARCF funding to support voluntary data collection on agricultural irrigation systems in West Tennessee.

- Assisted and facilitated refinement and implementation of the WTRBA Science Plan.
- Oversaw and conducted stream restoration monitoring data collection and analysis.
- Helped administer two successful funding proposals for ~$4 million watershed restoration projects where WTRBA is the lead or major partner.
- Continued participation in the Cypress Creek Watershed Stabilization Study with the U.S. Army Corps of Engineers.
- Participated in the implementation of a study with the University of Memphis Groundwater Institute that targets recharge of the Memphis Aquifer at WTRBA Project locations.
- Facilitated and managed a Fish Species Diversity Study with the University of Tennessee Martin.
- Played a key role in development of Metrics for two of the National Disaster Resilience Competition Projects.
- Initiated work to remove sections of three streams from the State of Tennessee 303d list of impaired streams.

- Partnered with US Fish and Wildlife Service (USFWS) and Southeast Aquatic Resources Partnership (SARP) to receive funding through the National Fish Passage Program. This partnership allowed for the purchase of construction materials to build two fish passage structures in Hardeman County.
- Developed restoration monitoring project using eDNA technologies in collaboration with US Forest Service and USFWS.

- Partnered on the Middle Fork Forked Deer Stream and Wetland Restoration Project property acquisition and will coordinate on project implementation. Construction began in 2019.
- Developed a conceptual design for implementation of the White Oak Wildlife Management Area (WMA) stream and floodplain restoration project. This project will improve stream and floodplain habitats; reduce potential for conflicts with adjoining agricultural producers; and provide improved access for hunting opportunities on this WMA. Funding has been provided by TWRA, TDA and the WTRBA on this ~$3,000,000 project. Construction started in 2019 and completed in 2021.
- Developed concepts to improve floodplain dynamics; reduce potential for conflicts with adjoining agricultural producers; and provide improved access for hunting opportunities at specific locations on the Gooch and Horns Bluff WMAs.
- Established a "west TN mussel working group" with TWRA malacologists and academic partners to provide connections for future collaborations.
- Provided input to TWRA on potential research project collaborations that can be (partially) funded by Recovering America's Wildlife Act.

- Provided monitoring on a project that resolved major flooding adjacent to Highway 21 in Obion County. Construction was completed in 2016. Three fish passage structures were monitored in 2017-18 to verify effectiveness. Several species of fish passed all three structures. This innovative structure design will be transferable to other WTRBA Projects.
- The WTRBA and TDOT initiated a Memorandum of Agreement to provide "Permittee Responsible Stream Mitigation" as a part of TDOT's highway construction schedule. The WTRBA is assisting TDOT at several locations, and is pursing the potential of developing Stream Mitigation Banks for use by TDOT.

- Completed a feasibility study on the Tennessee Water Education and Training (WET) Center.
- Collaboration with UTIA on the creation and potential construction of a WET Center at Lone Oaks Farm in Middleton, TN to teach the basic concepts of hydrology, hydraulics, erosion, and green infrastructure.

University Partnership Projects

University of Tennessee at Martin

- Waterfowl study on Middle Fork Bottoms
- Nutrient Processing study on Middle Fork Bottoms
- Long-term fish sampling in reference and restored streams
- Acoustic surveys on restored wetlands to survey for frogs and bats

University of Tennessee at Knoxville

- Testing fish passage of an innovative Aquatic Organism Passage (AOP) design at Lone Oak Farms

University of Memphis

- Development of Bio-Eco Modules that can be implemented across multiple restoration sites to determine restoration success
- Groundwater study
- Study on voluntary data collection on agricultural irrigation systems in West Tennessee

Internal WTRBA Collaborations

- Monitor and maintain thirteen permanent stream gauge stations and resulting data
- Study on identifying environmental flow for west Tennessee
- Study on establishing flow-ecology relationships for fish and mussels in west Tennessee
- Inundation analysis for August 2021 flooding in the City of Waverly
- On-going geomorphic surveys of Forked Deer and Hatchie rivers for WTRBA field database

III. Restoration

The WTRBA has completed many of the largest stream and wetland restoration projects in the State of Tennessee. To date, the WTRBA has successfully restored 200,000 linear feet of stream and hundreds of acres of floodplain and wetland habitat.

Below are select examples in the Mississippi River Basin:

Crooked Creek Restoration – Obion River Watershed

Restoration of 10,000 linear feet of meandering channel on Crooked Creek was completed as compensatory mitigation for the Carroll County 1,000 Acre Lake. The project abandoned a one-mile length of channelized canal and reconnected over four hundred acres of floodplain habitat. The WTRBA constructed the Crooked Creek project from 2008-2010 and provided monitoring services in partnership with the design consultant and the USGS. A permanent stream gauging station was established on the Highway 77 bridge upstream of the project. Over ten years of continuous stream gauging data has been collected along with nearly a decade of fish community response information.

Middle Fork Bottoms Restoration – Forked Deer Watershed

Previously, this area consisted of 4,700 feet of perennial streams and 2,450 feet of existing intermittent streams that were channelized, leveed, over-widened, and incised with no floodplain connectivity. The WTRBA restored 15,100 linear feet of meandering stream and ~870 acres of floodplain habitat. This man goals of this project were floodplain reconnection, sediment capture/reduction, to improve water quality, and to improve wildlife habitat by implementing dimensions and features of a naturally functioning, stable, and healthy stream system. This project will continue to expand allowing for another 10,000 linear feet of another stream and ~350 acres of floodplain habitat on a property adjacent to the existing project providing an excellent example of with multi-agency partnerships.

Stokes Creek Restoration – Forked Deer Watershed

Stokes Creek has a heavily channelized agricultural drainage system that passes through the Tigrett Wildlife Management Area (WMA). The system struggled for years with low dissolved oxygen, sediment accumulation, debris blockages, and altered flows from levees and an abandoned railroad bed. The goal of this restoration project was to re-establish a meandering channel that created natural stream and floodplain function through the Tigrett WMA. This project was completed in two phases and totaled over 16,000 linear feet.

Baxter Bottoms Restoration - Loosahatchie River Watershed

Baxter Bottoms is a stream system near Mason, Tennessee. This system is low gradient and downstream of highly erosive silt/clay areas that have historically been used for agriculture. A dysfunctional canal system combined with disruptive road crossings and beaver activity created an area with significant flooding problems. The goal of this restoration project was to re-establish a meandering channel that created natural stream and bottomland hardwood floodplain habitat. This project was completed in three phases and totaled over 19,000 linear feet.

IV. Presentations & Publications

The WTRBA is active in the ongoing science of watershed restoration through cooperative studies and partnerships including with the University of Tennessee (Nutrients, Waterfowl, Fish Assemblage Response), the University of Memphis (Groundwater Recharge), Tennessee Technological University (Mussel Restoration), the USACE Memphis District (Grade Control and Habitat Restoration), and internal research on West Tennessee Geomorphology. Below is a list of selected publications and presentations that have resulted from these partnerships.

Publications:

Bhuyian, Md Nowfel Mahmud, N. Reza, and D. Blackwood. Assessing Flow Rate through a Lake Siphon System via Computational Flow Modeling. In World Environmental and Water Resources Congress 2021, pp. 153-164.

Fore, Jeff D., A.B. Alford, D.C. Blackwood, and T.A. Blanchard. 2019. Linking fish trait responses to in-stream habitat in reconstructed valley-plugged stream reaches of the Coastal Plain, USA. Restoration Ecology: 27:1483-1494.

Hartman, J. H., A. E. Rosenberger, K.N. Key, and G. Lindner. 2022. Assessing Potential Habitat for Freshwater Mussels by Transferring a Habitat Suitability Model within the Ozark Ecoregion, Missouri. Freshwater Mollusk Biology and Conservation. Accepted with revisions.

Key, Kayla N., G. A. Lindner, A. Rosenberger, K. Bouska, S. E. McMurray. 2021. A Riverscape-scale Model that Identifies Fundamentally Suitable Habitat for Concentrated Mussel Assemblages in Missouri Ozark Rivers. Freshwater Mollusk Biology and Conservation. In print. DOI: 10.31931/fmbc-d-20-00002

Presentations:

Alford, Amy B., K. N. Key, MNM Bhuyian, and D. Blackwood. 2021. Flow-Ecology Relationships for Fish and Mussels in West Tennessee. Virtual Poster Presentation at American Fisheries Society Meeting.

Alford, Amy B., MNM Bhuyian, and D.C. Blackwood. 2020. Applicability of incorporating remotely sensed data in the development of hydraulic geometry equations for West Tennessee rivers. West Tennessee Water Symposium, Jackson, TN.

Alford, Amy B., J.D. Fore, T.A. Blanchard, and D.C. Blackwood. 2019. Evaluating fish trait responses to channel reconstruction in valley-plugged streams. Tennessee Water Resources Symposium, Montgomery Bell State Park, TN.

Alford, Amy B., J.D. Fore, T.A. Blanchard, and D.C. Blackwood. 2019. Passage of fish through grade control structures in a relocated stream near Reelfoot Lake. West Tennessee Water Symposium, Pickwick Lake, TN.

Bhuyian, Md Nowfel Mahmud, C. Lahiri, T. H. Diehl, and E. Heal. 2021. Application of hydrodynamic modeling and remote sensing for identification of flood-prone croplands downstream of Reelfoot Lake spillway.In AGU Fall Meeting 2021. AGU.

Bhuyian, Md Nowfel Mahmud, K. N. Key, A. B. Alford, and D. Blackwood. 2020. Regional Environmental Flow Estimation for Watersheds in West Tennessee. In AGU Fall Meeting Abstracts, vol. 2020, pp. H004-0007.

Bhuyian, Md Nowfel Mahmud, A.B. Alford, and D.C. Blackwood. 2019. Estimating spatio-temporal error of Natural Resources Conservation Service LiDAR DEM along the rivers in West Tennessee. American Geophysical Union Fall Meeting. San Francisco, CA.

Key, Kayla N., A. Rosenberger, G. Lindner, and K. Bouska. 2022. Using a Hierarchical Species Distribution Modeling Approach to Better Understand Risks & Threats to Freshwater Mussels: A Case Study of the Meramec River Basin, Missouri. Invited oral presentation at the Freshwater Mollusk Conservation Society Workshop 2022.

Key, Kayla N., A. D. Walters, and D. Blackwood. 2021. Using eDNA to evaluate fish passage restoration efforts in a small headwater stream of the Hatchie River in West Tennessee. Virtual Poster Presentation, 2021 American Fisheries Society Meeting.

Key, Kayla N. 2020. The Lost and Forgotten: An Assessment of the Current Status of Freshwater Mussels of West Tennessee. West Tennessee Water Symposium, Jackson, TN.

V. Attachments

WTRBA Board of Directors & Advisory Members

Board Members	County
Mark Ward	Benton County
Joseph Butler	Carroll County
Barry Hutcherson	Chester County
Gary Reasons, Chairman	Crockett County
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Dr. James Byford	TN Wildlife Federation
Kyle Etheridge	TN Forestry Assoc.
Hugh Adams	TN Farm Bureau
Sen. Ed Jackson	State Senator
Sen. John Stevens	State Senator
Vacant	State Representative
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Richie Chilcutt	Aaron Ellison
Brad Keiser	Jim Harrison
Eugene Pugh	Danny Jowers
Carl Alexander	Shannon Reed
Jai Templeton	Dennie Davidson
Gary Lofton	Larry Maxwell
Bill Dan Huggins	Rudy Collins
Robert C. Cantrell	Dr. Eric Pelren
Doug Taylor	Jimmy Lumpkin
Greg Young	Malcolm Burchfiel
Stefan Maupin	
Brad Robbins	

Appendix B: Compensation Planning Framework

Compensation Planning Framework

The Program's Compensation and Planning Framework is intended to detail how the Sponsor will *"select, secure, and implement aquatic resource restoration, establishment, enhancement, and/or preservation activities"* within the proposed service areas. The following framework outline, including the ten required sections under 33 CFR 332.8, detail how sites will be assessed and how mitigation/engineering practices will be applied to any permitted mitigation activities to fulfill ILF Program credit obligations.

A1. Program Geographic Service Area

The Program proposes to operate in three service areas. An 8-digit HUC delineation approach was used to determine service areas based on natural drainages. Due to the longitudinal connectivity issues commonly found in streams in the Lower Mississippi Basin in Tennessee (as described in section A3), the Program proposes the conjoining of HUC 8 drainages within the same river system, despite being in separate ecoregions. However, ecoregion considerations will be made as part of the Program Prioritization Strategy for each service area outlined later in section A6. The northern most service area, "Obion Basin," consist of the entire Obion River Basin system which includes the HUC 8 drainages of Obion and South Fork Obion. The second service area, "Forked Deer Basin," consist of the entire Forked Deer River Basin which includes the following HUC 8 drainages: mainstem Forked Deer, North Fork Forked Deer, and South Fork Forked Deer. The last service area, "Hatchie," includes the Hatchie, Loosahatchie, and Upper Hatchie HUC 8 drainages. All drainages in each service area are part of the same HUC 6 watershed except for Lower Mississippi – Memphis (08010100). The Lower Mississippi-Memphis HUC 8 is included because it is isolated within the state of Tennessee, and regulatory conflicts between state and federal rules severely limit credit options for this watershed. State regulations prevent seeking credits in adjacent states and the Lower Mississippi-Memphis watershed is 54% in Tennessee and 46% in Mississippi. This would leave an area of Tennessee ineligible for ILF or nearby banks.

A.2 Description of Aquatic Threats

It is the goal of this Program to better the waters of the nation through environmentally sound, sustainable mitigation projects. Aquatic threats are factors that negatively affect aquatic resources. The impacts of these threats adversely affect available habitat, ecological diversity,

and morphology of the resource. The major threats of concern in the proposed service area include water quality issues and physical threats that can be summarized into three main categories: physical alterations, urban development, and agricultural impacts (Table 1). The Program will address these threats by addressing some of the key stressors and implementing natural channel design techniques in the proposed mitigation projects. In the following paragraphs, we further describe threats to the proposed service area and our approach to addressing the associated the associated impacts.

Table 1. Impacts of interest throughout proposed service area.

Category	Specific threats
Past Physical Alteration	● Historical channelized and confined streams ● Spoil-pile levee systems (limits floodplain connectivity) ● Drained wetlands ● Incised streams/bank erosion ● Headcut erosion
Urban Development	● Habitat fragmentation ● Erosion ● Runoff pollutants ● Increase in impervious surfaces
Agricultural Impacts	● Bank erosion ● No or minimal riparian zones ● Livestock access ● Impoundments ● Fertilizer & pesticide application

Physical Alteration:

Beginning in the 1900s, channelization was a common practice in west Tennessee and resulted in historic losses of natural habitat and significantly decreased the overall length of stream habitat in west Tennessee. Channelization accelerated erosion and deposition cycles, as well as significant loss of bottomland hardwood wetland habitats. These impacts began with the settlement of west Tennessee and the effects continue to plague the area. Channelization was the action of straightening meandering streams into a long, continuous canal. This action alone created a loss of stream length and a reduction in wetlands. Placement of excavated material along the sides of the canal created a continuous spoil-pile levee along most rivers which inhibits

the interaction of the stream flows with the floodplain. Increases in slope that resulted from decreased length of flow made streams more capable of transporting sediments and promoted heavy erosion in the upstream reaches. Some areas have vertical cuts of 20-40 feet below the natural floodplain elevations.

The Program plans to address this issue of hydraulic and hydrologic dysfunction, by restoring the natural flow and function of the streams and wetlands; restoring habitat, removing the aquatic barriers, returning the stream to a natural meandering morphology, and in some cases reducing the potential for flash flooding in the area. Spoil levee removal projects will be assessed and reviewed for feasibility through working with various landowners, farmers, local Soil Conservation Districts, USDA/NRCS offices, and researching various historical data to verify problems and preferential flow paths to ensure successful restoration. Suitability for restoration will be assessed on a project specific basis, justification for project will be documented and submitted, along with the site-specific development plan/mitigation plan, for review and approval by the USACE in consultation with the IRT.

Urban Development:

Land development poses many challenges to aquatic resources across the country and is one of the biggest challenges that a natural environment can face. As surrounding land uses change, native vegetation is typically removed and drastically changes how water interacts with the environment. As changes occur in a watershed, the stream transporting the water and material out of the watershed begins to, in many cases rapidly, adjust to these changes through adjusting stream grade, meander pattern, floodplain connectivity, sediment transport capacities, among many other stream hydraulic properties of a stream. Once the land use changes to developed, the natural ability to filter pollutants, slow velocities, control flooding, and prevent erosion are drastically diminished, causing degrading effects to continue downstream and throughout the watershed.

The ILF Program will address these threats through restoration and enhancement activities that protect the watershed. A watershed mitigation approach will always be used when feasible and applicable, meaning securing the entire watershed will always be the primary focus of the program when applicable. Protecting the headwaters of streams and protecting the surrounding riparian buffer has been shown to be a successful way to protect aquatic resources, with benefits seen even at lower portions of a watershed. Therefore, when considering projects in developing areas of the proposed service area, the upper portions of the watershed will be assessed and considered when determining feasibility of a project. If the upper portions of a watershed are unable to be acquired along with the overall mitigation project, for preservation purposes (to protect against future development in highly developed or developing areas), then the site will likely not be considered for a mitigation project, unless the Sponsor has documented otherwise

with scientifically supported evidence, and documentation of past projects in similar geographic areas showing project success under the specific project conditions. Projects will also be sought after in developed areas where existing watershed conditions are already severely degraded, but upper portions of the watersheds are undeveloped. These areas will be sought after to restore the underlying stream, while protecting the upper watershed from future development through preservation activities.

Runoff from urbanized areas is a growing issue across the nation as people continue to move and develop cities, increase impervious surfaces, and concentrate human activities, which tends to be near major waterways and aquatic resources. This increase of impervious surfaces causes rainwater to flow across those surfaces rather then slowly infiltrate and percolate through the soil column. This rush of water, usually with elevated velocities due to the lack of natural substrate acting as a drag on the water slowing the velocity, hits streams with high velocities and concentrations beyond what the natural system can handle. These areas typically have partially developed floodplains, or a complete lack of a floodplain due to the development of the surrounding area and leveeing of systems in this region to support use of waterways for transportation prevent flooding and other domestic purposes. Runoff from urbanized areas, further exacerbates the concentration of water in a system at one time, these elevated flows over short periods due to land development creates a flashy system, quick to rise and quick to recede, potentially causing severe damage to the local area. These flashy systems tend to be highly eroded streams that are deeply incised or leveed concentrating stress on stream bed and banks, while transporting additional debris including animal waste, fertilizers, chemicals, petroleum products, sediment, trash, etc., which further pollute and degrade the resource.

The program will address urban runoff issues through restoration and enhancement activities that focus on the establishment of the riparian buffer to help reduce velocities both in stream and intercepting runoff, design to give the stream adequate access to the flood plain where feasible and applicable, incorporate natural habitat structures to help reduce in stream velocities, while directing flow away from banks, and producing viable ecologically preferred habitat. The restoration of urban streams will likely also consider the establishment of public involvement, such as a park or greenway, and educational aspects, such as signs and information boards explaining the project, the benefit of the project to the natural environment, and ways the public can become involved. Urban restoration projects will be considered when a significant portion of the resource is available for restoration, significant riparian buffer can be established, and structures can be installed and implemented to reduce the excessive stresses urban streams can receive to help ensure long term success.

Agricultural Practices:

Agriculture includes animal operations, row crops, pasture, and silviculture. Many agricultural practices in use today are known to negatively impact aquatic resources in many ways. For example, some agricultural practices can negatively affect aquatic resources through the introduction of pesticide concentrations in runoff, increased bacteria concentrations such as E. Coli, increased nutrients in runoff leading to algae blooms that can decrease dissolved oxygen levels and destroy aquatic organism populations, increased erosion due to clearing of native vegetation and poor land management practices, increased erosion due to livestock access to streams and wetlands, and various other impairments. These practices can severely degrade a waterbody, and collectively among a region can be devastating to all aquatic resources within the drainage network. This degradation can negatively affect the aquatic resources through decreasing the designated use of the water, cause illness among recreational users, and create treatment issues for human/public consumption. Poor agricultural practices can also lead to physical degradation of an aquatic resource. Negative physical changes that occur from poor agricultural practices include: the increase of sediment load causing morphological changes to occur, channelization of streams and building levees causing a stream to lose access to the flood plain and incision from increased flow and bed and bank stresses, loss of vegetation causing lateral instability leading to undesirable channel migration, among many other negative physical adjustments that occur not only onsite but can also be observed downstream in many cases.

The ILF Program will focus on correcting these impairments through restoration and enhancement methods to stabilize the stream in cases where severe degradation has occurred and where streams are functioning poorly. The focus of restoration may include increasing the riparian buffer to help reduce and filter runoff, slowing runoff velocities, allowing for more infiltration and natural treatment of runoff, and increasing stream bank protection through dense native vegetation with deep dense root masses. The restoration will also include at minimum livestock exclusion from the immediate area along with livestock exclusion from any concentrated flow paths that contribute to the flow of the aquatic resource during wet weather to help prevent erosion of wet weather conveyances and additional sediment loads.

A3. Historic Resource Loss Within Program Service Area

Streams in west Tennessee (WT) are formed in the Southeastern plains and flow through the Mississippi Valley Loess Plains before discharging into the Mississippi River. The WTRBA has authority in four major watersheds in WT: Obion, Forked Deer, Hatchie, and Loosahatchie. Historically, these watersheds consist of wetlands and forests; today, agriculture dominates the landscape covering ~50% of the total area (Jin et al. 2019). Mass deforestation beginning in the 1800s followed by widespread channelization of streams has and continues to affect all hydrogeomorphic processes at multiple spatial and temporal scales leaving most WT rivers severely degraded, with exception of un-channelized portions of the mainstem Hatchie River (Hupp et al. 2009). Historic deforestation led to flooding issues downstream, which further

facilitated the need for channelization to mitigate flooding. Historic channelization shortened WT streams by 44%, lowered bed elevation by 170%, and increased stream gradient by 600% (Hupp et al. 2009). Historic changes in hydrologic dynamics caused by channelization escalated sedimentation processes making valley plug formations a common occurrence in present-day WT (Hupp et al. 2009). This is a common issue in WT streams and continues to affect the longitudinal connectivity of streams, thus causing fragmentation for aquatic organisms.

A4. Current Resource Conditions Within Program Service Area

Currently, a large portion of streams in the proposed service area are severely degraded, primarily due to agricultural practices in the region, while land development is the second leading cause of impairment. Of the thirty-one sources of impairment listed on TDEC's 2020 305(b) list (abbreviated list provided in Table 1), the top three sources of impairment, which include crop production, channelization, and high-density urbanized areas contribute to nearly three quarters of all impairment in the proposed service area (71.35%).

Table 2. Major sources of impairment in proposed service area based on TDEC's 2020 305(b) list.

Category	% of total impaired streams	Specific Threat
Agriculture	29.46%	● **Crop production (non-irrigated)** ● **Grazing** ● **Contaminated sediments (pesticides)** ● **Confined Animal Feeding Operations Crop production** ● Grazing in Riparian or Shoreline zones ● Impoundments ● Crop production (irrigated)
Physical	29.40%	● **Channelization**
Municipal/Urban	12.49%	● **Municipal (high-density urbanized area)** ● **Municipal point source discharge** ● **Sanitary sewer overflows** ● **Industrial/commercial site stormwater discharge** ● **Landfills** ● On-site treatment systems (septic) ● Construction stormwater discharge ● Dredging (mining and navigation)

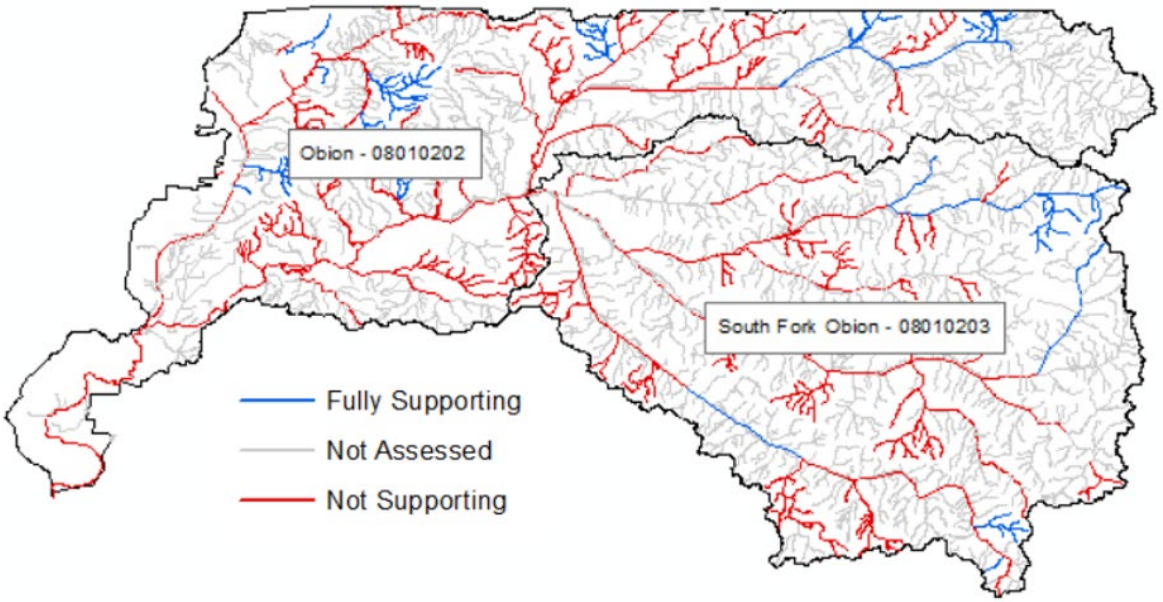
When looking at the contribution of impairment, agricultural practices as a whole contribute approximately 41.95% of impairments to the service area (specific activities shown in bold in Table 2); while municipal sources (sources directly linked to urban areas) contribute approximately 17.65% as a whole (specific activities shown in bold in Table 2). This analysis, using the State's 305(b) listed streams and sources of impairment, indicates that most impairment can be traced to land development, agricultural practices, and urbanized areas/sources.

Channelization of streams was left as its own category and not lumped with any other group due to the wide range of historic uses of channelizing streams, its large contribution to the overall impairment, and it's fit into multiple categories including agricultural purposes and land development/urbanization purposes.

Below, each service area is spatially described using TDEC's River and Stream Water Quality Assessment data. Accompanying tables summarize total area, stream length, percentage of reaches assessed, and percentage of reaches deemed impaired (not supporting) of those assessed reaches for each HUC 8 within that service area.

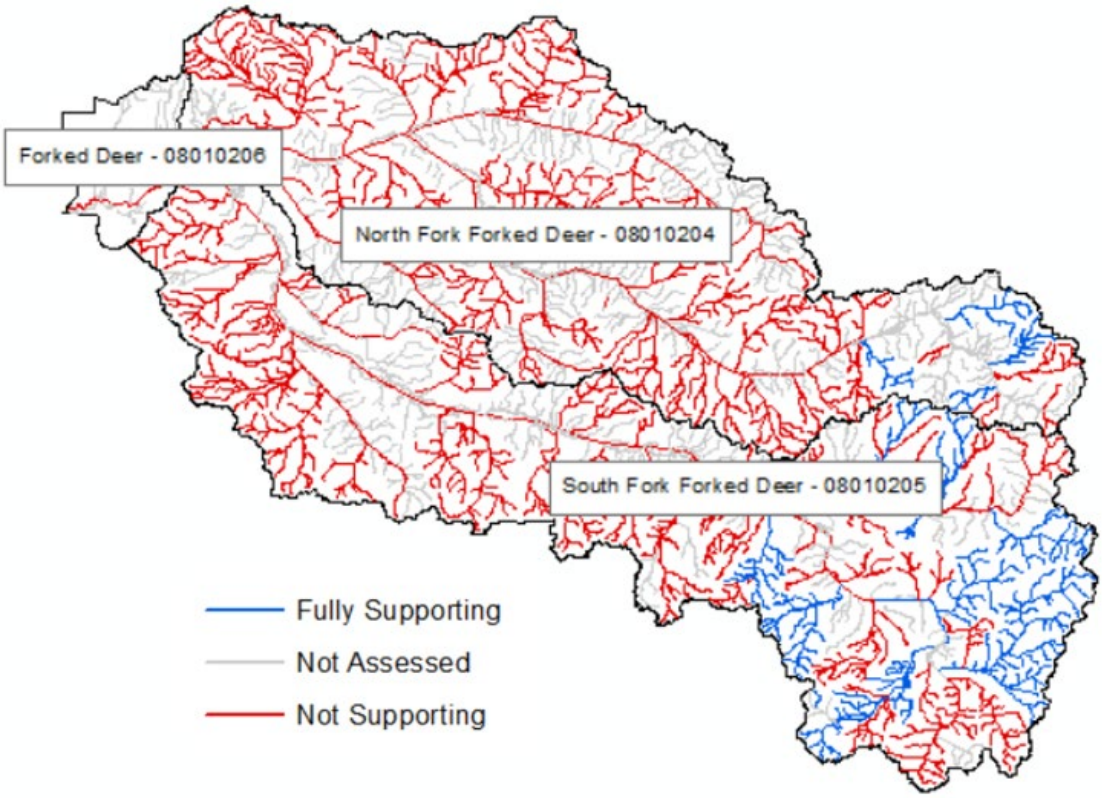
Obion Basin Service Area

Service Area HUC 8	Total Area (sq mi)	Total Stream Length (mi)	% of reaches assessed	% Impaired of assessed reaches
Obion	1315	1928	42	80
South Fork Obion	1157	1675	35	84
Total Service Area	2472	3603	38	81


Obion - 08010202
South Fork Obion - 08010203
Fully Supporting
Not Assessed
Not Supporting

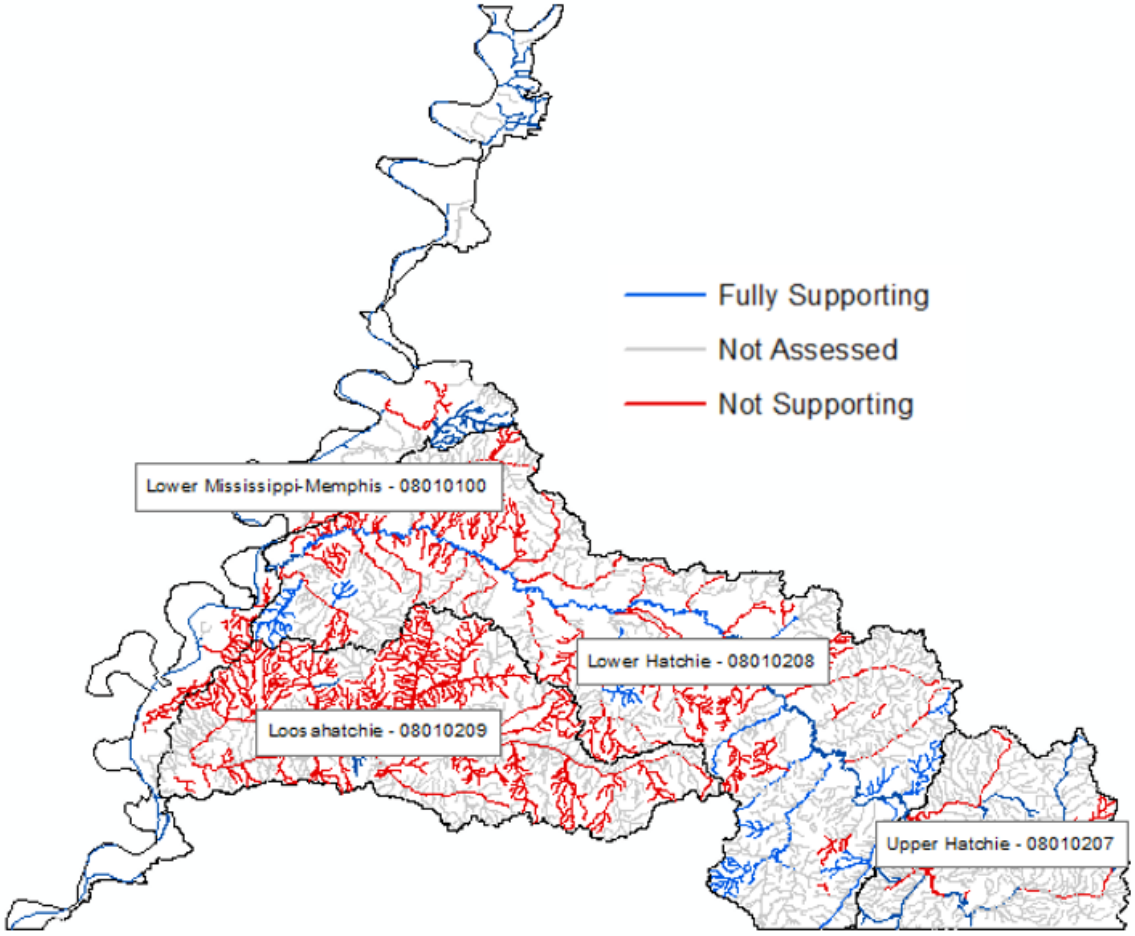
Forked Deer Basin Service Area

Service Area HUC 8	Total Area (sq mi)	Total Stream Length (mi)	% of reaches assessed	% Impaired of assessed reaches
Forked Deer	71	15	0	--
North Fork Forked Deer	954	1639	82	93
South Fork Forked Deer	1061	1780	76	80
Total Service Area	2086	3434	78	87



Hatchie Basin Service Area

Service Area HUC 8	Total Area (sq mi)	Total Stream Length (mi)	% of reaches assessed	% Impaired of assessed reaches
Upper Hatchie	1145	847	21	62
Lower Hatchie	1464	2186	49	75
Lower Mississippi-Memphis	1097	710	64	62
Loosahatchie	742	1400	66	95
Total Service Area	4448	5143	48	78



A5. Program Goals and Objectives

The main goal of the Program is to replace lost aquatic resources and replace resource functionality that supports ecological diversity resulting from permitted impacts authorized through the issuance of permits through Section 401 & 404 of the CWA, Section 10 of the Rivers and Harbor Act, and/or the Tennessee Water Quality Control Act. The Program aims to restore west Tennessee streams functionality, ecological capacity, habitat availability, and natural morphology. This will be achieved through scientifically defensible and evidence-based engineering methods, by selecting sites using best available scientific methods to assess stream existing functionality and choosing projects with the highest potentially feasible functional lift and high likelihood of project success. To aid in meeting the goals established here, local and state agencies, conservation groups and private landowners will be consulted with to help identify feasible mitigation projects. Other sources that may be used to help identify potential mitigation projects include:

- EPA's 303(d) list
- TDEC's 305(b) list
- Local watershed management plans
- Federal & State agencies
- TNC Floodplain Tools

Possible site selection limitations and considerations include:

- Sites where water quality problems and/or environmental problems that could restrain or negatively impact the survival of a native community of aquatic organisms that would not be addressed by the mitigation project.
- Sites where projected or on-going land-use impacts or changes would threaten a mitigation project unless reasonable assurances are given that future, anticipated impacts would not affect the mitigation project.
- Sites where the mineral/oil/gas rights and surface rights are separated and could potentially interfere with the mitigation project.
- Sites downstream from areas where the mineral/oil/gas rights and surface rights are separated and could potentially interfere with the mitigation project, unless reasonable assurances are given that future, anticipated impacts from extraction would not affect the mitigation project.
- Sites where compensatory mitigation efforts were previously performed.

A6. Program Prioritization Strategy

The Program, in general, will prioritize projects following the Programs established prioritization criteria, which is as follows:

1. Watersheds with highest concentration of permitted impacts where credits were sold
2. Projects that encompass entire drainage areas/watersheds
3. Sites with highest functional lift capacity
4. Projects with high probability of success

The Program will prioritize projects to fulfill credit obligations as outlined above, by first prioritizing projects in areas of the proposed service area that have the highest permitted impacts and the highest credit sales. The Program, through management of the ledger and account information, will identify areas where the most credits have been sold to offset impacts. This will help ensure that the ILF Program is offsetting impacts as close to the impact site as possible. While it is not possible for an ILF Program to offset every impact in the same HUC 8 watershed, using this approach to prioritize mitigation projects will help ensure that not only the service areas aquatic resources are being replaced, but more importantly, the likelihood the resources are being replaced in the watershed where the impacts occurred is higher.

The second priority is to select projects where the entire drainage area can be protected through, at minimum, preservation techniques and legal land use restriction mechanisms along with the overall stream and/or wetland mitigation project. This prioritization method will ensure that mitigation efforts follow a watershed approach, as preferred by the 2008 Mitigation Rule and applicable federal guidelines. This watershed approach will also help ensure long-term success of the project. Projects that encompass the upper portions of a watershed allow for more control of the project and its long-term success through control and protection of the riparian corridor and much of the contributing drainage area. The long-term success of the project and the ability of the resource to function as naturally as possible and support ecological diversity is drastically increased when the upper areas of a watershed are protected to compliment an effective mitigation project.

The third priority is to seek projects with the largest ability to increase functioning capacity or projects with the largest potential of change (largest delta) of the resource based on applicable stream and/or wetland assessments. This approach ensures the most ecologically beneficial projects are pursued by the Sponsor. This approach will also encourage the Sponsor to preferentially pursue projects that generate significant credits, ensuring long-term financial stability of the Program. From an environmental stance, this method helps the Program meet program goals established in this Prospectus, by creating the most meaningful and

environmentally sound and defensible mitigation projects, restoring the resources capacity to provide the natural function of that resource to the surrounding environment. This method supports watershed restoration by creating larger restoration projects, which creates the most benefit to the entire watershed and can address larger scale watershed issues as opposed to small projects scattered across a watershed, which typically address smaller scale local issues within the watershed. Because small scale projects still provide watershed, economic, and social benefits, they will be considered on a case-by-case basis.

The fourth priority is to locate projects with high likelihood of success and long-term natural equilibrium with the surrounding environment. Choosing projects based on likelihood of long-term success is a difficult metric to use due to the many variables that play a role in the long-term success of a project. There are natural and/or anthropogenic, uncontrollable variables that affect the long-term success of a mitigation project, including development in the watershed, change in land use, natural storm events, natural cycles in climate, among many others. Many factors happen on scales that would not be feasible to consider such as natural cycles in climate, which tends to happen on the scale of thousands to millions of years. These various limiting factors affecting long-term success of a mitigation project can vary across a region or service area and be specific to a particular site. This is the main reason it was determined to assess any potential mitigation projects for all limiting factors affecting long-term success of the project. When pursuing a site, the Sponsor will consider land development trends in the area of a potential project, land uses in the upper portions of the watershed, utilities in the area, and any other major issues that may potentially affect the long-term success of any individual mitigation project. The Sponsor will make every effort, based on all available scientific and other applicable information, to select projects based on future success. All decision-making criteria and justifications will be submitted with the mitigation plan provided for each specific project to the applicable review boards.

All Program decision-making criteria for specific projects will be provided to USACE and applicable IRT with the applicable mitigation plan developed for the specific site.

A7. Program Preservation Justification

Preservation is defined in the 2008 Mitigation Rule as “the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.”
This method of mitigation, as stated above, does not explicitly seek to increase resource value, this method solely protects the resource through legal real estate mechanisms. However, most protected properties will improve towards the most natural state if left undisturbed. The Program

proposes to use preservation as a means of mitigation on a case-by-case basis, pending approval of the USACE in consultation with the IRT. The main use of preservation in the Program would be to protect upper areas of a watershed or the headwaters of a drainage system that are currently functioning at a high capacity or are threatened by future development. This method will help the Program gain the ability to conserve the upper watersheds existing land use. This in turn will protect the lower portion of the watershed where the mitigation/restoration projects occur. Preservation will only be used when the mitigation buffer is in the direct vicinity of the mitigation project, and the area of preservation create a seamless, continuous buffer/easement along both banks of a feature (stream and/or wetland). All preservation recommendations will be subject to review and approval by USACE and applicable IRT.

A8. Description of Program Stakeholder Involvement

The Program will involve various stakeholders, which will be determined on a project specific basis (Table 3). Stakeholders may include landowners, federal and state agencies, local municipalities, watershed management organizations, among many others depending on land ownership for the specific project. The WTRBA will be the sole sponsor of the Program described here, and be the sole responsible party for fulfilling mitigation requirements and obligations from the sale of advanced credits through the Program. All stakeholder involvement will be project specific basis and negotiated/determined prior to the submission of any project that is brought before USACE in consultation with the IRT review team and will be legally binding in the form of a Memorandum of Understanding (MOU) or other applicable legally binding contract.

Table 3. List of Potential Stakeholders and Partners for the Program.

Stakeholders & Partners	
Federal	
	Natural Resource Conservation Service
	USACOE
	US Fish and Wildlife Service
	US Forest Service
State	
	TN Department of Environment and Conservation
	TN Wildlife Resource Agency
	TN Department of Agriculture
	TN State Parks
Local Government	
	Local municipalities (cities and counties)
NGOs	
	Southeast Aquatic Resources Partnership
	The Nature Conservancy of TN
	TN Wildlife Federation

A9. Program Long-Term Protection and Management

Program long-term management will be determined by the Sponsor, on a project-by-project basis. Long-term protection and management can be delegated on approval from USACE and IRT, from the Sponsor to a project stakeholder, pending proper legally binding document such as an MOU or other legally binding contract, and are subject to review and approval from USACE in consultation with the IRT. In the event the stakeholder or partners responsible for long-term management of a site default on their duties to manage the site, and continue to neglect their duties, the responsibility of long-term management for the specific site will revert to the Sponsor. The Sponsor will be responsible for taking appropriate action against the stakeholder or partners that defaulted on the underlying contract as necessary. Specific mechanisms for long-term protection for each mitigation project will be determined on a project-by-project basis, in consultation with USACE and IRT. All long-term protection instruments will be developed specifically for each project and be a legally binding, enforceable protection instrument such as a conservation easement or deed restrictions recorded with the local county office.

A10. Periodic Program Performance Evaluation and Reporting

The proposed Program will be fully evaluated and assessed every three years by the Sponsor. The performance report, which will be submitted to USACE and IRT as additional supporting documentation in addition to the annual report that will be submitted in accordance with current mitigation rules and guidelines. The triennial program evaluation report will review and document program effectiveness, cost analysis per credit generated, observed overall long-term success of mitigation projects completed by the Program, market analysis of credit generating programs and associated costs to implement other similar programs in the region, among other factors, affecting the Programs long-term management and success. The triennial report will also serve as an opportunity for the Sponsor to address any aspects of the Final Instrument governing the operation of the program that have been documented to be ineffective in the existing mitigation ILF Program site selection and/or implementation process of projects described in this Prospectus. Any proposed changes to the Final Approved Instrument that were identified through this triennial program evaluation will be documented and submitted to USACE and IRT as an amendment to the Final Instrument, pending approval of USACE and IRT. Upon consultation between the Sponsor, USACE, and the IRT, additional reviews can be requested by the regulatory agencies to address specific issues identified by either the Sponsor, Corps, and/or IRT. Any review request outside of the established review period described above must be substantiated with evidence of program failure or inconsistences in program operation, documented by the requestor of the review. Any review initiated by the sponsor outside the established review cycle, with no direction or request by the regulatory bodies to conduct such a review, will be submitted as additional documentation, and will not change the triennial reporting cycle, which will begin the date of final approval by USACE and in coordination with the IRT. Any additional reviews outside the established review cycle will be submitted as

supporting documentation, and not change the frequency or original cycle of program review, the date of final program approval will be the established “Start Date” of the Program, by which the triennial reporting timeline will be based.

Appendix C: Credit Reservation Letter Template

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
WEST TENNESSEE RIVER BASIN AUTHORITY
3628 EAST END DRIVE HUMBOLDT, TENNESSEE 38343
PHONE: (731) 784-8173 FAX: (731) 784-8606

CREDIT RESERVATION LETTER TEMPLATE

Date

Department of the Army
Memphis District, Corps of Engineers
Regulatory Division
167 N. Main St. Room B-202
Memphis, TN 38103

Subject: Statement of Credit Reservation for (*number of credits*) Stream Credits from the (*service area/project name*) to (*permittee's name*).

Dear NAME:

The West Tennessee River Basin Authority (WTBRA) and the Army Corps of Engineers (Corps) have established an In-lieu Fee program for three service areas in west Tennessee, pursuant to an ILF instrument between the Corps and WTRBA.

This letter confirms the reservation of (*number of credits*) stream mitigation credits. These credits are being used as compensatory mitigation for (*length in linear feet*) feet of impact to (resource type) in the (name of service area) as authorized by Corps permit (*Corps permit number*).

This letter ONLY reserves credits, once transaction have taken place, a follow up Credit Sale Letter will be sent to the Corps. Until credit sales are finalized the above Permittee is the only party responsible for fulfilling the mitigation aspect of the permit(s) listed above.

Sincerely,

_____
West Tennessee River Basin Authority

Appendix D: Master Ledger Outline

Financial Ledgers

•Administrative Ledger

The administrative ledger will track administration funds of the Program such as activities associated with the establishment and operation of the Program, research, planning, salaries and benefits, and program management. Also included are financial and programmatic audits of the Program. Up to 15% of each credit sold plus 15% any interest accruing on the Program Account shall allocated to administrative costs.

•Reserve Ledger

Reserve funds will be generated from a 10% each credit sold plus the proportionate amount of any interest accrued to the Program Account and will be used for contingency actions related to disasters, long-term management, and site protection. The use of these funds shall be subject to approval from USACE in consultation with the Sponsor, except for minor activities that do not require a permit, such as long-term management plan activities, fence repair, etc. All activities using Reserve funds shall be recorded in the Reserve Ledger and reported to USACE.

•Project Ledgers

Each mitigation project will have a ledger to track funds for project development, construction, monitoring, and maintenance.

Credit Ledgers

•Credit Accounting Ledger

Records will be maintained for stream credits and will include available advance credits, advance credits sold, advance credits fulfilled, credits released, released credits sold, current balance of credits available, and any other changes in credit availability

•Credit Transactions Ledger

Records will include the permit authorizing the associated impact, its date of issuance and associated stream mitigation guidance, project name, permittee name, impact location, acres or linear feet impacted, aquatic resource impacted, functional units lost and required type for mitigation, amount paid to the Program and the date the funds were received.

•RIBITS Credit Ledger

The Sponsor will be responsible for maintaining the ILF credit ledger in the Regional Internet Banking Information System (RIBITS).
RIBITS mandatory information fields include the following:

1. Jurisdiction
2. Transaction Date
3. Client Name
4. Credits Debited
5. Corps Permit Number- Format: LRN/Year/Permit Number
6. Type
7. Credit Classification.

Appendix E: Credit Sale Letter Template

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
WEST TENNESSEE RIVER BASIN AUTHORITY
3628 EAST END DRIVE HUMBOLDT, TENNESSEE 38343
PHONE: (731) 784-8173 FAX: (731) 784-8606

CREDIT SALE LETTER TEMPLATE

Date

Department of the Army
Memphis District, Corps of Engineers
Regulatory Division
167 N. Main St. Room B-202
Memphis, TN 38103

Subject: Statement of Credit sale for (*number of credits*) Stream Credits from the (*service area/project name*) to (*permittee's name*).

Dear NAME:

The West Tennessee River Basin Authority (WTBRA) and the Army Corps of Engineers (Corps) have established an In-lieu Fee program for three service areas in west Tennessee, pursuant to an ILF instrument between the Corps and WTRBA.

This letter confirms the sale of (*number of credits*) stream mitigation credits. These credits are being used as compensatory mitigation for (*length in linear feet*) feet of impact to (resource type) in the (name of service area) as authorized by Corps permit (*Corps permit number*).

By selling credits to the above Permittee, WTRBA is the only party responsible for fulfilling the mitigation aspect of the permit(s) listed above.

Sincerely,

_____
West Tennessee River Basin Authority

Appendix F: Annual Report Outline

Proposed Annual Report Outline

I. Introduction
II. Overall Status of Program Since Establishment
    a. Program Status
    b. Landowner Contacts and Potential Project Site Visits
III. Credit Costs and Status
IV. Program Financial Status
    a. Program Accounts Status
    b. Reserve Fund
    c. Administrative Fund
V. Mitigation of CWA Section 404 Impacts
    a. Spatial Analysis of Impacts in Relation to existing and Proposed Mitigation Projects
VI. Interagency Review Team Coordination
VII. Project Statistics and Status
    a. Obion Basin Service Area
    b. Forked Deer Basin Service Area
    c. Hatchie Service Area

Appendix A: Ledgers
Appendix B: Project Data
Appendix C: List of Approved Compensatory Mitigation Projects (All)
Appendix D: Monitoring and Compliance Information