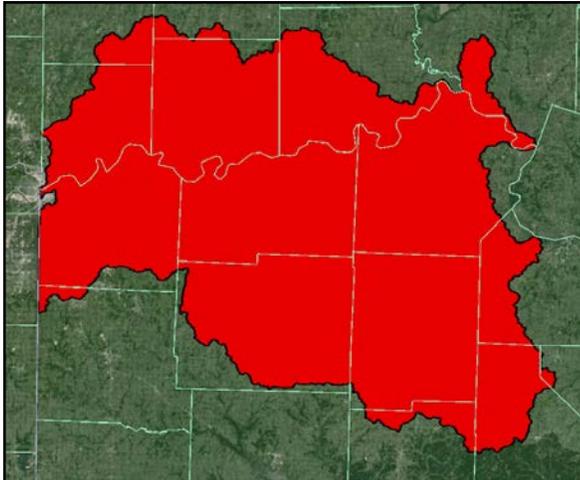


TERRA TECHNOLOGIES

Prospectus Mitigation Banking Instrument

For the
**Central Plains/Blackwater/Lamine EDU
Wetland & Stream
Umbrella Mitigation Bank**



March 2016

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TERRA TECHNOLOGIES



I. INTRODUCTION

Swallow Tail, LLC (the Sponsor) is proposing to establish the Central Plains/Blackwater/Lamine EDU Wetland & Stream Umbrella Mitigation Bank (the Bank) which will describe the establishment and operation of individual wetland and/or stream mitigation sites (mitigation sites) within the watershed service area in east-central Missouri. The Final Umbrella Mitigation Banking Instrument will define general guidelines applicable to all mitigation sites authorized as part of the Bank but certain site-specific details will be included in the mitigation plan for each mitigation site. These mitigation plans will become attachments to this umbrella mitigation banking instrument upon approval. The establishment of this umbrella mitigation bank will streamline the production of the Sponsor's mitigation plans and reduce regulatory workloads in the watershed service area in comparison to the establishment of multiple separate mitigation banking instruments. Consequently, mitigation sites will be more rapidly developed which will be beneficial to water quality and wildlife habitat, as well as being of service to the regulated public.

II. OBJECTIVES

The objectives of this proposed umbrella mitigation bank are: 1) to provide appropriate compensatory mitigation for impacts to jurisdictional aquatic habitats such as streams and wetlands authorized under Sections 404 and 401 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899 within the watershed service area and, 2) to improve the water quality and wildlife habitat functions provided by the mitigation sites in a manner that would simultaneously address the specific mitigation needs of the mitigation sites and the larger aquatic needs of the watershed. This would be done by re-establishing the native habitats that would have likely existed on the mitigation sites before agricultural conversion and by increasing the quantity and quality of stream, wetland, buffer and upland habitat, and the associated ecosystem functions. Typical anticipated mitigation activities include addressing stream bed and bank instability; reversing past stream channelization efforts by restoring natural stream channel alignment and/or cross section; riparian buffer restoration and enhancement; wetland restoration, rehabilitation, establishment, and enhancement; and buffer and upland establishment and enhancement. The Sponsor shall then legally protect the mitigation sites as natural habitat in perpetuity.



III. ESTABLISHMENT AND OPERATION

A. Umbrella Mitigation Bank Operation & Document Organization

The U.S. Army Corps of Engineers (the Corps) approval of this Instrument constitutes the regulatory approval required for the Central Plains/Blackwater/Lamine EDU Wetland & Stream Umbrella Mitigation Bank to be used to provide compensatory mitigation for Department of the Army permits pursuant to 33 C.F.R. 332.8(a)(1). This Instrument is not a contract between the Sponsor or the Property Owner and the 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 the Property Owner for monetary damages. This provision is controlling notwithstanding any other provision or statement in the Instrument to the contrary.

The Final Umbrella Mitigation Banking Instrument will serve as a binding agreement regarding the establishment, use, operation and maintenance of the Bank and is made and entered into, by, and among the Sponsor and the members of the Interagency Review Team (the IRT). The IRT is chaired by the Kansas City District of the U.S. Army Corps of Engineers and will also include as members the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), the Missouri Department of Natural Resources (MDNR) and the Missouri Department of Conservation (MDC).

The Final Umbrella Mitigation Banking Instrument will become valid on the date of the last signatory's signature. The Final Umbrella Mitigation Banking Instrument may be amended or modified with the written approval of all signatory parties as described in the Mitigation Rule at 33 CFR Part 332.8(d). The addition and approval of mitigation sites and the expansion of previously approved mitigation sites will be included as modifications (*i.e.*, attachments) to the Final Umbrella Mitigation Banking Instrument using the procedures described in the Mitigation Rule at 33 CFR Part 332.8(g)(1). Any of the IRT members may terminate their participation upon written notification to all signatory parties. Participation of the IRT members will terminate 30 days after written notification.

After Corps and IRT approval of mitigation sites the Sponsor shall perform the mitigation activities described in the mitigation plan of each mitigation site or as shown in any subsequent As-Built Figures and shall operate all mitigation sites in accordance with the provisions of the Final Umbrella Mitigation Banking Instrument and the corresponding mitigation plan. The Sponsor shall receive wetland credits and stream credits upon satisfaction of the ecological performance standards outlined in the Final Umbrella Mitigation Banking Instrument and/or the mitigation plan of each mitigation site. After all ecological performance standards have been met and after all credits have been



released to the Sponsor, the Bank will have received the total number of wetland credits and stream credits stated in the mitigation plan of each mitigation site to use as compensatory mitigation for impacts to waters of the U.S., including wetlands, authorized by Sections 404 and 401 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. The amount of stream credits granted to the Sponsor will be determined by the Corps and IRT and will be proportionate to the amount of functional lift accomplished at the site which will be calculated through the use of the 2013 Missouri Stream Mitigation Method (U.S. Army Corps of Engineers, 2013a) or any subsequently approved method of credit assessment. Wetland credits will be determined on an acreage basis depending on the type of mitigation activity (establishment, rehabilitation, or enhancement) unless a new method of wetland credit assessment is adopted after the approval of the Final Umbrella Mitigation Banking Instrument. Credits will be sold to third parties at appropriate market rates to be determined by the Sponsor. The sale of these wetland credits and stream credits available at the mitigation sites only pertain to the mitigation requirements of the Department of the Army permit issued under the authorities of Section 404 of the Clean Water Act and/or under Section 10 of the Rivers and Harbors Act of 1899 and any associated Section 401 water quality certification as administered by the State of Missouri. Additional mitigation requirements may be necessary to comply with other federal, state, and/or local statutes and regulations. Per Corps' and EPA's joint regulation for *Compensatory Mitigation for Losses of Aquatic Resources* (the Mitigation Rule) at 33 CFR 332.3(j)(1)(ii), proposed mitigation activities may address requirements of multiple regulatory programs and authorities for the same activity.

This Prospectus addresses all requirements of a complete Prospectus as described in the Corps' *Mitigation Banking Instrument Outline for Proposed Mitigation Banks within the State of Missouri* (U.S. Army Corps of Engineers, 2015) in addition to some supplemental information provided by the Sponsor. After this Prospectus has been placed on Public Notice and the public comments have been submitted to the Sponsor, the Sponsor will address those comments and submit the Draft Umbrella Mitigation Banking Instrument which will contain the necessary information required by the *Mitigation Banking Instrument Outline for Proposed Mitigation Banks within the State of Missouri*, including but not limited to baseline information, determination of credits, mitigation work plan, ecological performance standards, monitoring requirements, management plans, financial assurances, credit release schedule, and default and closure provisions. An example letter of credit that would be used as financial assurances is included in Appendix A. The Corps and IRT will then have the opportunity to comment on the Draft Umbrella Mitigation Banking Instrument. The Sponsor will then incorporate the comments into the document and submit the Final Umbrella Banking Instrument for Corps and IRT review.





The main body of the Final Umbrella Banking Instrument will discuss how the Bank will be established and operated and will include the following:

- Location
- Establishment and Operation
- Current and Long-Term Ownership Arrangements and Long-Term Management Strategy
- Sponsor Qualifications
- Legal Responsibility for Compensatory Mitigation
- Watershed Approach
- Service Area
- Mitigation Plan Guidelines
 - Objectives
 - Site Selection (General Discussion of Prioritization Criteria)
 - Site Protection Instrument
 - Determination of Credits (Methodology)
 - Operation and Maintenance Plan Guidelines
 - Common Ecological Performance Standards (Wetland Hydrology, Hydrophytic Vegetation, Hydric Soils, Desirable Vegetative Cover, Tree & Shrub Survival, Invasive Species, *etc.*)
 - Monitoring Requirement Guidelines
 - Long-Term Management Plan Guidelines
 - Adaptive Management Plan Guidelines
 - Financial Assurance Guidelines
- Credit Release Schedule Guidelines
- Accounting Procedures
- Reporting
- Default and Closure

The mitigation plans for each mitigation site will be attachments to the Final Umbrella Banking Instrument. These mitigation plans will include the following:

- Location (Including Map[s] and Shapefile)
- Objectives
- Site Selection (Including Descriptions of Existing Easements and Documentation of Acquisition and Protection of Water Rights)
- Site Protection Instrument (If Different Than Instrument Main Body)
- Baseline Information
- Determination of Credits
- Mitigation Work Plan
- Operation and Maintenance Plan

- Site-Specific Ecological Performance Standards (If Different Than Instrument Main Body)
- Site-Specific Monitoring Requirements (If Different Than Instrument Main Body)
- Site-Specific Long-term Management Plan (Including Legal Mechanism & Responsible Party)
- Site-Specific Adaptive Management Plan
- Financial Assurances
- Credit Release Schedule
- Other Information Required by the Corps

B. Initial Mitigation Site

The Sponsor has an initial mitigation site within the service area whose mitigation plan will be included in the Bank's Draft Mitigation Banking Instrument. The initial mitigation site is owned by Habitat Missouri, LLC and Terra Foundation Inc. The proposed Blue Branch Wetland & Stream Mitigation Site is approximately 171.93 acres in size and is located in Grain Valley, Jackson County, Missouri along Blue Branch, just upstream from its confluence with Sni-A-Bar Creek. This mitigation site is divided into three parcels that are separated by Sni A Bar Parkway and AA Highway. This location is shown below in Figure 1 (ESRI, 2016). Figure 2 shows an aerial photograph of the Bank along with its proposed boundaries (Google Earth, 2013).

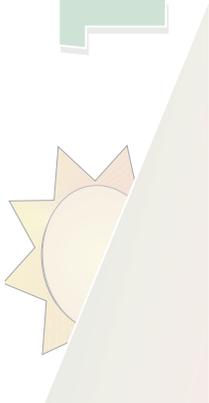
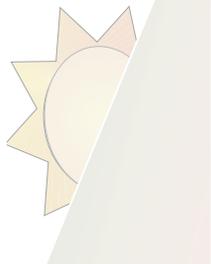
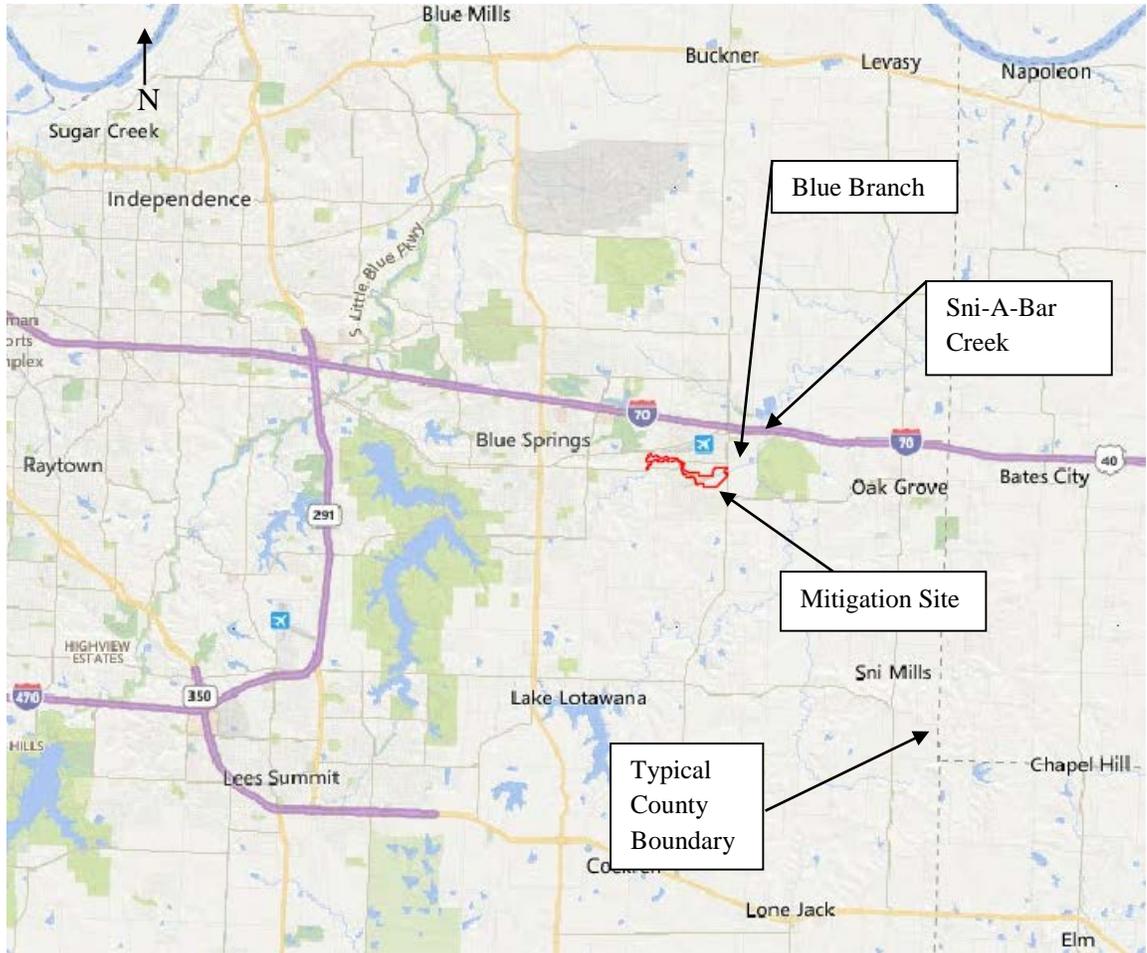


Figure 1. Blue Branch Wetland & Stream Mitigation Site Location



**Figure 2. Blue Branch Wetland & Stream Mitigation Site
Aerial Photograph with Approximate Boundaries**



The Blue Branch Wetland and Stream Mitigation Site's position within the Blue Branch floodplain at a location containing multiple tributary streams meant that the site's pre-settlement morphology and ecology were largely shaped by the alluvial processes of these numerous streams, the foremost being Blue Branch itself. Frequent flooding created poorly drained hydric soils throughout the bottomlands and wetland, riparian, and prairie habitats likely dominated the site historically. Agricultural conversion and residential & commercial development lessened the strong hydrologic influences on the mitigation site through habitat replacement and the channelization of some of the tributary streams. Additionally, a large farmed wetland complex exists in the eastern parcel of the mitigation site. Restoration of this converted wetland to a natural wetland system will represent a substantial ecological lift for the watershed. Also, changes in the surrounding land use from prairie and woodlands to agriculture and developed land altered the watershed hydrology of the onsite streams so that they received flows of greater magnitudes and shorter durations. This change caused dramatic stream base incision and bank erosion which in turn undoubtedly decreased these streams' natural connection with their floodplains and moved large quantities of eroded sediments into downstream waters. Today, these stream channels are deeply incised and the tops of the steep stream banks are held by the exposed roots of the streamside trees, the eventual toppling of which will further destabilize these stream systems. Blue Branch itself has multiple zones of significant bank erosion due to past stream channelization activities as well as commercial and residential development. The Sponsor is proposing to address the needs of this property and of the watershed through wetland establishment, restoration and enhancement; stream grade control and habitat enhancement; riparian habitat restoration



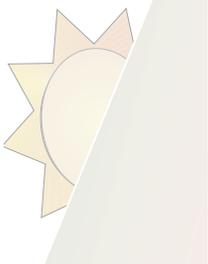
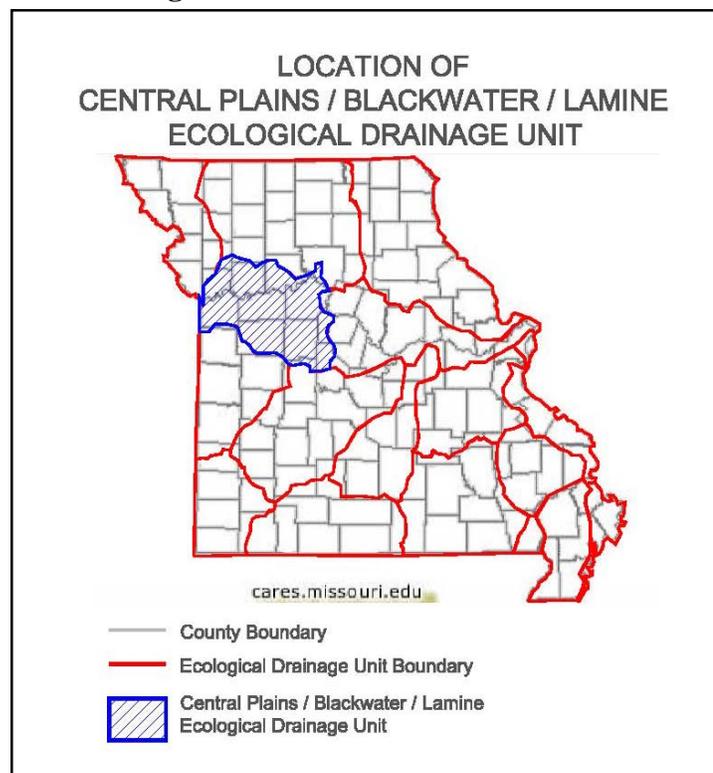
and enhancement; and stream bank stability. Additionally, in order to provide a significant public benefit, the Sponsor is partnering with the City of Grain Valley Parks and Recreation Department to establish a permanent trail system within the property. The trail will be excluded from the mitigation site and no mitigation credit will be awarded for the portions of the property where the trail is constructed.

For all of the reasons stated above, the Blue Branch Wetland & Stream Mitigation Site has significant potential for wetland and stream mitigation and will provide a significant public benefit. Additional details will be provided as a mitigation plan attachment to the Bank’s Draft Mitigation Banking Instrument.

IV. SERVICE AREA

The proposed service area of the Bank is the portion of the Central Plains / Central Plains/Blackwater/Lamine Ecological Drainage Unit (EDU) within Missouri. This service area consists of the watershed of the Missouri River in the west-central portion of the state. The primary tributaries to the Missouri River in this service area include the Blue River, Crooked River, Blackwater River, and Lamine River. The boundaries of this service area are shown below in Figure 3.

Figure 3. Service Area Boundaries



On a case-by-case basis the Corps, in consultation with the IRT, may approve mitigation credits to be sold to offset impacts from Department of the Army permit impacts that occur outside this service area. If determined appropriate, the Corps will determine the number of credits needed to be purchased in order to adequately replace the aquatic resources lost at the Department of the Army permit site.

The EDUs within Missouri generally consist of the state's major watersheds. They are combinations of 8-digit Hydrologic Unit Code (HUC) watersheds grouped together because of a common drainage area, geomorphology, and aquatic species assemblages. As a result, all areas within an EDU contain aquatic species that are evolutionarily divergent from those in neighboring EDUs because of the distinct aquatic habitats that are unique to each EDU (Sowa *et al.*, 2005). The concept of EDUs was originated by The Nature Conservancy's Freshwater Initiative with the goal of creating a meaningful geographic unit of ecologically similar drainage basins within which restoration and conservation sites can be selected to guarantee that target species and habitats are characterized across important environmental gradients. This commonality between the aquatic habitats within each of these major drainages makes the EDU an appropriate watershed boundary unit for centralized mitigation within Missouri.

V. GENERAL NEED AND TECHNICAL FEASIBILITY

The service area is a Missouri watershed shown to be in need of restoration. All states were required by the federal government to write a Unified Watershed Assessment in order to formally measure and prioritize the restoration or protection need of water resources within all eight-digit HUC watersheds in each state. The State of Missouri Unified Watershed Assessment, which was created by a steering committee which included as members MDNR, the Center for Applied Research and Environmental Systems (CARES), the Natural Resources Conservation Service (NRCS), the U.S. Forest Service, and the U.S. Department of Agriculture Farm Service Agency, ranked all of the 8-digit HUCs in Missouri in terms of restoration priorities with a specific focus on watersheds in greatest need of restoration. The results of this analysis placed the Lower Missouri Crooked subbasin (HUC 10240012) that contains the Bank as the 16th highest restoration priority out of the 66 8-digit HUCs in Missouri and stated that this subbasin had a severe biological impairment. The factors that influenced the prioritization of this subbasin include urban non-point sources, agricultural non-point sources, channel alterations, a TMDL 303(d) stream, severe biological impairment, point source pollutants, sedimentation, stream bank/channel erosion, and a significant number of public drinking water intakes (Missouri Unified Watershed Assessment Steering Committee, 1998).

The Missouri Resource Assessment Partnership (MoRAP), a collection of University of Missouri employees who have produced a number of digital data and maps related to



natural resources, has undertaken a thorough analysis of the type and severity of threats to aquatic resources throughout Missouri in order to create Human Stressor Index values for each small drainage area (Aquatic Ecological System). This analysis characterized the level of stress on riverine ecosystems across the state from eleven unique and fairly uncorrelated factors: percent urban cover, percent agricultural cover, number of introduced species, amount of hydrologic modification or fragmentation by major impoundments, population change between 1990 and 2000, number of small impoundments, density of stream road crossings, density of coal mines, density of NPDES permitted discharges, density of lead mines, and density of confined animal feeding operations (Sowa *et al.*, 2005). While this analysis was focused solely on riverine ecosystems, the results can be safely extrapolated to be applicable to all aquatic resources. This is because the same stressors act similarly on stream, wetland, and open water habitats due to the ecological parallels between these systems and the close physical, chemical, and biological relationships between neighboring aquatic habitats. Additionally, the results from each Aquatic Ecological System can be combined to provide a thorough presentation of the type and severity of threats to aquatic resources within each service area.

The aquatic resources in the proposed service area are highly stressed as almost all of the Central Plains / Central Plains/Blackwater/Lamine EDU in Missouri is shown to be in the upper two levels of the Human Stressor Index. The locations of greatest aquatic stress are watersheds that are directly adjacent to the Missouri River. All of these areas are ranked in the top level of overall Human Stressor Index (Sowa *et al.*, 2005).

Assessing the service area as a whole, the median value for each stressor shows a relatively high to moderate level of stress from agricultural activities and disturbance from stream road crossings; a moderate to low level of stress from the number of introduced species, population change (*i.e.*, land development), large federally licensed dams, density of coal mines, density of NPDES permitted discharges, and confined animal feeding operations; and a relatively low level of stress from all other factors. There was relatively little variation in the level of disturbance caused by each individual aquatic threat across the service area as almost all of the service area was impacted by agriculture at the highest or second highest level. The Clear Creek Aquatic Ecological System that is located along US I-70 between Odessa and Sweet Springs is considered to have the highest level of human stress within the EDU and has the highest level of disturbance from agriculture and federally licensed impoundments. The Aquatic Ecological Systems within the Kansas City metropolitan area portion of the service area on average had the highest average possible rating for the density of stream road crossings and also had a moderate to high amount of impacts from agricultural disturbance, federally licensed impoundments, and NPDES permitted discharges (Missouri Resource Assessment Partnership, 2005).



The conclusions of the MoRAP analysis are corroborated by those of MDC and MDNR. In its watershed inventories and assessments for the Crooked, Lamine, and Blue Rivers, MDC found that the main aquatic impairments in the Crooked river watershed are soil erosion from agricultural uplands, urban areas, and stream banks; minimal riparian buffers; and modified stream flow patterns because of agricultural conversion and urbanization. Channelization and the creation of levees has been widespread in the assessed watersheds (and throughout this service area), resulting in the direct loss of aquatic habitat, downcutting, significant erosion, and the hydrologic disconnection of rivers from their floodplains (Pitchford *et. al.*, n.d., Horton & Kerns, n.d., & Brown *et. al.*, n.d.). Additionally, according to MDNR (1996), the major water quality areas of concern in this service area are:

- Most streams in the agricultural portions of the service area contain excessive sediment resulting from runoff from agricultural fields
- Saline springs within the Blackwater watershed result in poor water quality within those streams
- Most of the nitrogen, phosphorus and metals found in stormwater flows in the Blue River were associated with suspended sediments from agricultural runoff

Based on the findings described above, the main threat to aquatic resources in this service area is agriculture, followed by stream road crossings, and to a lesser degree introduced species, small impoundments, and the density of NPDES permitted discharges, with a relatively low level of disturbance from all other stressors at the watershed level. Impacts to aquatic resources resulting from agricultural activities include insufficiently wide riparian buffers; non-point source pollution of nutrients, herbicides and pesticides; the conversion of wetlands; stream channelization, excessive sediment loads, and livestock damage. In developed areas, aquatic resources are impacted by such threats as increases in surface water flows and resulting erosion, stream channelization, wetland conversion, and water pollution from point and nonpoint sources. The mitigation activities proposed as part of the Bank will address these watershed needs by converting agricultural ecosystems to the natural habitats that likely previously existed on the site; significantly reducing invasive species cover; widening riparian buffers; establishing large wetland areas that will treat nutrient, chemical, and sediment pollution; restoring natural stream channel alignments and cross sections; and reducing soil erosion.

The proposed wetland and stream mitigation activities are technically feasible. As described later in this document, the Sponsor has a history of selecting mitigation sites that are ecologically suitable for stream and riparian buffer restoration. These locations have contained stretches of perennial, intermittent and ephemeral streams that have denuded and/or degraded riparian buffers and require in-stream restoration to re-establish proper channel cross section, remedy bank instability, or reverse past channelization



efforts which present great potential for restoring in-stream and riparian buffer habitat. In addition, the Sponsor's previously approved mitigation sites have had topography, soils, and hydrology amenable to wetland restoration, establishment, rehabilitation and enhancement.

VI. CURRENT AND LONG-TERM OWNERSHIP ARRANGEMENTS AND LONG-TERM MANAGEMENT STRATEGY

Unless otherwise stated in the site-specific mitigation plan, The Flick Family Irrevocable Trust will own the real estate containing each mitigation site, including the water rights and mineral rights, and the Sponsor will develop mitigation plans to establish, restore, rehabilitate, and enhance onsite streams, riparian buffers, wetlands, buffers, and/or uplands at each mitigation site. It is the intention of the Sponsor to legally preserve the property as open space habitat in accordance with the terms of the long-term management plan included in the Final Umbrella Mitigation Banking Instrument and each mitigation site conservation easement. Conservation easements will be the legal means to ensure that each mitigation site remains as natural habitat in perpetuity. The conservation easements shall prohibit any development of the site and shall stay with the mitigation site property in the instance that the title to the property is transferred to another party. A draft conservation easement is included in Appendix B. The terms of the easement will be enforceable by the Corps and the Midwest Mitigation Oversight Association, a non-profit group that will hold the conservation easement and will monitor the Sponsor's compliance with the conditions of the easement. After the mitigation site is approved, copies of the finalized and recorded conservation easement shall be provided to the Corps.

The Midwest Mitigation Oversight Association is a conservation-based non-profit corporation established in 2007 with the sole purpose of holding and monitoring natural resource mitigation conservation easements. The Midwest Mitigation Oversight Association has been approved by the Kansas City, St. Louis, and Little Rock Districts of the U.S. Army Corps of Engineers as a legally-binding recipient of conservation easements for mitigation sites and currently holds easements on thousands of acres of federal mitigation parcels in Missouri and Kansas. The board of directors consists of professionals whom all meet stringent requirements in order to be on the board, including the possession of a broad scientific background related to natural resources, conservation science, or applied ecology. These board members have more than fifty combined years of professional natural resource experience in wetland and stream regulations, habitat maintenance, and construction.



The long-term management strategy for each mitigation site is to provide limited maintenance and management of the mitigation site as needed after all parties have determined that the mitigation site is successful and that more intensive monitoring and management is no longer necessary. Active management of each mitigation site will continue for a minimum of fifteen (15) years after approval of the mitigation site or until all credits from the mitigation site have been sold (unless the remaining credits are indefinitely suspended or removed), whichever is later. At that point, the ecosystems within the mitigation site will not require active management. Long-term management will commence at the end of the active management phase of mitigation site operation and will include continued maintenance of the mitigation site for purposes of such activities as controlling invasive species, maintaining water control berms, prevention of trespassing and removal of litter, as necessary. Costs associated with these activities will be paid for by the revenues from credit sales. It is the intent of the Sponsor to oversee the long-term management of each mitigation site in perpetuity, but should the Sponsor for any reason decide to transfer the long-term management of a mitigation site to a currently unknown entity, the Sponsor will notify the Corps prior to the transfer of the long-term management responsibilities. At that time the appropriate funding mechanism for a mitigation site, as outlined in the Mitigation Rule at 33 CFR 332.7(d), will be determined.

VII. SPONSOR QUALIFICATIONS

The Sponsor operates five existing approved wetland and stream mitigation banks within the Kansas City District of the Corps. Project descriptions of these mitigation banks are included in Appendix C. These approved wetland and stream mitigation banks together encompass roughly 474 acres and include more than 150 acres of floodplain wetland establishment, restoration and enhancement as well as many acres of wetlands established within riparian buffers that function solely as stream mitigation. These approved mitigation banks have also legally protected both sides of almost 4.7 miles of streams and more than 3.25 miles of streams on one side and have expanded riparian buffers on these streams with more than 223 acres of new riparian buffer plantings. The Sponsor also has five proposed wetland and stream mitigation banks in the Corps' Kansas City District and two proposed wetland and stream mitigation banks in the Corps' Little Rock District under current review that are either entirely or partially constructed. The design, construction, management, and monitoring of these proposed mitigation banks further demonstrates the Sponsor's qualifications to perform mitigation related to wetland, riparian, stream, and upland habitats.

Specific to the design and construction of stream channel restoration projects, the Sponsor's approved Stranger Creek Wetland and Stream Mitigation Bank included the restoration of more than a half mile of two highly degraded farm ditches to their natural condition as intermittent stream channels with appropriate channel morphology and



riparian buffers. Also as part of that project, a longitudinal peak stone toe bank stabilization was engineered and constructed along about 300 feet of Stranger Creek to address an area experiencing extreme erosion. In addition, willow plantings along perennial stream banks have been utilized at two of the Sponsor's approved mitigation banks in order to stabilize eroding stream banks utilizing natural methods.

Services related to project planning and design as well as construction oversight and monitoring of the Bank will be contracted to the scientists and engineers at Terra Technologies, Inc. (Terra Technologies). Terra Technologies is an environmental engineering company with offices in Overland Park, Kansas and St. Louis, Missouri. The firm has significant experience with compensatory mitigation projects with approximately 600 successful mitigation sites in Kansas and Missouri since the company's founding in 1992. Additionally, Terra Technologies has extensive expertise in the planning, design, and construction of large-scale wetland and stream mitigation projects as the firm has designed and overseen construction of all of the Sponsor's approved and proposed mitigation banks.

The licensed professional engineers and biologists at Terra Technologies have significant experience in stream design, restoration, stabilization, and enhancement as they have designed stream improvements for many waterways throughout Missouri and Kansas including projects for the City of Leawood, Kansas; the City of Overland Park, Kansas; the City of Merriam, Kansas; the City of Shawnee, Kansas; the City of Lawrence, Kansas; the City of Independence, Missouri; the City of Blue Springs, Missouri; the City of St. Charles, Missouri; the Metropolitan St. Louis Sewer District, and; the U.S. Army Corps of Engineers Kansas City District among many others. In addition, Terra Technologies was also awarded the Conservation Award in 1999 from the Kansas Department of Wildlife and Parks Environmental Services Section for their work with municipalities and private entities.

VIII. ECOLOGICAL SUITABILITY

Each mitigation site will be ecologically suitable as a large-scale wetland and/or stream mitigation site because of its location, baseline conditions, and mitigation opportunities. All of these aspects will be discussed in the mitigation plan for each mitigation site. Each of the Sponsor's approved mitigation banks have been ecologically suitable for wetland and stream mitigation based upon an assessment of such characteristics as each site's stream mitigation priority status, proximity to existing protected natural areas, topography, floodplain limits, soils, existing wetland and stream locations and boundaries, degree of ecological degradation, and resulting mitigation opportunities. The same factors will be evaluated for each of the Bank's mitigation sites.



IX. WATER RIGHTS, MINERAL RIGHTS & EXISTING REAL ESTATE ENCUMBRANCES

Missouri is a state governed by riparian doctrine water law. As such, river and stream flows are not treated as property to be owned. Instead, riparian land owners have the right to use and enjoy those waters in a reasonable manner. These water rights are inextricably bound to the legal ownership of real estate property that borders or underlies waterways or is located above groundwater. Consequently, those water rights cannot be legally separated from the ownership of the riparian lands and sold to other entities as is the policy in many western states which typically utilize the prior appropriation doctrine (*i.e.*, first in time, first in right) (Gaffney & Hays, 2000).

The Flick Family Irrevocable Trust will hold the water rights on each mitigation site. There is no plan for irrigation or mechanized distribution of water at any mitigation site. All water necessary for wetland and/or stream mitigation will be attained by stream flows, precipitation, overland sheet flow and overbank flood flows based on the Flick Family Irrevocable Trust's water rights. In addition, the plant species proposed for each mitigation site will be native species and therefore generally drought resistant.

The Flick Family Irrevocable Trust will also own all mineral rights on each mitigation site. Consequently, the potential for future mineral exploration or extraction will not threaten the long-term sustainability of each mitigation sites as the mitigation sites' conservation easements will prohibit mineral extraction. Additionally, any existing real estate encumbrances on each mitigation site will be disclosed to the Corps and IRT.

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