TERRA TECHNOLOGIES

Final
Mitigation Banking Instrument

For the

Stranger Creek
Wetland & Stream Mitigation Bank

January 2011

1920 W. 143rd Street, Suite 140 • Leawood, KS 66224
Phone: 913-385-9560 • Fax: 913-385-5295
http://www.terratechnologies.com • e-mail: terratech@terratechnologies.com

TABLE OF CONTENTS

APPENDICES

I. INTRODUCTION

A. *Location of Mitigation Bank*

Swallow Tail, LLC owns approximately 75.62 acres of land, including the water rights, in unincorporated Leavenworth County, Kansas for which the Sponsor has developed a preliminary mitigation plan to establish, enhance, and maintain wetlands and stream systems. The approximate center point of the bank site is at 39.043017°N -95.040406°W, which is approximately 2.8 miles north of Linwood, Kansas and 5.2 miles southeast of Tonganoxie, Kansas (Image 1). It is located in the NE 1/4 of the NE 1/4 of Section 2 of Township 12S Range 21E and the SE 1/4 of the SE 1/4 of Section 35 of Township 11S Range 21E in rural Leavenworth County Kansas (Figure 1 Township Range Section). The north and western boundaries are adjacent agricultural property, the south boundary is Stranger Creek, and the east boundary is Stranger Creek and 198th Street.

Image 1. Location of Stranger Creek Wetland & Stream Mitigation Bank

B. *Establishment and Operation of Bank*

This Mitigation Banking Instrument will serve as a binding agreement regarding the establishment, use, operation, and maintenance of the Stranger Creek Wetland & Stream Mitigation Bank (the Bank) and is made and entered into, by, and among Swallow Tail, LLC (Sponsor) and the members of the Interagency Review Team (IRT). The members of the IRT include the Kansas City District of the U.S. Army Corps of Engineers (Corps), the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), the Kansas Department of Wildlife and Parks (KDWP), the Kansas Water Office (KWO), and the Kansas Department of Health and Environment (KDHE).

This Mitigation Banking Instrument will become valid on the date of the last signatory's signature. This Mitigation Banking Instrument may be amended or modified with the written approval of all signatory parties as described in 33 CFR Part 332.8(d). 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.

The Sponsor shall create the wetland and stream habitats shown on the Bank Development Plan in Appendix C or as shown in the subsequent As-Built Figure and shall operate the Bank in accordance with the provisions of this Mitigation Banking Instrument. The Sponsor shall receive wetland credits and stream credits upon satisfaction of the ecological performance standards contained in Section IV.H and according to the credit release schedule contained in Section V.B. After all ecological performance standards have been met and after all credits have been released to the Sponsor, the Bank will have received a total of 19.10 wetland credits and a total of 37,442.60 stream credits to use as compensatory mitigation for impacts to waters of the U.S, including wetlands, in accordance with all applicable requirements. However, if the post-construction As-Built Figure differs from the Bank Development Plan contained in this document, the total amount of wetland credits or stream credits available to the Sponsor may have to be adjusted. Similarly, if monitoring results show a lesser or greater amount of wetland or stream habitat types, the total amount of amount of wetland credits or stream credits released to the Bank may be altered. Credits will be sold to third parties at an appropriate market rate to be determined by the Sponsor. Per 33 CFR 332.3(j)(1)(ii), proposed restoration activities may address requirements of multiple regulatory programs and authorities for the same activity.

To the extent that specific language in this document changes, modifies, or deletes terms and conditions contained in those documents that are incorporated into the Mitigation Banking Instrument by reference, and that are not legally binding, the specific language within the Mitigation Banking Instrument shall be controlling.

C. Site Ownership

Swallow Tail, LLC owns approximately 75.62 acres of land, including the water rights, in unincorporated Leavenworth County, Kansas for which the Sponsor has developed a preliminary mitigation plan to establish, enhance, and maintain wetlands and riparian

corridors. The Bank will constitute 64.78 acres of this property, with 8.83 acres dedicated to the adjacent third party mitigation site for Corps permit number NWK 2006-1003. The remaining acres consist of a portion of Stranger Creek itself and road right of ways.

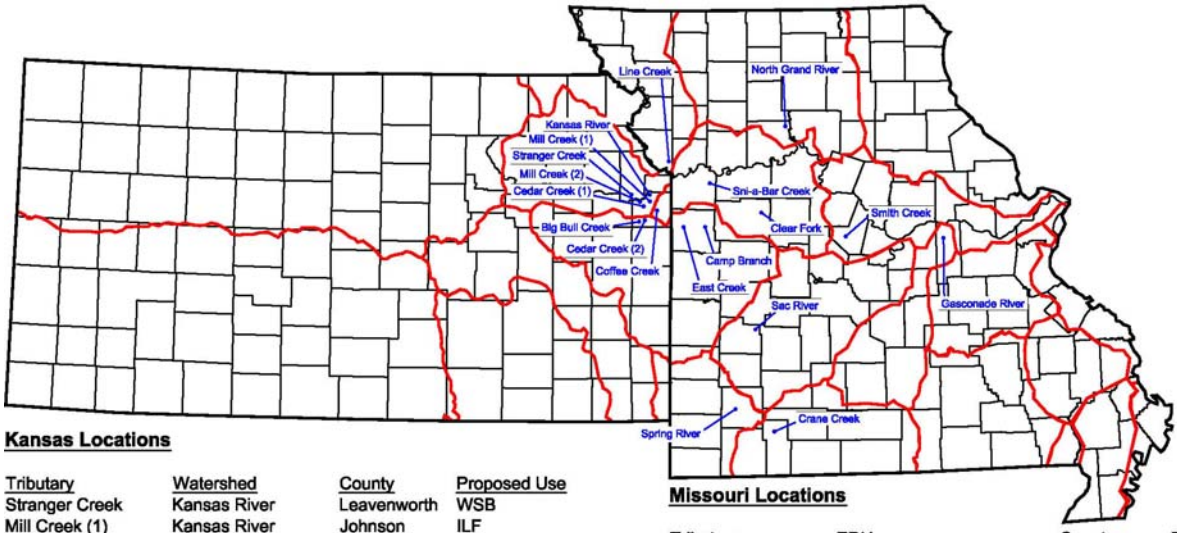
There are no short-term or long-term plans to transfer title of the property to another party. It is the intention of the Sponsor to maintain the property in perpetuity as highly functioning habitat in accordance with the terms of the long-term management plan and the conservation easement. The conservation easement shall restrict any development of the site in perpetuity and shall stay with the property in the instance that the title to the property is transferred to another party.

Routine maintenance of the Bank property will continue for a minimum of fifteen years after approval of the final mitigation banking instrument or until all credits have been sold, whichever is later, at which point the ecosystems on the property will be self-sustaining and self-regulating.

D. *Sponsor Qualifications*

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) under contract to the Sponsor. Terra Technologies is an environmental engineering company with offices in Leawood, Kansas and St. Louis, Missouri. The firm has significant experience with compensatory mitigation projects with approximately 600 successful mitigation sites in Missouri and Kansas 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 two approved and six proposed wetland and stream mitigation banks totaling over 1,000 acres with six additional proposed mitigation bank sites that have not yet been constructed. The location of current and future proposed mitigation banks is shown in Image 2. Project examples and additional information regarding Terra Technologies' qualifications are included in Appendix F.

Image 2. Location of Terra Technologies Approved & Proposed Wetland & Stream Mitigation Banks and In-Lieu Fee Project Sites



Kansas Locations

Tributary	Watershed	County	Proposed Use
Stranger Creek	Kansas River	Leavenworth	WSB
Mill Creek (1)	Kansas River	Johnson	ILF
Cedar Creek (1)	Kansas River	Johnson	ILF
Coffee Creek	Blue River	Johnson	WSB
Kansas River	Kansas River	Johnson	ILF
Mill Creek (2)	Kansas River	Johnson	ILF
Cedar Creek (2)	Kansas River	Johnson	ILF
Big Bull Creek	Marais Des Cygnes	Johnson	TPM

WSB - Wetland and Stream Bank
ILF - In-Lieu Fee Site
TPM - Third-Party Mitigation

Missouri Locations

Tributary	EDU	County	Proposed Use
Sni-a-Bar Creek	Blackwater/Lamine	Jackson	WSB
East Creek	Osage/South Grand	Cass	WSB
Camp Branch	Osage/South Grand	Cass	WSB
Clear Fork	Blackwater/Lamine	Johnson	WSB
Smith Creek	Moreau/Loutre	Moniteau	WSB
Gasconade River	Gasconade	Gasconade	WSB
North Grand River	Grand/Chariton	Carroll	WSB
Sac River	Osage	Cedar	WSB
Crane Creek	Upper White	Stone	WSB
Spring River	Neosho	Lawrence	WSB
Line Creek	Platte	Platte	ILF

E. *Legal Responsibilities*

Once a Department of the Army permit applicant has purchased credits from the Sponsor and the Corps has recorded the purchase of those credits from the Bank as satisfying all or a portion of the mitigation responsibilities of the permit applicant, the legal responsibilities for providing compensatory mitigation for any project impacts to jurisdictional waters of the U.S. is transferred from the permit applicant to the Sponsor.

II. WATERSHED APPROACH

A. *Watershed Boundary*

The watershed boundary considered by the Sponsor in the location and establishment of the Bank is established on a Hydrologic Unit Code (HUC) 8 basis. The watershed boundary (service area) is the HUC 8, 10270104 Lower Kansas, that the bank is located within and the two adjacent HUC 8s, 10270103 Delaware and 10270102 Middle Kansas that are within the same HUC 6, the Kansas River basin. Major streams within this watershed are the Kansas River, Delaware River, Wakarusa River, Stranger Creek, Mill Creek, and Vermillion Creek. The Sponsor has used a watershed selection process as part

of the siting of this Bank in order to maintain and improve the quality and quantity of aquatic resources within the Bank's geographical service area. Through the establishment and use of this mitigation bank the Sponsor seeks to provide a wide variety of landscape, resource and habitat types to create, enhance, restore and protect aquatic resource functions to improve water quality and wildlife habitat within the Bank's watershed.

B. *Historic and Current Wetland and Wildlife Habitat Loss*

Since European settlement, there has been significant and widespread alteration and destruction of wetland and stream habitats. According to the USFWS (Dahl, 1990), approximately 48% of Kansas' wetlands have been lost over the past 200 years as a result of conversion to agriculture, a drop in groundwater levels due to irrigation, levee construction, river management and navigation programs, urban development activities, and other actions.

Within the Kansas River Watershed the two major reservoirs, Perry Lake and Clinton Lake, have impounded nearly one hundred miles of the Wakarusa River, Delaware River, and their tributaries. Impoundment of these streams has eliminated pool and riffle complexes within the streams, which are vital special aquatic sites for aquatic life. Also, the inundation from these lakes has also likely caused a significant historic losses of wetlands associated with these rivers. Other causes of historic wetland and wildlife habitat loss within the Bank's watershed include agricultural conversion, urbanization, and sedimentation caused by detrimental land use practices. Historically, the most prominent habitat feature within the watershed was prairie. Historical surveys from the 1850s indicate that 85% of Johnson County, 94% of Douglas County, and 75% of Wyandotte County land cover was native prairie. Today less than one half percent of the high quality prairie in these counties remains (Kindscher et. al 2005). Most of native prairie loss is contributed to conversion to agriculture and urbanization. Another significant contributor to wetland and habitat loss within the watershed is bed degradation of the Kansas River. This has caused considerable loss of the wetlands due to a lower water table within the Kansas River floodplain and a reduction in sand/point bar habitat which is essential for many species of wildlife like the endangered piping plover (*Charadrius melodus*) and interior least tern (*Sterna antillarum*) (KWO 2009).

Current land use trends include rapid urbanization and agriculture. The watershed contains the urban areas of Topeka, Lawrence, and Kansas City, Kansas, which are three of the largest urban areas in the state. Wyandotte and Johnson County in the Kansas City metropolitan area are the two most heavily urbanized areas in the watershed. The population of Johnson County has grown by nearly 400% over the last 50 years and Wyandotte County, whose population has actually decreased during that time period, is nearly completely urbanized (KWO 2009). Prior to passing of the Clean Water Act and FEMA regulation of development within the floodplain, wetlands and streams within the watershed were impacted without regulation and the amount of wetlands, streams and wildlife habitat were significantly reduced.

C. *Water Quality Issues*

Watershed Resource and Protection Strategies (WRAPS) plans have been developed for the Middle Kansas, Lower Kansas, and Delaware Watersheds. Through advisement from KDHE, the Middle and Lower Kansas have targeted the following TMDLs as priority water quality concerns (Lower Kansas WRAPS 2008 and Middle Kansas WRAPS 2009):

- Kansas River at Wamego – Bacteria
- Vermillion Creek – Bacteria
- Upper Soldier Creek – Sediment
- Shunganunga Creek – Dissolved Oxygen and Bacteria
- Rock Creek – Bacteria
- Lake Shawnee – Eutrophication
- Lower Kansas River – Bacteria
- Cedar Creek – Bacteria
- Mill Creek – Bacteria
- Mill Creek – Sediment (Biology)
- Kill Creek - Bacteria
- Stranger Creek – Bacteria
- Lower Wakarusa - Bacteria.
- Washington Creek – Dissolved Oxygen

According to the Delaware WRAPS (Bosworth 2007), high priority water quality issues within the watershed are Sedimentation / Erosion, Nutrient Contamination, Bacterial Contamination, Pesticides, Household Hazardous Waste, HHW Disposal Sites, Ground Water / Water Wells, and Point Sources of Pollution.

Waterbodies on the proposed 2010 Clean Water Act Section 303(d) list of impaired waters includes the following (KDHE, 2010):

HUC 10270102

- Cross Creek (*E. coli*)
- Kansas River (*E. coli*, Total Phosphorus, Biology, Total Suspended Solids, Fecal Coliform,)
- Mission Creek (*E. coli*, Copper)
- Muddy Creek (*E. coli*, Fecal Coliform)
- Rock Creek (*E. coli*)
- Soldier Creek (*E. coli*, Total Suspended Solids, Biology)
- Lake Shawnee (Eutrophication)
- Vermillion Creek (Biology, Fecal Coliform)
- Pottawatomie Co. SFL # 1 (Eutrophication, Dissolved Oxygen)
- Topeka Public Golf Course (Eutrophication)
- Shunganunga Creek (Total Phosphorus, Fecal Coliform)
- Central Park Lake (Eutrophication)
- Warren Park Lake (Aquatic Plants, Eutrophication)

- Gage Park Lake (Eutrophication)
- Myer's Lake (Eutrophication, pH)
- Wamego City Lake (Eutrophication)

HUC 10270103

- Perry Lake (Eutrophication)
- Perry W.A. Wetland (Eutrophication, Dissolve Oxygen)
- Mission Lake (Siltation)
- Delaware River (Total Phosphorus, Fecal Coliform, Biology)
- Elk Creek (Total Phosphorus, Fecal Coliform)
- Grasshopper Creek (Total Phosphorus, Atrazine, Copper, Fecal Coliform)
- Atchison Co. Park Lake (Eutrophication, Siltation)
- Elkhorn Lake (Eutrophication)
- Nebo SFL (Eutrophication)
- Mission Lake (Atrazine, Eutrophication)
- Little Lake (Eutrophication)
- Sabetha Watershed Lake (Eutrophication)
- Straight Creek (Fecal Coliform)
- Lake Jayhawk (Eutrophication)
- Prairie Lake (Eutrophication)

HUC 10270104

- Kansas River (Total Phosphorus, Copper, Lead, PCB, Total Suspended Solids, Biology, Biology/Sediment, *E. coli*)
- Turkey Creek (Ammonia)
- Captain Creek (Atrazine, Copper)
- Crooked Creek (Atrazine, Total Phosphorus, Biology)
- Kill Creek (Atrazine, *E. coli*)
- Stranger Creek (Atrazine, Biology, Copper, Lead, Total Phosphorus, *E. coli*, Fecal Coliform)
- Baker Wetlands (Eutrophication, Lead, pH, Dissolved Oxygen)
- Douglas Co. SFL (Eutrophication)
- Leavenworth Co. SFL (Eutrophication)
- Rose's Lake (Eutrophication)
- Strowbridge Reservoir (Eutrophication)
- Nine Mile Creek (Lead, Total Phosphorus, Fecal Coliform)
- Cedar Creek (Total Phosphorus, *E. coli*, Nitrate)
- Mill Creek (Total Phosphorus, Biology, Biology/Sediment, Chloride, *E. coli*, Diazinon)
- Wakarusa River (Total Suspended Solids, Biology, Biology/Sediment, *E. coli*, Fecal Coliform, Ammonia)
- Lakeview Estates Lake (Aquatic Plants, Eutrophication)
- Gardner City Lake (Dissolved Oxygen, Eutrophication, Copper)
- Mary's Lake (Dissolved Oxygen, pH)

- Sunflower Park Lake (Dissolved Oxygen, Eutrophication)
- Washington Creek Near Lawrence (Dissolved Oxygen)
- Cedar Lake (Eutrophication)
- Clinton Lake (Eutrophication)
- Frisco Lake (Eutrophication)
- Lone Star Lake (Eutrophication)
- New Olathe Lake (Eutrophication)
- Olathe Waterworks Lakes (Eutrophication)
- Pierson Park Lake (Eutrophication)
- Potter's Lake (Eutrophication, pH)
- Buck Creek (Fecal Coliform)
- Coal Creek (Fecal Coliform)
- Antioch Park Lake (Eutrophication)

HUC 10270102, HUC 10270103, and HUC 10270104 are delineated as sub-watersheds of the Kansas-Lower Republican Basin. According to the Kansas Water Office (2006), fecal coliform bacteria and dissolved oxygen (DO) are the most rampant stream impairments to water quality within the basin. Bacteria and dissolved oxygen are not mutually exclusive. Microorganisms, such as bacteria, rapidly break down and decompose available organic matter, consuming oxygen in the process. This has great potential to decrease DO levels. DO, bacteria levels, and other impairments within the Kansas River watershed are attributed to both point sources and nonpoint sources. Within the watershed, likely sources of nonpoint source pollution and nutrients include: agricultural runoff, sedimentation from erosion in disturbed watersheds, sludge application from waste water treatment facilities, seepage from septic tanks, and many urban runoff sources. The primary point sources of nutrients and pollution are discharges from the multiple National Pollutant Discharge Elimination Program (NPDES) administered waste water treatment facilities that outlet to the Kansas River. Proposed wetlands and stream restoration improvements can help offset water quality issues like low DO levels and fecal coliform bacteria. Wetland restoration efforts will take up excess movement of nutrients, sediment and organic matter that historically were transferred to Stranger Creek and the Kansas River as runoff. Also restored stream bank and riparian vegetation will help maintain stable water temperatures.

Stranger Creek is within HUC 8 10270104 which is ranked number one in priority for restoration throughout the state (Kansas Department of Health and Environment, 2000). Stranger Creek is the largest tributary of the Lower Kansas River which is included on the 303(d) Impaired Waters List for Total Phosphorus, Copper, Lead, PCB, Total Suspended Solids, Biology, Biology/Sediment, and *E. coli*. Downstream of the Bank, Lower Stranger Creek is on the 303(d) Impaired Waters List for Impaired Biology caused by excessive nutrients and/or sediments resulting in decreased diversity of clean water organisms. According to Tom Stiles who works for KDHE, streambank restoration and riparian plantings would be of definite benefit in reducing the amount of sediment in the stream which is contributing to the impairment of Stranger Creek and the Kansas River (personal communication, January 8, 2009).

D. *Immediate and Long-Term Needs of the Watershed*

Surface water quality needs of the watershed are reducing the amount of urban runoff in the Kansas City, Topeka, and Lawrence areas and decreasing the amount of point source runoff of nutrients into the Kansas River. Over the long term, improving water quality will be achieved by achieving the above goals and by reducing the amount of nonpoint source nutrient inputs within the watershed. One of the long term goals of the Lower Kansas WRAPS (2008) is the protection of Stranger Creek, which is impaired due to flooding, agricultural runoff, poor livestock management, increased runoff and water velocities, an increase in impervious surfaces, and many other factors. According to the Kansas Water Plan (2009), immediate goals for the Kansas River watershed are:

- A reduction in the concentration of bacteria ,biochemical oxygen demand, solids, metals, nutrients, pesticides and sediment that adversely affect water quality
- Ensuring that water quality conditions are maintained at an equivalent or higher level than conditions in the year 2000
- Maintaining, enhancing, and restoring priority wetlands and riparian areas to improve water quality

Some of the long-term water quality needs for the watershed include: a reduction in excessive nutrient loading, a reduction in stream bank erosion, reduction in impervious surface, reduction of sediment loading, and protection and restoration of wetlands and riparian areas. Long term habitat needs are restoration of native prairie areas, wetlands, and riparian corridors. Native prairie is the predominant historical ecological land cover within the watershed, which the majority of the native terrestrial species are adapted to live in. Very little of this native prairie remains. Riparian corridors and wetlands are important not only for water quality, but they also are a critical habitat element for terrestrial and aquatic organisms. The Bank will help to offset some of these needs by increasing the size of riparian corridors which will reduce sediment loading, nutrient loading, stream bank erosion, and increased runoff. Stream bank stabilization activities will limit stream instability, sediment-loading, and bank erosion. Stream habitat restoration will remove invasive species, restore site hydrology, and improve habitat for fish and aquatic macroinvertebrates.

The restoration and enhancement activities shown on the Bank Development plan are technically feasible. Within the bank boundary, the riparian corridor along Stranger Creek has been mostly removed and is significantly impaired and the right descending bank is showing considerable erosion. Stream enhancement activities along Stranger Creek will include bank stabilization with two longitudinal peak stone toes consisting of native stone. Additionally, nonnative vegetation will be removed and the right descending bank will be replanted with native vegetation. With a minimal amount of herbicide application, seeding and labor the Bank site can be planted with native trees and herbaceous plants to create a diverse riparian habitat that will improve water quality and wildlife habitat. Stream geomorphology of the two restored stream channels was altered due to continual agricultural site grading, which destroyed the small onsite streams and converted them to agricultural drainages with linear wetlands. Consistent hydrology has been monitored

within the drainages during the growing season by the Sponsor, indicating the ability to maintain intermittent flow. Restoration of the stream channels is feasible due to the existence of an undisturbed reference intermittent channel on the western edge of the parcel. The drainage area of the agricultural drainages is similar to the undisturbed existing intermittent channel and the historical geomorphology of those streams was likely typical of a headwater floodplain stream. Stream geomorphology of the restored channels will mimic the sinuosity, slope, and channel cross-section of the existing undisturbed stream channel. The presence of wetland conditions that currently exist in the linear drainages in this field shows that wetlands can be restored through slight alterations in site grading.

E. *Historic and Current State of the Bank Site and Adjacent Lands*

Currently, the majority of the Bank site consists of agricultural row-crop land with some impaired riparian corridors. Tall fescue (*Festuca arundinacea*), Johnson grass (*Sorghum halepense*), and shattercane (*Sorghum bicolor*) are common undesirable and highly invasive species that are prevalent within the agricultural fields. The right descending bank along Stranger Creek is exhibiting significant erosion. The riparian corridor along Stranger Creek is in marginal condition, and it contains considerable amounts of undesirable vegetation along the banks such as *Sorghum halepense.* Dominant species within the riparian corridors of Stranger Creek and its tributaries include: silver maple (*Acer saccharinum*), walnut (*Juglans nigra*), Virginia wild rye (*Elymus virginicus*), cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanicum*), hackberry (*Celtis occidentalis*), wood nettle (*Laportea canadensis*), sycamore (*Platanus occidentalis*), corral berry (*Symphoricarpos orbiculatis*), and black snakeroot (*Sanicula canadensis*). According to the Jurisdictional Assessment report, there is 0.90 acre of impaired farmed wetlands within the bank site. These wetlands are within the row-crop fields and have been farmed through for many years; as a result the wetlands have only a few beneficial species growing within them.

Historically, the majority of the Bank site would have been in native tall-grass prairie. Wetland types within the bank would have been mostly prairie swales and wet bottomland prairie, dominated by such species as; prairie chord grass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), switch grass (*Panicum virgatum*), mixed sedges (*Carex*), and spikerushes (*Eleocharis*). The endangered plants, Mead's milkweed (*Asclepias* meadii) and Western Prairie Fringed Orchid (*Platanthera praeclara*) could have historically inhabited the bank site. The historical forested riparian corridor along Stranger Creek would have been much more extensive than it is today. According to the Kansas State Board of Agriculture First Biennial Report (1878), timber stands in Leavenworth County were "from one to one and a half miles." Varieties included: "white oak, walnut, burr oak, cottonwood, hickory, hackberry, etc".

The Bank site is ecologically suitable for wetland, stream, and riparian corridor restoration. It contains a long stretch of a perennial stream, two intermittent streams, and two former stream channels that require restoration to restore their hydrologic function. As a result, the parcel has great potential for increasing riparian corridor width along these

streams systems and the aquatic habitat value of the site. Additionally, the site is capable of supporting wetlands. Sufficient hydrology flows across the site, evidenced by the existing linear and depressional wetlands. These small wetlands have formed in areas with only a slight change in topography from the surrounding farmed ground. This shows that excavation and grading can easily enhance the existing drainage patterns to allow for the dispersal and storage of runoff across the site in sufficient quantities for wetland conditions to develop. The size of the proposed wetland areas is in proper relation to the size of the watershed that drains to the Bank. Restoring wetland areas will increase habitat opportunities for species that require shallow ephemeral wetlands including several species of frogs, toads and salamanders. The onsite wetlands will decrease the amount of nutrients travelling to downstream waters. The restored and enhanced riparian corridors and longitudinal peak stone toes will reduce the amount of sediment eroding from the stream banks into Stranger Creek, and the restored stream channels will restore site hydrology, restore proper sediment transport processes, and increase the aquatic habitat value of the site.

F. *Short-Term and Long-Term Offsite Threats*

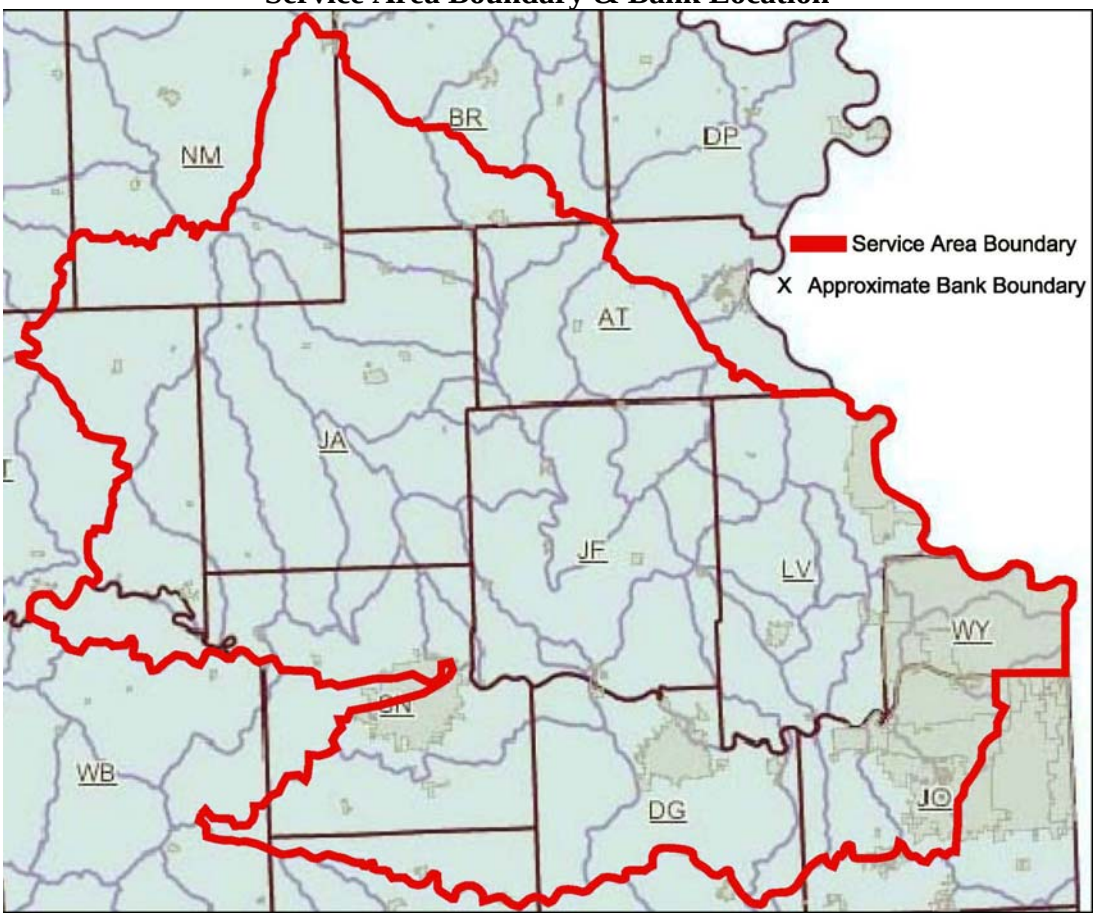
There are no short-term or long-term threats to the site. The site's remote location removes surrounding urbanization as a potential threat. Additionally, the surrounding properties are rural and agricultural in nature so there are no foreseeable hazards to the site caused by incompatible surrounding land uses.

III. SERVICE AREA

A. *Service Area Boundaries*

The service area of the Bank is the HUC 8, 10270104 Lower Kansas, that the bank is located within and the two adjacent HUC 8s, 10270103 Delaware and 10270102 Middle Kansas, that are within the same HUC 6, excepting all of the following HUC 11s: 10270102010, 10270102080, 10270102090, 10270102100, and 10270102120. The service area also includes all of HUC 8-10300101 that lies within Wyandotte County and all of HUC 8-10240011 that lies within Wyandotte and Leavenworth County. The boundaries of this service are shown below in Image 3 along with the location of the Bank. On a case-by-case basis the Corps, in consultation with the IRT, may approve mitigation credits at the Bank to be sold to offset impacts from Department of the Army permit impacts that occur outside this Bank's service area. If determined appropriate, the Corps will determine the number of credits needed to be purchased at the Bank in order to adequately replace the aquatic resources lost at the Department of the Army permit site.

Image 3. Stranger Creek Wetland & Stream Mitigation Bank
Service Area Boundary & Bank Location



IV. MITIGATION PLAN

A. *Objectives*

Under this Mitigation Banking Instrument, the Sponsor will create the Stranger Creek Wetland & Stream Mitigation Bank which will be approximately 64.78 acres in area. To achieve this goal, the Sponsor proposes to undertake the following activities:

- Restore 41.83 acres of Riparian Corridor
- Create 17.22 acres of Herbaceous Wetlands
- Rehabilitate 0.87 acre of existing Herbaceous Wetlands
- Create 3.60 acres of Upland Buffer
- Create 0.44 acre of Berm Planted as Upland Prairie
- Restore 3,005 lineal feet of intermittent stream channel
- Enhance and stabilize 2,408 lineal feet of perennial stream bank

All of these activities are in accordance with the provisions of this Mitigation Banking Instrument and the Bank Development Plan located in Appendix C. The Sponsor shall then maintain the Bank in such condition in perpetuity.

The aquatic benefits provided by the planned restoration activities will compensate for the loss of such habitats within the geographic service area of the Bank. The creation of the Bank will improve water quality by filtering surface and subsurface water that drains across the property and will store and treat water that floods the site when Stranger Creek or its tributaries overflow their banks and flood portions of the property. All these benefits (riparian corridor restoration, streambank stabilization, stream channel restoration, wetlands creation, native grass plantings) are practices that are sorely needed in the Stranger Creek watershed to prevent erosion, capture erosion from other sources, improve water quality and improve streambank stability (Central Plains Center for Bioassessment, 2002).

The Bank will be located adjacent to an 8.83 acre third party mitigation site for Corps permit number NWK 2006-1003. This area will be managed in concert with the proposed Bank site but will not be included in the Bank and the Sponsor will not receive any credits for any restoration activities undertaken within the third party mitigation site.

The restoration and enhancement activities described above are technically feasible. With a minimal amount of herbicide application, seeding and labor the Bank site can be planted with native trees and herbaceous plants to create a diverse riparian habitat that will improve water quality and wildlife habitat. The Bank site is ecologically suitable for wetland, stream, and riparian corridor restoration. It contains a long stretch of a perennial stream, two intermittent streams, and two *former* stream channels that require restoration to restore their hydrologic function. As a result, the parcel has great potential for increasing riparian corridor width along these streams systems and the aquatic habitat value of the site. Additionally, the site is capable of supporting wetlands. Sufficient hydrology flows across the site, evidenced by the existing linear and depressional wetlands. These small wetlands have formed in areas with only a slight change in topography from the surrounding farmed ground. This shows that excavation and grading can easily enhance the existing drainage patterns to allow for the dispersal and storage of runoff across the site in sufficient quantities for wetland conditions to develop. The size of the proposed wetland areas is in proper relation to the size of the watershed that drains to the Bank. Restoring wetland areas will increase habitat opportunities for species that require shallow ephemeral wetlands including several species of frogs, toads and salamanders. The onsite wetlands will decrease the amount of nutrients travelling to downstream waters. The restored and enhanced riparian corridors and longitudinal peak stone toes will reduce the amount of sediment eroding from the stream banks into Stranger Creek, and the restored stream channels will restore site hydrology and increase the aquatic habitat value of the site and the watershed.

B. *Site Selection*

The Bank property was selected by the Sponsor for several reasons, including but not limited to, the long length of stream channels onsite which offers great potential for the restoration of riparian corridors; favorable topography and hydric soils for wetland creation as well as the potential for restoring the natural course of onsite streams across the agricultural field.

The Bank has a landscape position within the watershed that will allow it to provide significant water quality benefits. The property's location immediately adjacent to a major primary tributary to the Lower Kansas River will create important benefits for the watershed as agricultural runoff will be filtered as it flows across the Bank property. Additionally, occasional flooding from Stranger Creek would be filtered in the proposed wetlands which would also store flood waters and provide substantial wildlife benefits.

The bank site is ecologically suitable for wetland and riparian restoration. It is capable of forming wetlands because there is sufficient hydrology that flows across the site, because of the dominance of hydric soils on the property, and because excavation and grading can easily enhance the existing drainage patterns to allow for the dispersal and storage of runoff across the site. The size of the proposed wetland areas is in proper relation to the size of the watershed that drains to the Bank. The Sponsor owns the water rights to the property. Additionally, the Bank's position adjacent to a large perennial stream makes it ideal for riparian restoration. Restoring a large wetland area will increase habitat connectivity for migratory waterfowl between existing wetland and open water habitats. Additionally, by widening the existing Stranger Creek riparian corridor, the Bank would enhance the wildlife corridor already used by animals that travel along the banks of Stranger Creek.

The Bank has a landscape position within the watershed that will allow it to provide significant water quality benefits. The property's location along Stranger Creek will create important benefits for the watershed as agricultural runoff will be filtered as it flows across the Bank property. Additionally, occasional flood waters from Stranger Creek will be filtered in the proposed wetlands which would also store flood waters and provide substantial wildlife benefits.

Native plantings will be established using diverse blends of native seed mixes and containerized plants. Additionally, the existing riparian corridor, on-site wetlands, and unimproved upland areas in the immediate vicinity of the Bank would be a seed source for natural recruitment. The ecosystem benefits that the Bank provides are consistent with the targeted water quality impairments and restoration efforts identified by the Lower Kansas WRAPS (2009).

Threatened and endangered species listed for Leavenworth County include the pallid sturgeon (*Scaphirhynchus albus*), Mead's milkweed (*Asclepias meadii*), and the western prairie fringed orchid (*Platanthera praeclara*) (USFWS, 2010). The pallid sturgeon is known to occur in the Kansas River during periods of flooding, and the Missouri River is

designated as critical habitat downstream of the site. Reduction of pollutants into Stranger Creek will enhance habitat downstream in the Kansas River and Missouri River for pallid sturgeon. The western prairie fringed orchid is found in a few counties in eastern Kansas, including Leavenworth County. This orchid is found in calcareous prairies and sedge meadows, preferring to grow along swales and in marshy areas (Sieg and King 1995, USFWS 1996). Sieg and King also indicate that the western prairie fringed orchid requires periodic burning for success, which will be employed at the Bank to control weeds and brush. The planned habitat appears to satisfy the requirements for this endangered plant and it is possible, but unlikely, that it may eventually become established at the Bank. The United States Fish and Wildlife Service Recovery Plan for the western prairie fringed orchid is to protect it in the place it grows. Mead's milkweed is predominantly found on dry to moist tallgrass prairies that are hayed each year. Upland buffer locations on the bank that are free of woody vegetation could support a Mead's milkweed population, though it is unlikely that they will generate without introduction of seedlings from an existing population. Similar to the western prairie fringed orchid, fire is essential to control encroaching woody vegetation in Mead's milkweed management (Betz 1989). Any western prairie fringed orchids or Mead's milkweed found growing onsite will have appropriate protective measures undertaken.

A Phase I Cultural Resources survey has been conducted on the site which determined that the proposed activities will have no effect on any significant cultural resources. The correspondence from the Kansas Historical Society's State Historic Preservation Officer which shows their agreement with this opinion is included in Appendix G.

There are no publicized in-lieu fee project sites in the Bank's watershed nor are there any mitigation banks within the watershed. Federally owned land includes Clinton Reservoir and Perry Reservoir. Much of the land around the two lakes is maintained by the Kansas Department of Wildlife and Parks as Clinton State Park and Perry State Park.

C. *Site Protection Instrument*

The Sponsor owns the land that contains the Bank. To ensure that the Site remains in its desired state in perpetuity, the entire area will be protected by means of conservation easement which will preserve the Bank lands as undeveloped wildlife habitat. A draft conservation easement is included in Appendix E. The terms of the easement will be enforceable by the Corps and the Midwest Mitigation Oversight Association, a non-profit group that will monitor the Sponsor's compliance with the conservation easement. After the Bank is approved, copies of the finalized and recorded conservation easement shall be provided to the Corps.

There are no short-term or long-term plans to transfer title of the property to another party. It is the intention of the Sponsor to maintain the property in perpetuity as highly functioning habitat in accordance with the terms of the long-term management plan and conservation easement. However, in the instance that the title to the property is transferred to another party the conservation easement shall stay with the property.

D. *Baseline Information*

Much of the Bank area can be accurately depicted by the description provided in this section. The subject site of approximately 64.78 acres is located at approximately 39.043017°N 95.04027°W in the NE 1/4 of the NE 1/4 of Section 2 of Township 12S Range 21E and the SE 1/4 of the SE 1/4 of Section 35 of Township 11S Range 21E in rural Leavenworth County Kansas (Figure 1 Township Range Section). The property is surrounded by agricultural properties on all sides. The majority of the property is presently in agricultural production, with tree and shrub cover focused along the Stranger Creek and its tributaries. The site resides in the Glaciated Ecoregion of Kansas.

The site is mapped by the United States Fish and Wildlife Service National Wetland Inventory (NWI), and no wetlands or ponds are indicated within the limits of the property (Figure 2). The topographical map published by the United States Geologic Survey (USGS) indicates the presence of one blue-line tributary, Stranger Creek (Figure 3).

According to the National Cooperative Soil Survey's Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/) administered by the Natural Resources Conservation Service (NRCS), soils on the site are mapped as Kennebec silt loam, occasionally flooded (7050); Wabash silty clay loam, occasionally flooded (7091); Zook silty clay loam, occasionally flooded (7099); Gosport-Sogn complex, 7 to 35 percent slopes (7250); and Shelby-Pawnee complex, 3 to 7 percent slopes (7591). The Kennebec silt loam, Wabash silty clay loam, Shelby-Pawnee complex, and Zook silty clay loam are listed as hydric for Leavenworth County, Kansas. The hydric soil map of the site is shown as Figure 5.

In June 2008, a scientist with Terra Technologies visited the site for the collection and evaluation of scientific data necessary to determine the extent, magnitude, and spatial limits of jurisdictional environs. Figure 4 shows the results of the Jurisdictional Assessment of the Site. It is the opinion of Terra Technologies that the Site contains four existing farmed wetlands encompassing 0.86 acre as well as 2,532 linear feet of one perennial stream (Stranger Creek), and two intermittent streams totaling 2,017 linear feet. The two intermittent streams flow north to south along the east and west boundaries of the parcel and flow directly into Stranger Creek. The eastern stream, indicated on the jurisdictional assessment as Intermittent # 1, flows into Stranger Creek within the parcel, and the western stream, Intermittent # 2, exists the parcel before flowing into Stranger Creek just west of the parcel boundary. Two former streams have been impaired and straightened from years of agricultural grading. The drainages currently exist as two linear wetlands, Wetlands # 2 and # 4, as indicated on Figure 4. Wetlands 2 and 4 drain to Intermittent # 1 and thus maintain continuous hydrologic connectivity with Stranger Creek. Wetland # 1 is located just east of Wetland # 2 in a small depression within the agricultural field. It maintains hydrologic connectivity to Stranger Creek through storm runoff to Intermittent # 1. Wetland # 3 maintains hydrologic connectivity to Stranger Creek through drainage to Intermittent # 2. The Corps has not issued an Approved or Preliminary Jurisdictional Determination for the Site.

Historically, the majority of the Bank site would have been in native tall-grass prairie. Wetland types within the bank would have been mostly prairie swales and wet bottomland prairie, dominated by such species as; prairie chord grass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), switch grass (*Panicum virgatum*), mixed sedges (*Carex* spp.), and spikerushes (*Eleocharis* spp.). The endangered plants, Mead's milkweed (*Asclepias meadii*) and Western Prairie Fringed Orchid (*Platanthera praeclara*) could have historically inhabited the bank site. The historical forested riparian corridor along Stranger Creek would have been much more extensive than it is today. According to the Kansas State Board of Agriculture First Biennial Report (1878), timber stands in Leavenworth County were "from one to one and a half miles." Varieties included: white oak, walnut, burr oak, cottonwood, hickory, and hackberry among others. Historically, wildlife at the site would have been typical species adapted for a prairie community. The dominant prairie herbivore, the bison, would have frequented the site for grazing and watering. Other mammals would have been deer, fox, coyotes, mountain lions, and many others. Hundreds of species of birds, amphibians, and reptiles like dicksissel, prairie chicken, crawfish frog, massasauga rattlesnake, and others would have been historical residents. Fish species like shiners, stonecats, madtoms, darters, catfish, and many others would have been historically abundant within Stranger Creek.

Stranger Creek is a major tributary of the Kansas River basin and is within the 10270104 HUC 8 watershed. The total size of Stranger Creek's watershed area is approximately 330 square miles. Stranger Creek flows into the Kansas River approximately 3 miles southeast of the property, about 0.75 miles east of Linwood, Kansas. Land use in the Stranger Creek watershed is approximately 39% cropland, 49% grassland, and 11% woodland. Urban land use makes up less than 1% of the watershed area (Central Plains Center for Bioassessment, 2002).

E. *Determination of Credits*

1. Wetland Credits

Upon approval of this document, the Corps, in consultation with the IRT, grants the Bank the proposed quantity of wetland credits shown in Table 1. The release of these credits shall follow the schedule described in Section V.B. Areas proposed to receive wetland credits for creation (at a 1 credit: 1 acre ratio) have been observed to not contain all three criteria necessary for wetland determination (wetland hydrology, hydrophytic plant community, and hydric soils) before restoration activities were initiated. The rehabilitation of existing wetlands that possess all three wetland criteria but that provide limited ecological function as a result of degradation from agricultural impacts will receive credits at a 1 credit: 1 acre ratio. Existing wetlands that have not been dramatically affected by agriculture will be enhanced either with additional plantings or with a slight hydrologic modification.

The enhancement of existing upland areas will consist of using management techniques such as selective thinning and fire to remove undesirable early successional species and planting mast-producing late successional species as well as underrepresented herbaceous

and woody species. Buffer restoration/creation will consist of approximately 5% of the total bank area and will be located in the northwest and northeast corners of the parcel. The buffers will separate the created wetlands from adjacent agricultural properties and roadside drainage. The western buffer will average approximately 400 feet in width, and the eastern buffer will average approximately 90 feet in width. These activities will improve the aquatic resources within the Bank by filtering some of the agricultural runoff and by preventing the establishment of undesirable vegetation through the creation of a mature perennial plant community.

Table 1. Proposed Wetland Credit Amounts

Restoration Activity	Area	Credit Ratio (Credits:Acres)	Resulting Credits
Herbaceous Wetland Creation	17.22 Acres	1:1	17.22
Herbaceous Wetland Rehabilitation	0.87 Acre	1:1	0.87
Upland Buffer Creation	3.60 Acres	1:4	0.90
Berms (Planted as Prairie)	0.44 Acre	1:4	0.11
		TOTAL WETLAND CREDITS:	**19.10**

2. Stream Credits

Upon signature of this document, the Corps, in consultation with the IRT, grants the Bank the proposed quantity of stream credits shown in Table 3. The release of these credits shall follow the schedule described in Section V.B. The number of proposed stream credits was determined by using the Stream Mitigation Bank Credit Assessment Worksheet contained within the State of Kansas Stream Mitigation Guidance (SMG) document dated June 25, 2010. Should the accepted method of stream credit accounting be changed in a manner that would affect the number of stream credits provided by the Bank, the Sponsor shall provide the Corps with an updated Table 3 for the Corps' review and approval.

Stream types on the parcel consist of perennial and intermittent. Assessed stream type was determined by a number of physical, geomorphic, and biological factors including but not limited to: flow regime, drainage area, observable flow, channel geometry, stream sinuosity, riparian corridor establishment, channel slope, and substrate. The Sponsor is proposing to restore 41.83 acres of riparian corridor surrounding the onsite streams. Riparian corridor creation will be achieved by planting trees and shrubs and by seeding appropriate herbaceous species in order to expand the existing corridors of perennial streams to 300 feet per side and intermittent streams to 200 feet per side, as shown in the Bank Development Plan in Appendix C and as described in Tables 2 & 3. The enhancement of existing riparian corridors will involve selective thinning and prescribed burning to remove undesirable early successional species as well as planting mast-producing late successional species and underrepresented herbaceous and woody species.

Substantial stream restoration will consist of restoring two impaired drainages to functional stream channels, based upon their anticipated historic channel alignment. The streams will be restored to appropriate width, sinuosity, and channel geometries that are

similar to the on-site reference channel, Intermittent # 2. The Sponsor has observed sufficient hydrology consistent with intermittent flow during the growing season. Stream channel characteristics will be designed similar to the geomorphic conditions of Intermittent # 2. Intermittent # 2 has a drainage area of approximately 30 acres. Restored Intermittent # 3 and Intermittent # 4 have drainage areas of approximately 90 and 60 acres respectively. Intermittent # 2 has low sinuosity and low width to depth ratio. Stream sinuosity of Intermittent # 2 is approximately 1.04 and the width/depth ratio averages approximately 3.5. Restoration of Intermittent # 3 and 4 will produce substantial stream channel restoration by restoring the stream channels to maintain similar gentle slopes and low width to depth ratios. Stream sinuosity will be increased from the previous straightening of the drainages and the stream restoration will enhance sediment transport capacity while maintaining appropriate erosion/sedimentation rates and channel stability. Plan view details and typical sections for the restoration of the two streams are included in Appendix C.

Substantial stream enhancement of Stranger Creek will consist of bank stabilization with native stone, rolled erosion control product, and native vegetation to reduce energy at the right descending bank. Bank stabilization activities will provide some pollutant load reduction, which will have an ecological benefit for the downstream aquatic community. An approximately 150 foot section of the right descending bank will be modified by grading to a stable slope and stabilized with rolled erosion control product and native vegetation. Rolled erosion control product used in bank stabilization will consist of biodegradable material consisting of straw/coir or Sudan grass. Additional specifications for rolled erosion control products are located in Appendix C. Downstream of the longitudinal peak stone toes, the right bank will be stabilized with willow stakes on the slope and at the toe. Strange Creek enhancement activities will prevent accelerated erosion along the right descending bank within the project limits and reduce sedimentation downstream, which is one of the major impairments of Stranger Creek's watershed. Plan details for Stranger Creek bank stabilization and enhancement are contained within Appendix C.

The Bank Development Plan shows areas of wetland creation and enhancement within the Riparian Corridor Restoration boundaries. These wetland areas within the riparian corridor are proposed for stream credits only and their acreage totals are included within the Riparian Corridor Restoration total and not within any wetland acreage total. The Net Benefit areas are described below in Table 2 and in Image 4.

Table 2. Net Benefit Area Descriptions

Net Benefit Area	Location / Description	Average Width (Feet)
1	Stream Enhancement of Stranger Creek with longitudinal peak stone toe protection for 300 linear feet for a total benefit of 600 feet within the natural radius of curvature of the channel segment.	N/A
2	Stream enhancement of Stranger Creek with native vegetation bank stabilization and toe stabilization with willow staking for a length of 1,808 lineal feet	N/A
3	Substantial stream channel restoration of restored Intermittent # 3. Restoration activities include restoring the appropriate stream sinuosity and bankfull discharge width for a length of 1,593 lineal feet.	N/A
4	Substantial stream channel restoration of restored Intermittent # 4. Restoration activities include restoring the appropriate stream sinuosity and bankfull discharge width for a length of 1,412 lineal feet.	N/A
5	Riparian Corridor Restoration along the right descending bank of Perennial 1 (Stranger Creek) from the downstream extent of the Third Party Mitigation Area to the downstream extent of the property, for a distance of 1,360 feet.	300 (right descending bank)
6	Riparian Corridor Restoration along the left descending bank of Intermittent #2 to for a distance of 1,495 linear feet from its most upstream point to the boundary with Net Benefit Area 5. (Note that the most downstream portion of the restoration area was accounted for in the restoration along Perennial 1.)	200 (left descending bank)

Net Benefit Area	Location / Description	Average Width (Feet)
7	Riparian Corridor Enhancement for an average width of 75 feet along the right descending bank of Intermittent #1 for a distance of 164 linear feet.	75 (right descending bank)
8	Riparian Corridor Restoration along both banks of Intermittent # 1 for a distance of 35 lineal feet.	75 (right descending bank) 80 (left descending bank)
9	Riparian Corridor Restoration along both banks of restored Intermittent #3 for an average width of 200 feet per side and a length of 1,593 linear feet.	200 (left and right descending banks)
10	Riparian Corridor Restoration along both banks of restored Intermittent #4 for an average width of 200 feet per side and a length of 1,412 linear feet.	200 (left and right descending banks)

Image 4. Net Benefit Areas

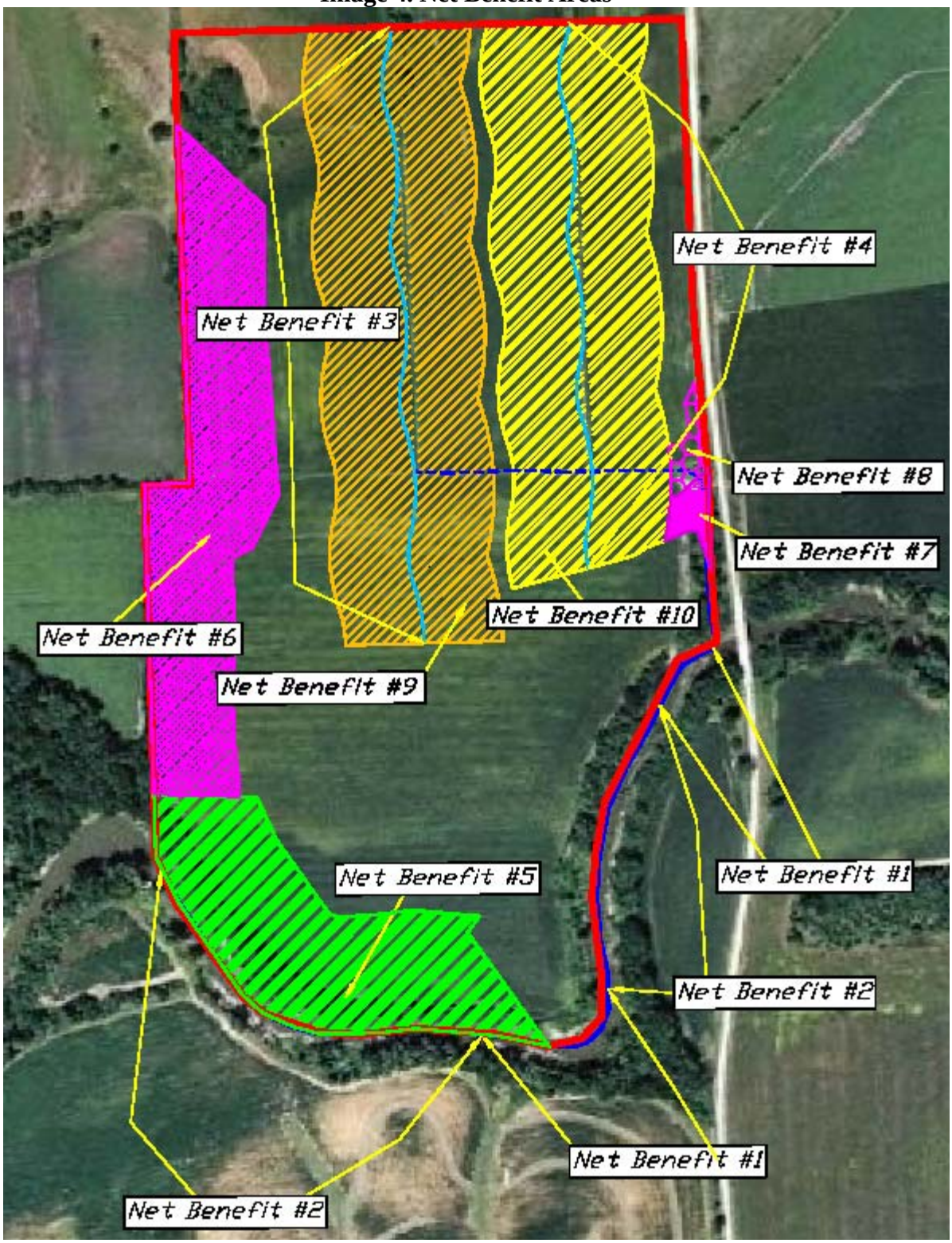


Table 3. Stream Mitigation Credit Assessment Worksheet

Stream Type	Ephemeral/Intermittent w/o Pools 0.2	Intermittent w/ Pools 0.4	Perennial Stream Avg. Width at OHWM			
			<15' 0.4	15'-30' 0.6	30'-50' 0.8	>50' 1.0
Priority Area	Tertiary 0.05	Secondary 0.2	Primary 0.4			
Existing Condition	Not Applicable 0	Functionally Impaired 0.4	Moderately Functional 0.05			
Net Benefit	Minimal 1.0	Moderate 2.0	Substantial 3.5			
Control / Site Protection	Corps approved site protection without third party grantee 0.1	Corps approved site protection recorded with third party grantee, or transfer of title to a conservancy 0.4				
Mitigation Construction Timing	Schedule 1 0.3	Schedule 2 0.1	Schedule 3 0			

Factors	Perennial 1 Net Benefit 1	Perennial 1 Net Benefit 2	Reach 3 Net Benefit 3	Reach 4 Net Benefit 4	Reach 5	Reach 6
Stream Type	1.0	1.0	0.2	0.2		
Priority Area	0.2	0.2	0.2	0.2		
Existing Condition	0.4	0.4	0.4	0.4		
Net Benefit	3.5	2.0	3.5	3.5		
Control/Site Protection	0.4	0.4	0.4	0.4		
Mitigation Construction Timing	0.3	0.3	0.3	0.3		
Sum Factors (M)	5.8	4.7	5.0	5.0		
Stream length in Reach	600	1808	1,593	1,412		
Credits (C) = M x LF	3,480	8,497.6	7,965	7,060		

Stream Type	Ephemeral/ Intermittent w/o Pools 0.05		Intermittent w/ Permanent Pools 0.2	Perennial 0.4
Priority Status	Tertiary 0.05		Secondary 0.2	Primary 0.4
Net Benefit (for each side of stream)	Riparian Creation, Enhancement, Restoration, and Preservation Factors (select values from Table 1) (MBW = Minimum Buffer Width = 50' + 2' / 1% slope)			
Supplemental Buffer Credit	Condition: MBW restored or protected on both streambanks To calculate:(Net Benefit Stream Side A + Net Benefit Stream Side B) / 2			
Control / Site Protection	Corps approved site protection without third party grantee 0.05		Corps approved site protection recorded with third party grantee or transfer of title to a conservancy 0.2	
Mitigation Construction Timing (each side of stream)	Schedule 1 0.15		Schedule 2 0.05	Schedule 3 0
Temporal Lag (Years)	Over 20 -0.3	10 to 20 -0.2	5 to 10 -0.1	0 to 5

Factors		Perennial 1 Net Benefit 5	Reach 2 Net Benefit 6	Reach 3 Net Benefit 7	Reach 4 Net Benefit 8	Reach 5 Net Benefit 9	Reach 6 Net Benefit 10
Stream Type		0.4	0.05	0.05	0.05	0.05	0.05
Priority Status		0.2	0.2	0.2	0.2	0.2	0.2
Net Benefit	Stream Side A	0.56	0.48	0.24	0.24	0.48	0.48
	Stream Side B	-	-	-	0.24	0.48	0.48
Supplemental Buffer Credit Condition Met (Buffer on both sides)		-	-	-	0.24	0.48	0.48
Control /Site Protection		0.2	0.2	0.2	0.2	0.2	0.2
Mitigation Construction Timing (none for primarily riparian preservation) < 10% requires planting)	Stream Side A	0.15	0.15	0.15	0.15	0.15	0.15
	Stream Side B	-	-	-	0.15	0.15	0.15
Temporal Lag page 19		0	0	0	0	0	0
Sum Factors (M)=		1.51	1.08	0.85	1.47	2.19	2.19
Linear Feet of Stream Buffer (LF) (don't count each bank separately)		1,360	1,495	164	35	1,593	1,412
Credits (C) =M X LF		2,053.6	1,614.6	139.4	51.45	3,488.67	3,092.28

Total Credits Generated = <u>37,442.6</u>

F. *Mitigation Work Plan*

All work for this project will take place within the site boundaries as shown in Appendix C. The Bank is surrounded by agricultural properties.

Site construction commenced in the summer of 2009. Excavation was the first stage of the project. Areas of the site for wetland creation were excavated by 0.5 to 2.0 feet depending on the location. Spoil material was placed at low points along the edge of the riparian corridor to increase the elevation that the onsite water would have to reach in order to drain into Stranger Creek, thus increasing the amount of water that can be contained onsite. Excavation for the restoration of the two intermittent stream channels was conducted at the same time as the excavation for wetlands restoration. Plan view details and typical sections for the restoration of the two streams are included in Appendix C. Erosion control measures were undertaken to prevent sediment from entering Stranger Creek or any of its tributaries. Although Stranger Creek may occasionally flood the site, onsite streams and runoff will be the primary source of any wetland hydrology. The field drainage that connects to Intermittent # 1 will be filled, and hydrology from the restored intermittent stream channels will be collected in the large herbaceous wetland in the southern portion of the parcel. This will ensure that that the wetland receives sufficient hydrology and prevent increased erosion and/or head-cutting in Intermittent # 1 due to increased flow volumes. The created wetlands will likely function similarly to the existing wetlands and will either be saturated or have a few inches of water for long enough periods of the growing season to become anaerobic.

After excavation was completed, the site was planted with a diverse mixture of native wetland and prairie plants. The entire site was seeded with native seed blends appropriate for either upland or wetland habitats. Tree and shrub plantings consisting of supercell plugs and 3-gallon individuals grown using the air prune method of production were used within the riparian corridor restoration areas. Riparian restoration areas were planted at a density of 109 trees per acre. Weed mats and flagging will be placed for each individual. Seed mixes and tree planting lists are included in Appendix C. Wetland plantings within the herbaceous wetlands and Stranger Creek bank stabilization construction activities, including native vegetation stabilization were completed in the fall of 2010. Native vegetation stabilization with willow staking will consist of two rows of willow stakes on 10 foot spacing for a total of 480 plantings. Herbaceous species will be acquired in either deep cell plugs or 1- or 2-quart containers. All plant stock will be acquired from a nursery specializing in native plants and will be installed by a qualified restoration contractor. Construction details for bank stabilization and longitudinal peak stone toe stabilization are included in Appendix C.

G. *Operation and Maintenance Plan*

The Sponsor agrees to perform all necessary work to ensure that the Bank achieves the ecological performance standards described in Section IV.H, including, but not limited to, the replanting of vegetation, the removal of invasive species, mowing of areas as appropriate, replacement or repair of stream restoration improvements, accumulating and

clumping woody debris to create small mammal habitat, and the use of prescribed burning. Additional warranted maintenance may include the pickup and piling of wind-fall limb debris and the cutting and removal of fallen trees.

The management of invasive species will be undertaken to maintain biodiversity and wetland function. There shall be two categories of invasive plants: Highly Aggressive Invasive Species and Undesirable Species as shown in Table 4.

Table 4. Highly Aggressive Invasive Species

Carduus nutans	Musk Thistle
Cirsium arvense	Canada Thistle
Convolvulus arvensis	Field Bindweed
Dipsacus fullonum	Common Teasel
Dipsacus lanciniatus	Cut-leaf Teasel
Elaeagnus umbellata	Autumn Olive
Euonymus fortunei	Wintercreeper
Euphorbia esula	Leafy Spurge
Lespedeza cuneata	Sericea lespedeza
Lonicera japonica	Japanese Honeysuckle
Lonicera morrowii & Lonicera maackii	Bush Honeysuckles
Lythrum salicaria	Purple Loosestrife
Onopordum acanthium	Scotch Thistle
Phalaris arundinacea	Reed Canarygrass
Pueraria lobata	Kudzu
Rhamnus cathartica	Common Buckthorn
Rosa multiflora	Multiflora Rose
Securigera varia	Crown Vetch
Sesbania exaltata	Sesbania
Sorghum halepense	Johnson Grass
Typha spp.	Cattails

Methods of removal include:

(1) Extirpation
(2) Hand cut
(3) Chemical spray
(4) Seedhead separation

The methods of removal described above will be used to control undesirable vegetation on the Bank. Extirpation refers to the removal of the plant and roots from the ground. After pulling, the plant can be left on the ground. For other species, hand cutting or power trimming to a height of 12-inches will suffice to prevent the plant material from making a seed head. Chemical spraying should be completed with a product containing glyphosate, including one approved for use in or near aquatic environments if applicable (Rodeo or equivalent). Control of tree saplings should utilize Tordon RTU or equivalent. All label directions and safety precautions will be followed while using approved herbicides. Herbicides will be applied with a back-pack or bottle sprayer for best results and to minimize overspray onto native plant materials.

The maintenance needs of the site will be determined during a minimum of three monitoring visits per year. Maintenance of the Bank property will continue for a minimum of 15 years fifteen years after approval of the final banking instrument or until all credits have been sold, whichever is later, at which point the ecosystems on the property will be self-sustaining and self-regulating. Deviation from the approved Bank Development Plan is subject to review and written approval by the Corps, in consultation with the IRT.

The Bank has been designed to ensure natural hydrology and landscape features will ensure long-term sustainability. Any long-term management such as prescribed burns or invasive species control will be conducted as needed. The water rights are owned by the Sponsor.

H. *Ecological Performance Standards*

The following criteria, in addition to the general performance standards used by the Corps, will be used to assess project success.

1. Wetland Hydrology

All areas proposed for wetland creation, rehabilitation, enhancement or preservation must show evidence of wetland hydrology. The attainment of wetland hydrology will be determined by the presence of sufficient indicators to satisfy the wetland hydrology criteria included in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and its appropriate regional supplement across the vast majority of permanent sampling points for a continuous period of not less than 5% of the growing season (assumed to be 11 days) for a number of years to be determined appropriate by the Corps, in consultation with the IRT.

2. Vegetation:

All areas proposed for wetland creation, rehabilitation, enhancement or preservation must meet the required hydrophytic vegetation criteria in the 1987 *Corps of Engineers Wetlands Delineation Manual* and its appropriate regional supplement. Specifically, at least 51% of the relative vegetative cover in wetland areas will be of species that are Facultative, Facultative Wetland or Obligate Wetland. All wetland and upland areas on the Bank will have at least a 75% absolute vegetative cover, except in areas of near-constant inundation that cannot support such a high absolute vegetative cover percentage. Trees and shrubs planted on the Bank as part of the restoration shall have an overall survival rate of at least 75%, based upon 109 trees/acre within riparian restoration areas and 10 foot spacing for willow staking, and a species survival rate of at least 75%. Natural recruitment of equivalent desirable species of trees and shrubs within the same group (hardwoods, softwoods, fruit producing, mast producing, etc.) may count towards meeting the 75% survival rate. If areas do not meet any requirements related to survival rate or vegetative cover, appropriate planting and/or seeding activities will be initiated.

3. Hydric Soils

All areas proposed for wetland creation, rehabilitation, enhancement or preservation must show evidence of hydric soils by meeting the criteria described in the 1987 *Corps of Engineers Wetlands Delineation Manual* and its appropriate regional supplement. Evidence of wetland hydrology will be sufficient to show that the hydric soils criterion is being met as it may take many years before certain indicators of hydric soils develop.

4. Establishment of Wetland Conditions

Before the final credits can be released, as detailed in Section XI, the presence of hydric soils, wetland hydrology, and hydrophytic plants will be demonstrable for the large majority of sampling data taken during the course of the monitoring of the project. It will be the decision of the Corps, in consultation with the IRT, to determine that areas proposed for wetland establishment shall have met all three criteria described in the 1987 *Corps of Engineers Wetlands Delineation Manual* and its appropriate regional supplement with sufficient regularity to prove the establishment of wetland conditions across all areas intended for wetland development. Upland areas will be determined to be successful based on percent cover of the intended vegetation and the relative absence of invasive species, as described below.

5. Invasive Species:

Management of invasive species will be undertaken as is suitable to maintain biodiversity and wetland function. Until five years after the Corps has released all credits for sale, invasive species shall be controlled as follows. Species on the list of Highly Aggressive Invasive Species (Table 4) will be eradicated upon observation and shall not, in the aggregate, cover more than 5% of the absolute cover of the Bank.

6. In-Stream Enhancement/Restoration:

Before the final credits can be released, as detailed in Section XI, stream restoration and enhancement activities must maintain satisfactory channel stability. Restored stream channels shall demonstrate minimal levels of channel instability, bank erosion, and downcutting as well as maintain proper channel cross-section at permanent monitoring points for a number of years to be determined appropriate by the Corps, in consultation with the IRT. Bank stabilization efforts will show satisfactory performance by demonstrating minimal levels of bank erosion and vegetative success at permanent monitoring points for native vegetative stabilization efforts. Vegetative stabilization efforts within the zone of bank modification will maintain a minimum of 75% absolute vegetative cover. Willow stakes planted for stream bank stabilization and enhancement shall have a 75% survival rate based upon 10 foot spacing.

I. *Monitoring Requirements*

The Sponsor agrees to perform all necessary work to monitor the Bank to demonstrate compliance with the performance standards established in this Mitigation Banking Instrument.

Permanent sampling plots will be placed along transects that run north to south along Stranger Creek and monitoring will be conducted per Section E of the 1987 *Corps of Engineers Wetlands Delineation Manual* regarding Comprehensive Determinations. Permanent photo points will also be established across the site.

Two of the three wetland parameters (hydrology and vegetation) will be monitored at the Bank for a period of five years. Hydrologic monitoring will occur at the permanent sampling plots from April through June at a frequency sufficient to show the presence of wetland hydrology for at least 11 consecutive days at the vast majority of sampling plots. This sampling will occur for at least the first three years after the site grading and excavation is complete. After the first three years, the frequency of hydrologic monitoring may be reduced to monitoring twice a year at the discretion of the Corps, in consultation with the IRT. The site will be monitored for invasive species and animal damage during these visits. Since the methods used to determine the presence or absence of wetland hydrology in the 1987 *Corps of Engineers Wetlands Delineation Manual* and its regional supplements are the definitive standard, they will be used to monitor the Bank's hydrology to determine if wetland hydrology has been established as a result of restoration activities. The methods described in the 1987 *Corps of Engineers Wetlands Delineation Manual* and its regional supplements provide a snapshot view of wetland conditions at one moment in time, but by assessing data taken repeatedly, this monitoring method will provide information on wetland conditions along a timeline, specifically the frequency and duration of wetland hydrology.

Vegetation and bank stabilization activities will be surveyed yearly, or more often at the discretion of the Sponsor, in order to determine if vegetative and stream restoration performance standards are being met. The methods used shall match those described in Section E of the 1987 *Corps of Engineers Wetlands Delineation Manual* regarding Comprehensive Determinations. Woody vegetation shall be sampled within a thirty foot radius from the center of the sampling plot. Vegetation will be identified and wetland indicator status will be determined. Permanent photo points will also be established at the location of Stranger Creek bank modifications, longitudinal peak stone toe protection construction, and vegetative stabilization and along the two restored stream channels to document the condition of bank stabilization activities and channel stability and identify accelerated erosion or channel instability problems requiring remedial action. Hydrologic monitoring of the restored intermittent stream channels will include channel cross sections for 3 bankfull flow events.

J. *Long-Term Management*

There are no long-term plans to transfer title of the property to another party. It is the intention of the Sponsor to maintain the property in perpetuity as highly functioning habitat in accordance with the terms of the long-term management plan and conservation easement. The site's conservation easement shall stay with the property in the instance that the title to the property is transferred to another party.

Maintenance of the Bank property will be carried out by the Sponsor for a minimum of fifteen years after approval of the final banking instrument or until all credits have been sold, whichever is later, at which point the ecosystems on the property will be self-sustaining and self-regulating. Long term maintenance needs will focus on vegetation management, maintenance of in-stream structures, and removal of trash. Removal of invasive species will be one of the most important long-term management tasks. Invasive species will be removed upon discovery during two maintenance visits each year. Methods of removal will include cutting, burning, and chemical spraying. Reseeding of bare spots will be the primary native vegetation maintenance task to be implemented on a yearly basis. It is estimated that no greater than 5% of the grass buffer will require supplemental seeding in a one year period. Prescribing burnings, supplemental tree & shrub plantings, supplemental wetland (herbaceous) plantings, and mowing will be the primary tasks implemented on an every other year rotation. Timber Stand Improvement (TSI) will be one of the most important riparian buffer management activities. TSI activities will include selective cutting of early successional deciduous species, removal of softwoods, girdling, removal of invasive woody species, and removal of grape vines. Timber Stand Improvements will be conducted within the riparian buffer on a five year rotational basis. Though the in-stream structures are designed for long-term success, unexpected events like natural disaster could damage or cause complete failure of the in-stream structures. Therefore, the structures will likely require some long-term maintenance. Maintenance is scheduled once every five years, which greatly exceeds the anticipated maintenance needs for the structures. Additional maintenance tasks like trash removal and vandalism repairs will be conducted as identified at bi-yearly maintenance visits. A full schedule of maintenance tasks and cost estimates based upon 2010 prices is shown below in Table 5.

Table 5. Long-Term Maintenance Schedule

Maintenance Item	Requirement	Acres	% of Area	$ Cost/Unit	Schedule	Yearly Cost
Prescribed Burning	1 visit	64.5	50%	$10	Bi-Yearly	$161.25
Tree & Shrub Supplemental Plantings	109 per acre	35.85	1.5%	$25	Bi-Yearly	$732.68
Herbaceous Supplemental Plantings	1,742 per acre	23.2	1%	$3	Bi-Yearly	$606.22
Buffer Reseeding	20 # PLS / Acre	4.0	5%	$40	Yearly	$160
Timber Stand Improvement	1 visit	35.85	100%	$100	Every 5 Years	$716.00
Buffer Mowing	1 visit	4.0	100%	$50	Bi-Yearly	$100.00
Invasive Species Removal	2 visits	64.5	1%	$150	Semi-Yearly	$193.5
In-Stream Structure Maintenance	1 visit	N/A	N/A	$5,000	Every 5 Years	$1000.00
Trash Removal	1 visit	N/A	N/A	$300	Bi-Yearly	$150.00
Miscellaneous	1 visit	N/A	N/A	$250	Yearly	$250.00
					Yearly Total	**$4069.65**

The financial assurances that will be used for long-term management of the Bank after it becomes self-sustaining will be in the form of a letter of credit reissued and adjusted yearly for inflationary costs per the Consumer Price Index. An annual report of the long-term management funding will be included along with the annual ledger report submitted to the Corps summarizing all of the Bank transactions of the previous year as described in Section VII.

K. *Adaptive Management Plan*

If the site cannot be constructed in accordance with the Bank Development Plan included in Appendix C, the Sponsor will notify the Corps. Any significant modifications in the Bank Development Plan must be approved by the Corps.

After initial site construction, the Sponsor shall maintain the property using an adaptive management approach that will provide flexibility when dealing with unforeseen issues. The Sponsor shall implement all facets of site maintenance in perpetuity. The Sponsor and Terra Technologies have extensive experience with successional plant assemblages and the Bank site will be planted with an initial planting assemblage that contains species

that are adapted to early successional conditions as well as plentiful sunlight in addition to young mast hardwood plantings that will eventually be the dominant species. As the site matures and as shaded conditions proliferate, the Sponsor shall continue to plant herbaceous and woody species at the site that are appropriate to each successional stage in order to accentuate the species assemblages as deemed appropriate given the site conditions at the time of assessment. The Sponsor is prepared to remove softwood species if necessary if they become overly prevalent as appropriate for the long-term management of the site.

Additionally, if the site is not able to be constructed to match the Bank Development Plan or if site monitoring and maintenance activities determine that the project as planned is unable to meet the ecological performance standards contained in Section IV.H, then the Sponsor will approach the Corps with suggestions of design changes, site modifications, or revisions to monitoring or maintenance requirements in order to ensure that the Bank provides aquatic resource benefits similar to the objectives described in Section IVA. If necessary, the ecological performance standards contained in Section IV.H may have to be revised to address deficiencies in the compensatory mitigation project or in management strategies or objectives if the new standards provide for ecological benefits that are comparable or superior to the approved compensatory mitigation project. No other revisions to performance standards will be allowed except in the case of natural disasters as described in Section VIII.A.

L. *Financial Assurances*

The Sponsor agrees to provide the following financial assurances for the work described in this Mitigation Banking Instrument. The Sponsor shall provide the sum of $36,000 U.S. Dollars as a Letter of Credit from a financial institution that is a member of the Federal Insurance Deposit Corporation to the Midwest Mitigation Oversight Association, a non-profit group that will monitor compliance with the conservation easement. This sum was derived by calculating the costs necessary to replace one quarter of the Bank and to monitor the site for five years as shown in Table 6.

Based on the credit release schedule identified in Section XI, fifty percent (50%) of credits are available for sale upon signing of the final instrument, purchasing of restoration services, recordation of the conservation easement, completion of construction and planting, and submittal of an as-built figure. The Sponsor agrees to not sell any credits prior to substantial completion of site construction; therefore, no financial assurances are implemented for site construction. The Sponsor holds an unencumbered fee simple title to the bank site; therefore, no financial assurances are required for land acquisition. All other credit releases are based upon monitoring reports that assess the fulfillment of performance standards and bank success. Therefore, financial assurances are provided for 50% of the bank, those credits available for sale prior to the performance of monitoring.

Post-construction maintenance tasks at a mitigation bank include replanting of trees and shrubs, selective spraying of invasive species, site mowing, and reseeding. On several

other mitigation banks owned by the Sponsor, historical averages for maintenance are as follows;

Tree/Shrub Death Rate:	20% of original planting
Spraying of Invasive Species:	2% of total acreage
Mowing of Site:	Reseeded Areas Only
Reseeding of Site:	10% of original planting
Monitoring of Site:	$1,750 per year

Historical averages provide guidance for budgeted maintenance activities. For the purpose of financial assurance determination, averages are increased by 1.25 in order to provide additional funds for unplanned expenses including inflation.

The mitigation site is comprised of 64.78 acres proposed for creation, enhancement, and restoration. Providing planned maintenance of fifty percent (50%) of all creation and enhancement areas yields 32.5 acres of size. Assuming the restoration standard of 110 trees and shrubs per acre (one per 20 lineal feet) for riparian creation and forested wetland creation and native seeding at 20 pounds pure live seed (# PLS) per acre, and utilizing standard "for-hire" installation costs, the calculated required financial assurance as follows;

Table 6. Short-Term Financial Assurance Estimate

Item	Requirement	Acres	% Failure	$ Cost/Unit	$ Total Cost
Trees & Shrubs	110/Acre	32.5	20% x 1.25	$25	$22,343.75
Reseeding	20 # PLS/Acre	32.5	10% x 1.25	$50	$4062.50
Mowing	1 visit	32.5	10% x 1.25	$50	$203.13
Spraying	3 visits	32.5	2% x 1.25	$200	487.50
Monitoring	5 years	---	---	$1,750	$8,750
				TOTAL	**$35,846.88**

These funds shall be termed Contingency Funds and shall be used by a third party to be designated by the Midwest Mitigation Oversight Association in the event that the Sponsor fails to comply with the terms of this Banking Agreement or to rectify any unforeseen events as determined by the Corps, in consultation with the IRT. The Letter of Credit will state that the Corps will receive notification of at least 120 calendar days in advance of any termination or revocation of said letter. The Sponsor will submit an annual statement regarding the state of the financial assurance funding to the Corps along with the annual credit ledger report as described in Section VII.C. A standby trust account will be established to hold the funds paid by the financial assurance provider to be used by the Midwest Mitigation Oversight Association in accordance with the Corps' instructions of how to rectify any site deficiency should the Sponsor not be able to perform those duties.

The said sum shall be reduced to $9,000 (25% of the initial financial assurance) after the Corps, in consultation with the IRT, has agreed that the Bank has completed all initial construction and planting activities and the vegetative performance standards included in Section IV.H.2 have been met. The remaining contingency funds shall remain until the Sponsor receives a letter from the Corps, in consultation with the IRT, stating that they are satisfied that the Bank is sustainable and has met all of its performance standards as well as all of the terms and conditions of this Mitigation Banking Instrument and Bank Development Plan. A draft copy of the Letter of Credit is included in Appendix D.

The financial assurances that will be used for long-term management after the bank is determined by the Corps, in consultation with the IRT, to be sustainable will be provided in the form of an irrevocable letter of credit calculated at $4,000 based upon the yearly maintenance schedule and Consumer Price Index for 2010. The letter of credit will be reissued and adjusted for inflation per the Consumer Price Index each year after the release of the initial contingency funds for a minimum of 15 years after the approval of the final banking instrument or until all credits have been sold, whichever is later.

V. CREDIT RELEASE SCHEDULE

A. *Credit Release Provisions*

Credits shall be released to the Sponsor by the Corps, in consultation with the IRT, following the credit release schedule described below. As the Sponsor reaches the stated performance milestones, documentation shall be submitted to the Corps demonstrating that the appropriate milestones for credit release have been achieved along with a request for the release of credits. The Corps will provide copies of this documentation to the IRT members for review. IRT members must provide any comments to the Corps within 15 days of receiving this documentation. However, if the Corps determines that a site visit is necessary, IRT members must provide any comments to the Corps within 15 days of the site visit. The Corps must schedule the site visit so that it occurs as soon as it is practicable, but the site visit may be delayed by seasonal considerations that affect the ability of the Corps and the IRT to assess whether the applicable credit release milestones have been achieved. After full consideration of any comments received, the Corps will determine whether the milestones have been achieved and the credits can be released. The Corps shall make a decision within 30 days of the end of that comment period, and shall notify the Sponsor and the IRT of their decision.

The Corps, in consultation with the IRT, may modify the credit release schedule, reduce the number of available credits or suspend credit sales or transfers altogether when deficiencies in the performance standard have been observed or specific requirements of the instrument have not been met.

B. *Credit Release Schedule*

Upon submittal of all appropriate documentation by the Sponsor and subsequent written approval by the Corps, in consultation with the other members of the IRT, it is agreed that credits will become available for use by the Sponsor or for transfer to a third party in accordance with the following schedule. Because the areas within the Bank that are designated for wetland credit creation or stream credit creation may achieve performance milestones at different times, the Sponsor may request the release of wetland credits and stream credits either together or separately.

1. 20% of the total number of projected wetland and stream credits shall be available for debiting immediately after all of the following are completed: (1) the final signature is recorded on this Mitigation Banking Instrument; (2) the Sponsor's demonstration of the establishment and funding of the Bank's financial assurances; and (3) the Sponsor's demonstration of the recording of a conservation easement for the Bank site.

2. An additional 30% of the total number of anticipated wetland and/or stream credits shall be available for debiting immediately for those areas where construction and planting have been completed and for which an as-built report has been submitted and approved by the Corps, in consolation with the IRT.

3. An additional 30% of the total number of anticipated wetland and/or stream credits shall be available for debiting following successful demonstration of vegetative and in-stream enhancement/restoration performance success as described in Section IV.H.2. Net Benefit areas that generate stream credits as a result of riparian buffer restoration and enhancement and in-stream restoration and enhancement will receive all of the remaining proposed credits when vegetative and in-stream enhancement and restoration success is achieved.

4. The remaining total anticipated credits for wetland and/or stream areas where the as-built report has been submitted shall be made available for withdrawal when hydrology performance standards has been met, as well as when all other performance standards, as described in Section IV.H, are satisfied, based on monitoring reports approved by the Corps, in consultation with the IRT.

C. *Credit Release Review Schedule*

The credit release approval process shall follow the schedule described in 33 CFR Part 332.8(o)(9). Specifically, after the Sponsor submits documentation to the Corps demonstrating that the appropriate milestones for credit release have been achieved and requests the release of credits, the Corps will provide copies of this documentation to the IRT members for review. The IRT members must provide any comments to the Corps within 15 days of receiving this documentation. However, if the Corps determines that a site visit is necessary, the IRT members must provide any comments to the Corps within 15 days of the site visit. The Corps must schedule the site visit so that it occurs as soon as it is practicable, but the site visit may be delayed by seasonal considerations that affect the

ability of the Corps and the IRT to assess whether the applicable credit release milestones have been achieved. After full consideration of any comments received, the Corps will determine whether the milestones have been achieved and the credits can be released. The Corps shall make a decision within 30 days of the end of that comment period, and notify the Sponsor and the IRT.

The Corps or any IRT member will provide the Sponsor a minimum of 24 hours notice before any compliance inspection or other visit to the Bank site.

VI. CREDIT ACCOUNTING PROCEDURES

A. *Use of Credits*

The Corps, in consultation with the IRT as necessary, will determine the eligibility of projects to use the Bank for compensatory mitigation on a case-by-case basis. Projects that can be considered will be determined by the Corps and will include those requiring authorization under Section 404 and/or Section 401 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act, as well as mitigation projects, Supplemental Environmental Projects, unauthorized activities, non-compliance actions, and after-the-fact permits. The Corps will determine the number and type(s) of credits required to compensate for the authorized impacts of each Department of the Army permit. KDHE will determine the number and type(s) of credits required to compensate for any impacts that are solely authorized under Section 401 of the Clean Water Act.

B. *Credit Ledger*

The Sponsor will establish and maintain a credit ledger for the Bank in order to account for all credit transactions. This credit ledger will show all credit transactions for the Bank and will include the beginning and current balance of available credits for each credit type (wetland and stream), all additions and subtractions of credits, and any other changes in credit availability, such as additional credits released or suspended credit sales. The Sponsor will notify the Corps in writing each time a credit transaction occurs and will supply the Corps with an updated ledger with each transaction.

VII. REPORTING

A. *Monitoring Reports*

The Sponsor shall submit to the Corps, for distribution to the other members of the IRT, an annual monitoring report in accordance with Regulatory Guidance Letter 08-03, or any future relevant guidance, for a period not less than five years after final construction and planting. The monitoring report will be of sufficient content to accurately describe the progress, or lack thereof, of the Bank in meeting the performance standards. Monitoring reports will include as-built drawings, maps, and ground photography illustrating the site

conditions and interpretation of the current site conditions. If available, approved wetland and/or stream assessment methods that provide qualitative measures of the functions of the resource will be submitted.

B. *Credit Ledger Accounting Reports*

A credit ledger report will be submitted to the Corps on an annual basis after the first of each calendar year and will be part of the administrative record for the Bank. The credit ledger report will show the beginning and ending balance of available credits and permitted impacts for each resource type, including types of credits debited, all additions and subtractions of credits, and any other changes in credit availability (*e.g.*, additional credits released, credit sales suspended). The Corps will distribute copies of this ledger to the other IRT members.

C. *Financial Assurances Reports*

The Sponsor will also provide the Corps a report of the financial assurance funding along with the submittal of the credit ledger report. This financial assurance report will show the beginning and ending balances, including deposits into and any withdrawals from, the accounts providing funds for financial assurances. The status of those assurances will also be stated as well as their potential expiration.

VIII. DEFAULT AND CLOSURE PROVISIONS

A. *Default Provisions*

If the Corps determines that the mitigation bank is not meeting performance standards or complying with the terms of this Banking Instrument, appropriate action will be taken. Such actions may include, but are not limited to, suspending credit sales, adaptive management, decreasing available credits, utilizing financial assurances, and or terminating the instrument.

If the Corps, in consultation with the IRT, determines that the Bank, or a specific portion of the Bank, fails to achieve the performance standards specified in Section IV.H of this Mitigation Banking Instrument, the Corps shall give written notice to the Sponsor of such violation and demand corrective action sufficient to cure the violation and, where the violation involves injury to the Bank resulting from any use or activity inconsistent with the purpose of this Mitigation Banking Instrument to restore the portion of the Bank to its prior condition in accordance with a plan approved by Corps. If the Corps determines that the Bank is operating at a deficit, the Sponsor will be notified that debiting of credits from that Bank should immediately cease. The Sponsor shall cure the violation and notify the Corps of the remedial site activities within 60 days after receipt of notice thereof from the Corps, or under circumstances where the violation cannot reasonably be cured within a 60 day period, update the Corps of the situation and begin curing such violation within the 60 day period and diligently pursue such cure to completion. In the event the Sponsor fails to

implement remedial actions necessary to address a failure in meeting the performance standards or for a credit deficit within 60 calendar days, the Corps will notify the Sponsor that debiting from the Bank is indefinitely suspended and will authorize the Midwest Mitigation Oversight Association to draw on the contingency funds to implement the necessary remedial actions.

In the event that a natural disaster destroys all or part of the Bank, all debiting from the Bank shall cease immediately. Such natural disasters include floods, tornados, fires, earthquakes, droughts, disease, regional pest infestation, *etc*., which the Corps, in consultation with the IRT, determines is beyond the control of the Sponsor to prevent or mitigate. The Sponsor shall not be responsible for restoring acreage for credits which were sold prior to any such natural disaster. However, the Sponsor shall be responsible for restoring acreage for which credits have been released to the Sponsor if those credits are unsold at the time of the natural disaster. If the damage is so severe that the Sponsor and the Corps, in consultation with the IRT, determine that project success is unattainable, then the Sponsor will not be obligated to restore any portion of the Bank.

B. *Closure Provisions*

Bank Closure will occur when the terms and conditions of this instrument have been determined by the Corps, in consultation with the IRT, to be fully satisfied or until all credits have been debited, whichever is later. Subsequent to bank closure, site management and maintenance will remain the responsibility of the Sponsor.
If adaptive management strategies are unsuccessful and performance standards are unattainable, the Sponsor may request early closure of the Bank and forfeiture of the remaining anticipated credits

IX. EXECUTION AND AGENCY CONCURRENCE

The Kansas City District, Corps of Engineers, along with the members of the Interagency Review Team, have participated with the bank sponsor (Swallow Tail, LLC) in the development of the Stranger Creek Wetland and Stream Mitigation Bank and this banking instrument.

I have determined that the final banking instrument is complete and that the establishment of the Stranger Creek Wetland and Stream Mitigation Bank will provide appropriate compensation for impacts to wetlands and streams associated with unavoidable impacts to these resources that result from activities authorized by the Kansas City District's issuance of Department of the Army Permits.

Date: 30 AUG 2011

Mark D. Frazier, Chief
Regulatory Branch
Operations Division

IRT CONCURRENCE:

The United States Environmental Protection Agency, along with the members of the Interagency Review Team, has participated with the bank sponsor (Swallow Tail, LLC) in the development of the Stranger Creek Wetland and Stream Mitigation Bank and this banking instrument.

I concur that the final banking instrument is complete and that the establishment of the Stranger Creek Wetland and Stream Mitigation Bank will provide appropriate compensation for impacts to wetlands and streams associated with unavoidable impacts to these resources that result from activities authorized by the Kansas City District's issuance of Department of the Army Permits.

Karen Flournoy Date: 7-14-11

Ms. Karen Flournoy, Acting Director
Water, Wetlands, and Pesticide Division
U.S. Environmental Protection Agency, Region VII

IRT CONCURRENCE:

The U.S. Fish and Wildlife Service, along with the members of the Interagency Review Team, has participated with the bank sponsor (Swallow Tail, LLC) in the development of the Stranger Creek Wetland and Stream Mitigation Bank and this banking instrument.

I concur that the final banking instrument is complete and that the establishment of the Stranger Creek Wetland and Stream Mitigation Bank will provide appropriate compensation for impacts to wetlands and streams associated with unavoidable impacts to these resources that result from activities authorized by the Kansas City District's issuance of Department of the Army Permits.

Mike LeValley Date: 7-27-11

Mr. Mike LeValley, Project Leader
Kansas Ecological Services Field Office
U.S. Fish and Wildlife Service

IRT CONCURRENCE:

The Kansas Department of Health and Environment along with the members of the Interagency Review Team, has participated with the bank sponsor (Swallow Tail, LLC) in the development of the Stranger Creek Wetland and Stream Mitigation Bank and this banking instrument.

I concur that the final banking instrument is complete and that the establishment of the Stranger Creek Wetland and Stream Mitigation Bank will provide appropriate compensation for impacts to wetlands and streams associated with unavoidable impacts to these resources that result from activities authorized by the Kansas City District's issuance of Department of the Army Permits.

_____ Date:_____

Kerry L. Wedel, Chief
Watershed Management Section, Bureau of Water
Kansas Department of Health and Environment

IRT CONCURRENCE:

The Kansas Department of Wildlife & Parks, Environmental Services Section, along with the members of the Interagency Review Team, has participated with the bank sponsor (Swallow Tail, LLC) in the development of the Stranger Creek Wetland and Stream Mitigation Bank and this banking instrument.

I concur that the final banking instrument is complete and that the establishment of the Stranger Creek Wetland and Stream Mitigation Bank will provide appropriate compensation for impacts to wetlands and streams associated with unavoidable impacts to these resources that result from activities authorized by the Kansas City District's issuance of Department of the Army Permits.

Date: 7-27-11

Mr. Eric Johnson, Chief
Ecological Services Section
Kansas Department of Wildlife & Parks

X. REFERENCES

Betz, R.F. 1989. Ecology of Mead's milkweed (*Asclepias meadii* Torrey). Pages 187-191 in Proceedings of the Eleventh North American Prairie Conference. T.B. Bragg & J. Stubbendieck, eds. University of Nebraska at Lincoln.

Bosworth, M. K. Delaware River Watershed Restoration and Protection Strategy. May 2007. 114 pp.

Central Plains Center for Bioassessment. January 2002. April 2010. Final assessment of the ecological integrity of Stranger Creek (Leavenworth County, Kansas): Final report on the investigation of habitat, water quality, and biological conditions in Stranger Creek. Kansas Biological Survey, University of Kansas. Lawrence, Kansas. 49 p. <http://www.cpcb.ku.edu/research/assets/StrangerCreek.pdf>.

Dahl, T.E. 1990. Wetland losses in the United States - 1780s to 1980s. U.S. Department of Interior, Fish & Wildlife Service. U.S. Government Printing Office, Washington, D.C.
Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. NTIS No. AD A176 912.

Kansas Department of Health and Environment. March 24, 2010. April 12, 2010. 2010 303(d) List of All Impaired/Potentially Impaired Waters.
< http://www.kdheks.gov/tmdl/krtmdl.htm >.
Kansas Department of Health and Environment. August 22, 2000. February 2, 2009. A watershed conditions report for the State of Kansas HUC 10270104 (lower Kansas) watershed. < http://www.kdheks.gov/nps/wc_reports/10270104.pdf>.

Kansas State Board of Agriculture. 1878. April 09, 2010. First Biennial Report of the State Board of Agriculture to the Legislature of the State of Kansas, for the Years 1877-8.
< http://skyways.lib.ks.us/genweb/archives/1878/index.html>.

Kansas Water Office. January 2009. April 10, 2010. Kansas Water Plan. Kansas-Lower Republican River Basin.
<http://www.kwo.org/Kansas%20Water%20Plan/SWP/KWP_2008/Vol_III_Docs/KLR/Rpt_KLR_Entire_Basin_Section_KWP_2009.pdf >.

Kansas Water Office. August 2006. April 11, 2010. Kansas-Lower Republican Basin High Priority Issue Watershed Restoration and Protection.
http://www.kwo.org/Kansas%20Water%20Plan/SWP/KWP_2008/Vol_III_Docs/KLR/Rpt_KLR_BPI_WRAPS_August2006.pdf.

Kindscher, K. W. H. Busby, J. M. Delisle, J. A. Dropkin, and C. C. Freeman. 2005. A Natural Areas Inventory of Douglas, Johnson, Leavenworth, Miami, and Wyandotte Counties in Northeast Kansas. Open-File Report No. 124. Kansas Biological Survey., Lawrence, KS. 74 pp.

Lower Kansas Watershed Restoration and Protection Strategy Development Report. November 1, 2008. 43 pp.

Middle Kansas WRAPS Nine EPA Required Elements for Watershed Plans to Restore Impaired Water Bodies. December 1, 2009. 170 pp.

Seig, C.H., R.M. King, 1995. Influence of environmental factors and preliminary demographic analysis of a threatened orchid *Platanthera praeclara*. Amer. Midland Nat. 134:61-77.

United States Fish and Wildlife Service. 1996. Platanthera praeclara (western prairie fringed orchid) recovery plan, US Fish and Wildlife Service, Ft. Snelling, MN, pg. 101.

United States Fish and Wildlife Service. February 2010. April 12, 2010. Endangered, threatened, proposed and candidate species Kansas counties. <http://www.fws.gov/mountain-prairie/endspp/countylists/kansas.pdf >.

APPENDIX A

FIGURES

Figure 1 Township Range Section

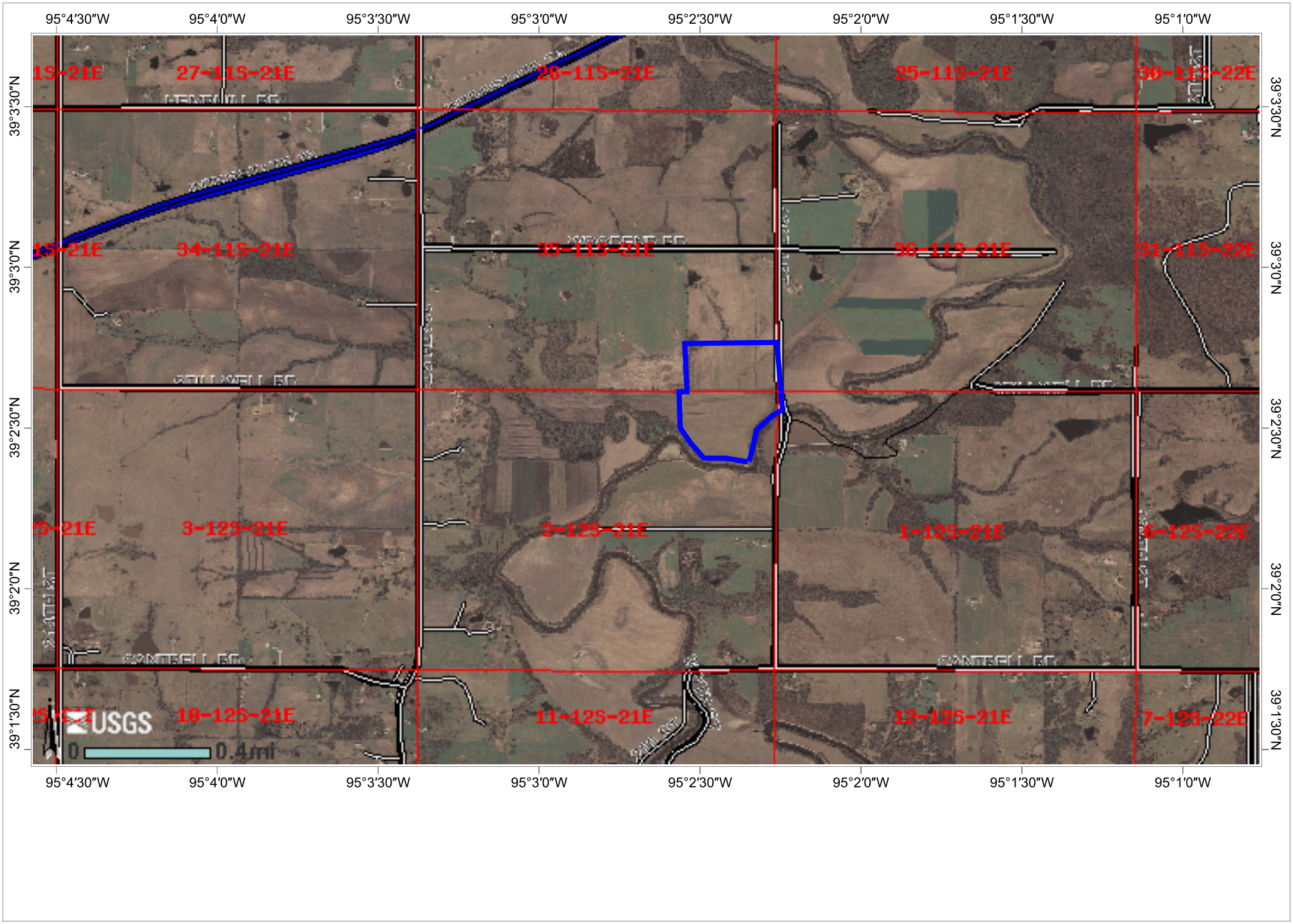
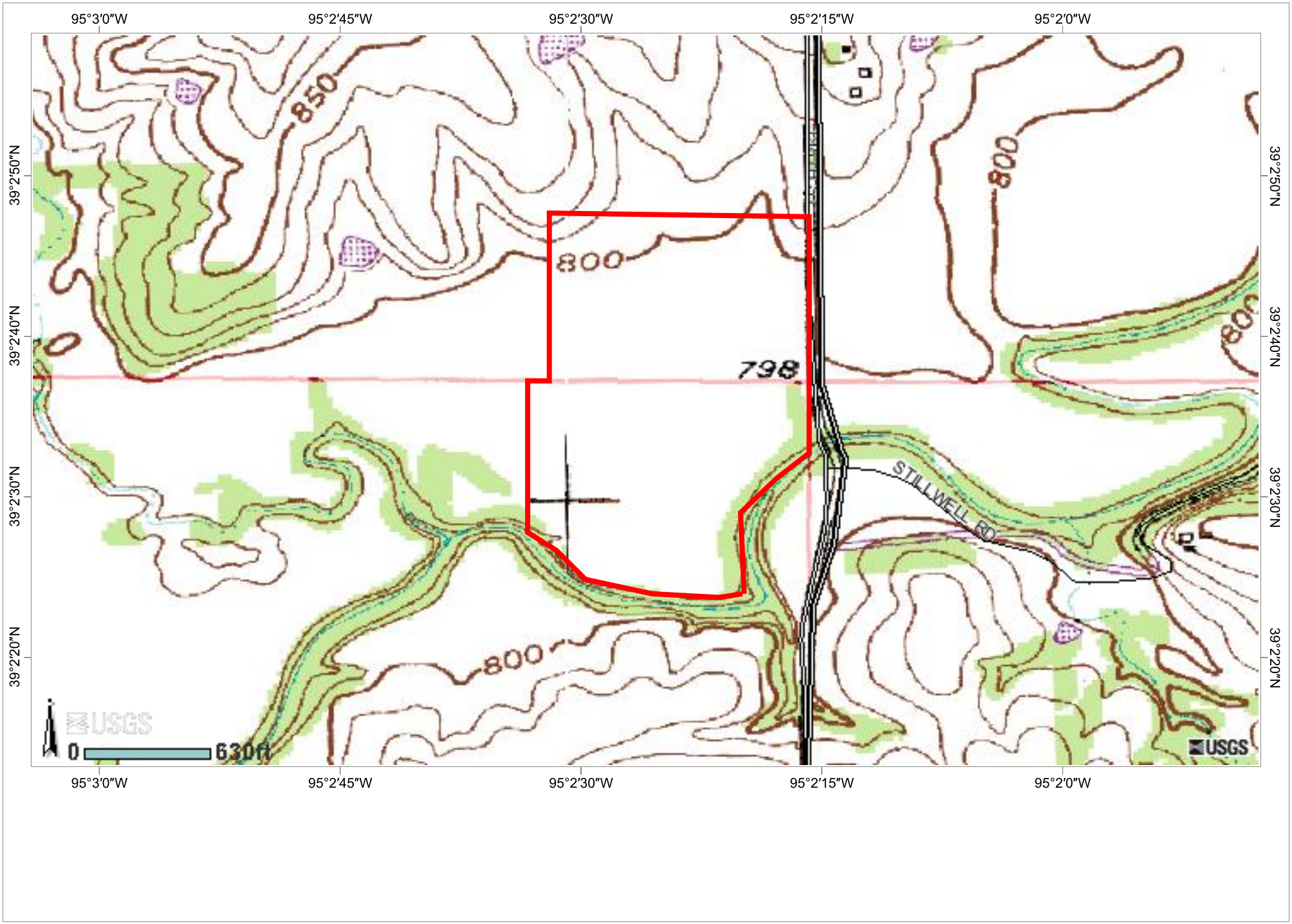
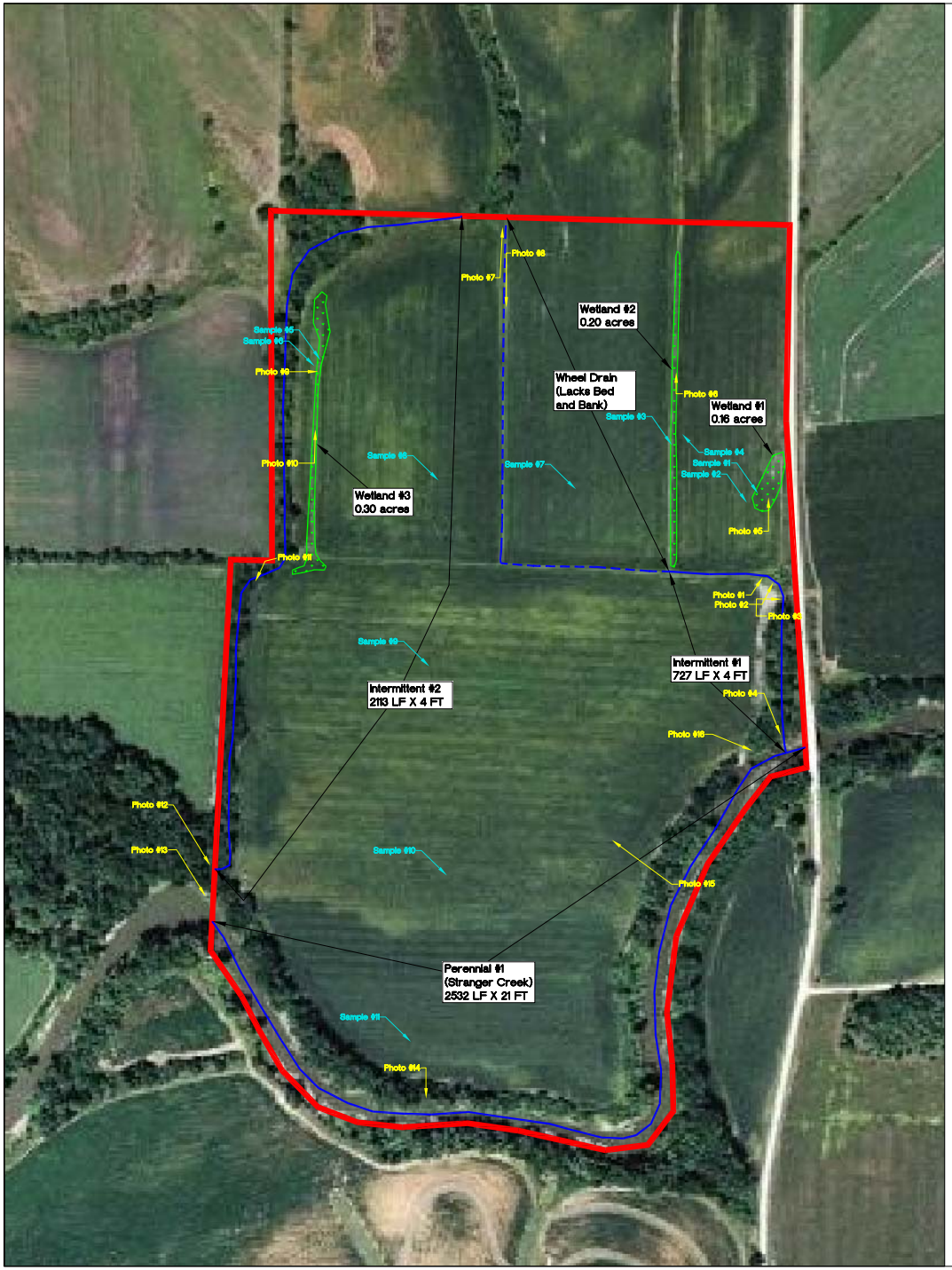


Figure 2 NWI


95°3'0"W
95°2'45"W
95°2'30"W
95°2'15"W
95°2'0"W
39°2'50"N
39°2'40"N
39°2'30"N
39°2'20"N
R5BFT
Stranger Creek
USGS
0
630
PEMBF

Figure 3 USGS





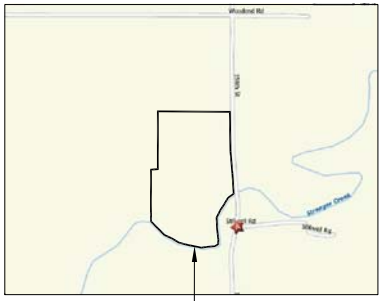
JURISDICTIONAL ASSESSMENT

Wetland 1: 0.16 acres (Farmed)
Wetland 2: 0.20 acres (Farmed)
Wetland 3: 0.30 acres (Farmed)
TOTAL WETLAND AREA: 0.66 ACRES

Ephemeral 1: 1304 LF, OHWM: 2 FT,
Riparian Corridor >50 FT
TOTAL EPHEMERAL LENGTH: 1326 LF

Intermittent 1: 727 LF, OHWM: 4 FT
Intermittent 2: 2113 LF, OHWM: 4 FT
TOTAL INTERMITTENT LENGTH: 2,840 LF

Perennial 1: 2532 LF, OHWM: 25 FT
TOTAL PERENNIAL LENGTH: 2,532 LF



Site Location
T12S - R21E - S2
T11S - R21E - S35
Unincorporated Leavenworth County, Kansas
67 acres

GRAPHIC SCALE
200 0 100 200 400 800
(IN FEET)
1 inch = 200 ft.

Terra Technologies
4707 W. 135th St., Ste. 280
Leawood, Kansas
66224
Tel 913.385.9560 Fax 913.385.5295

FIGURE 4

SHEET TITLE: JURISDICTIONAL ASSESSMENT
PROJECT: STRANGER CREEK MITIGATION BANK
CLIENT: SWALLOW TAIL, LLC

REVISIONS	
DATE	DESCRIPTION

DATE 06/30/08
CHECKED BY CAG
DRAWN BY JMG
SHEET NO. JA
JOB NO. XXX

Figure 5 Hydric Soils

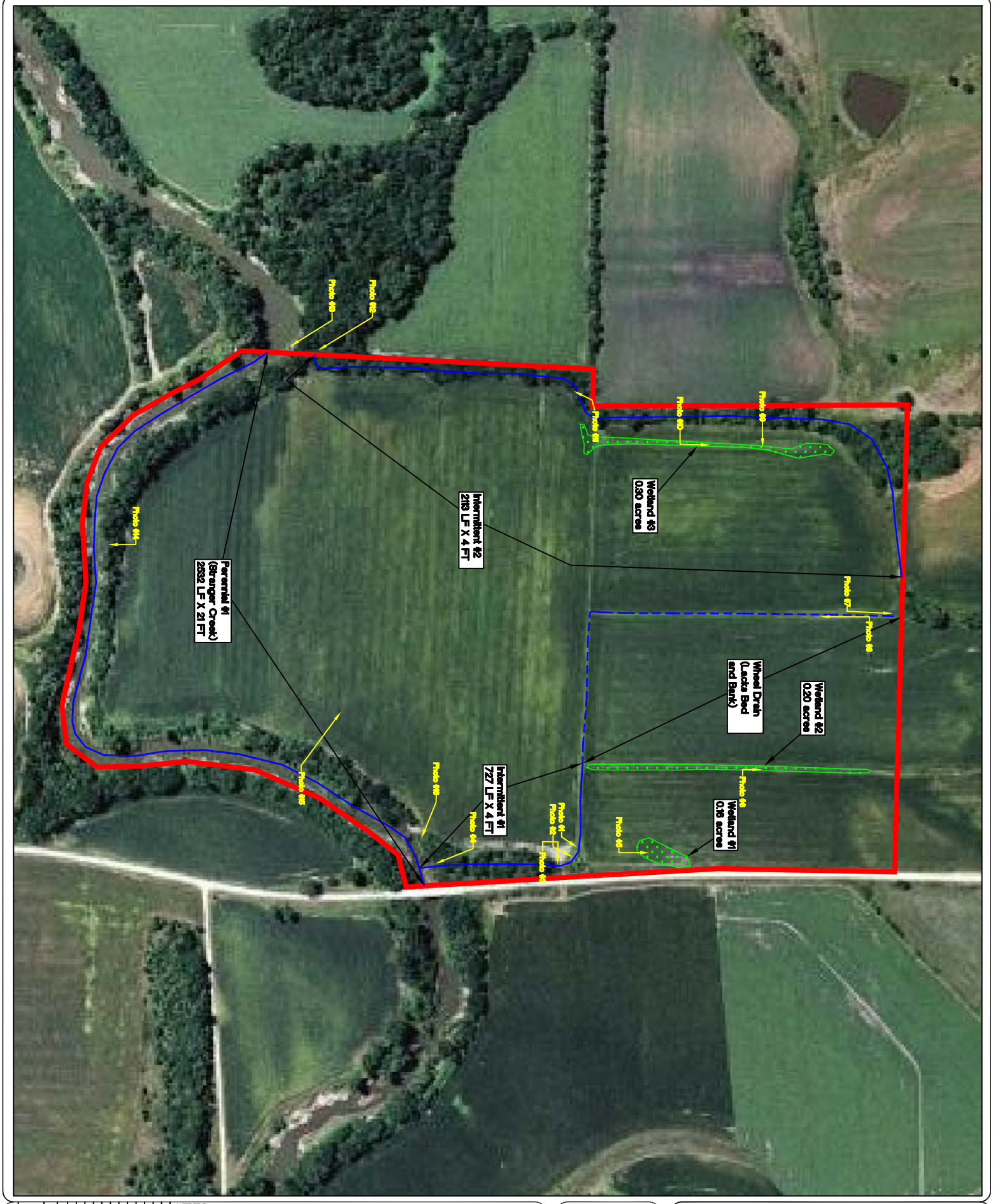
Figure 5 Hydric Soils

Hydric Rating by Map Unit

Hydric Rating by Map Unit— Summary by Map Unit — Leavenworth County, Kansas				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
7050	Kennebec silt loam, occasionally flooded	Not Hydric	7.7	10.2%
7051	Kennebec silt loam, frequently flooded	Not Hydric	3.9	5.2%
7061	Muscotah silty clay loam, occasionally flooded	Partially Hydric	50.7	67.7%
7091	Wabash silty clay, occasionally flooded	All Hydric	4.0	5.3%
7234	Elmont silt loam, 3 to 7 percent slopes, eroded	Not Hydric	5.6	7.5%
7262	Gymer silt loam, 3 to 7 percent slopes, eroded	Not Hydric	1.1	1.5%
7507	Pawnee clay loam, 4 to 8 percent slopes, eroded	Not Hydric	0.6	0.8%
7550	Rosendale-Bendena silty clay loams, 3 to 40 percent slopes	Not Hydric	1.3	1.8%
Totals for Area of Interest			**74.9**	**100.0%**

APPENDIX B

PHOTO DOCUMENTATION



JOB NO. XXX	SHEET TITLE	PHOTO LOCATIONS	DATE / DESCRIPTION
SHEET NO. 1	PROJECT	STRANGER CREEK WETLAND & STREAM MITIGATION BANK	REVISIONS
DRAWN BY JMG	CLIENT	SWALLOW TAIL, LLC	
CHECKED BY SCC			
DATE 07/14/08			

Terra Technologies
4707 W. 135th St., Ste. 280
Leawood, Kansas
66224
Tel 913.385.9560 Fax 913.385.5295

PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Intermittent # 1. OHWM of Intermittent # 1 averages 4 feet. View faces Northeast. PHOTO #: 1	

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of I-1 further downstream at culverted field crossing. View faces Northeast. PHOTO #: 2	

PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Intermittent # 1 at downstream end of culverted field crossing. View faces East. PHOTO #: 3	

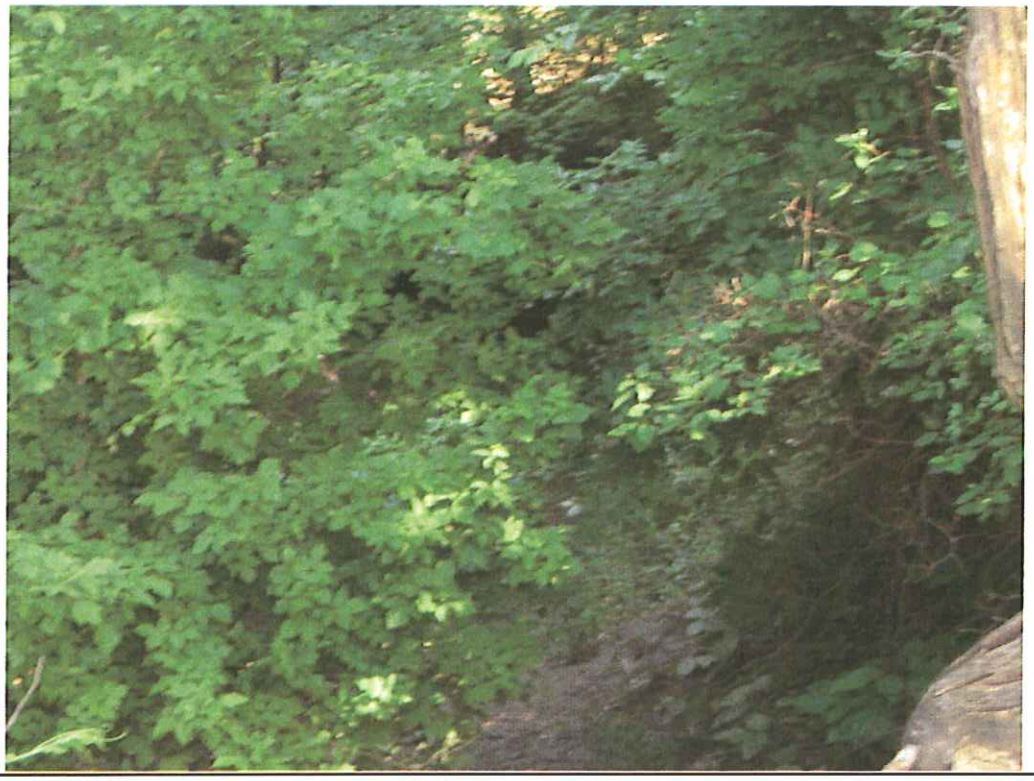
DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Intermittent # 1 at Stranger Creek. View faces Southeast. PHOTO #: 4	

PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of farmed Wetland # 1. View faces North. PHOTO #: 5	

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of farmed Wetland # 2 within swale. View faces North. PHOTO #: 6	

PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of start of wheel drain near northern property boundary. View faces North. PHOTO #: 7	

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of wheel drain further downstream. View faces South. PHOTO #: 8	

PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of farmed Wetland # 3. View faces East. PHOTO #: 9	

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of farmed Wetland # 3 further downstream. View faces North. PHOTO #: 10	

PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Intermittent # 2 at approximate parcel boundary. OHWM of I-2 averages 4 feet. View faces Southwest. PHOTO #: 11	

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Intermittent # 2 further downstream at approximate parcel boundary. View faces Southeast. PHOTO #: 12	

PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Stranger Creek at parcel boundary. OHWM of Stranger Creek averages 25 feet. View faces Southeast	
PHOTO #: 13	

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Stranger Creek further upstream. View faces South.	
PHOTO #: 14	

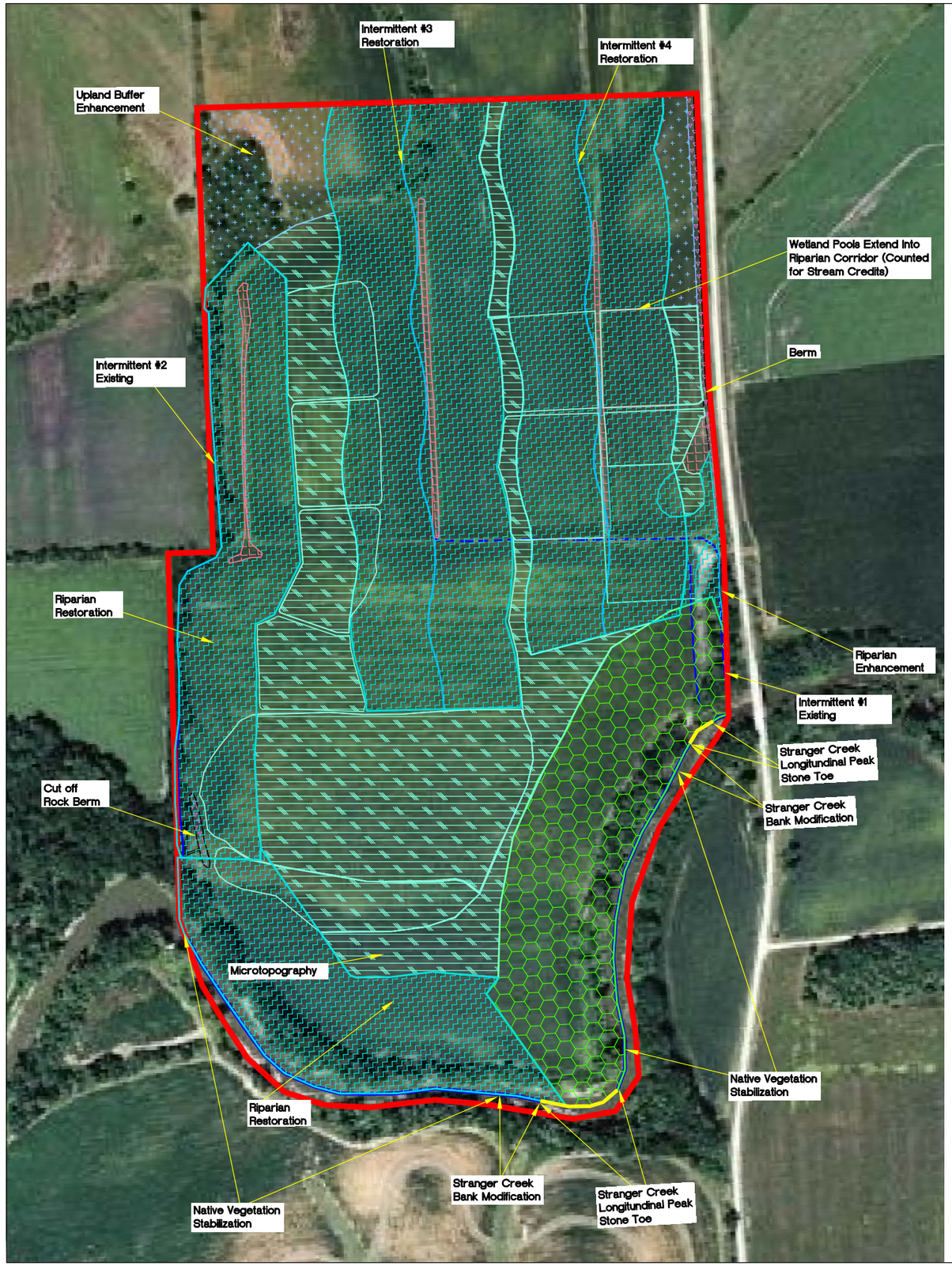
PHOTO LOG

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of conditions of agricultural field north of Stranger Creek. View faces Northwest. PHOTO #: 15	

DATE: 06/26/2008 TAKEN BY: CG	SITE NAME: STRANGER CREEK MITIGATION BANK
COMMENTS: Photo of Stranger Creek emerging onto property underneath the 108th Street Bridge. View faces Southeast. PHOTO #: 16	

APPENDIX C

BANK DEVELOPMENT PLAN



Riparian Corridor Restoration
41.83 Acres

Herbaceous Wetland Creation
17.22 Acres

Herbaceous Wetland Restoration
0.87 Acre

Upland Buffer Creation
3.60 Acres

Berms (Planted as Prairie)
0.44 Acre

Third Party Mitigation
NWK 2006-1003
8.83 Acres
(Not part of proposed bank)

MAGNETIC

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

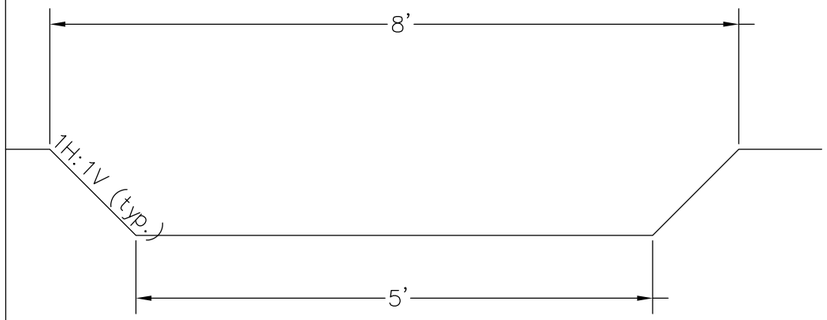
Terra Technologies
1920 W. 143rd St., Ste. 140
Leawood, Kansas
66224
Tel 913.385.9560 Fax 913.385.5295

SHEET TITLE: BANK DEVELOPMENT PLAN (RESTORATION DESIGN)
PROJECT: STRANGER CREEK WETLAND & STREAM MITIGATION BANK
CLIENT: SWALLOW TAIL, LLC

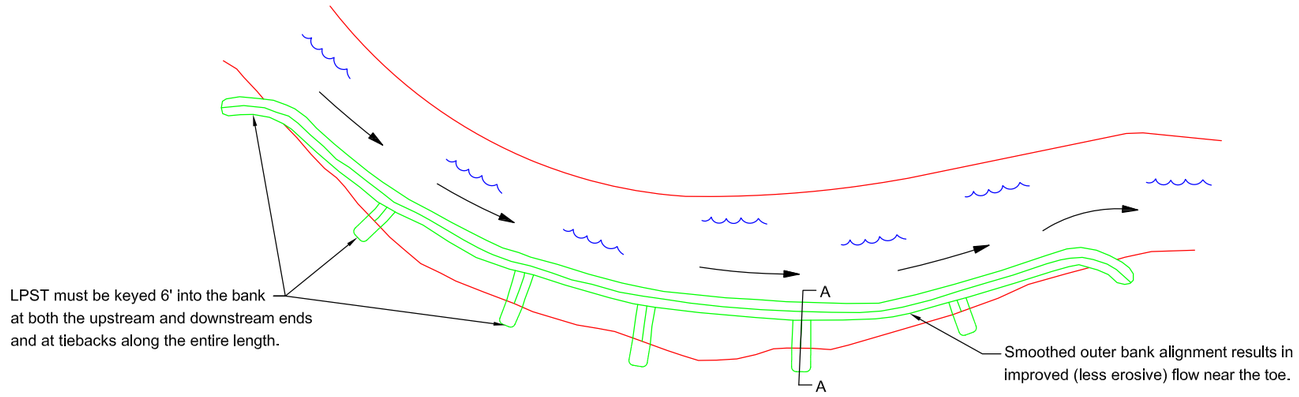
REVISIONS

DATE	DESCRIPTION
9/10/10	Changes Per COE

DATE 07/02/08
CHECKED BY CAG DRAWN BY JMG
SHEET NO. 1
JOB NO. .



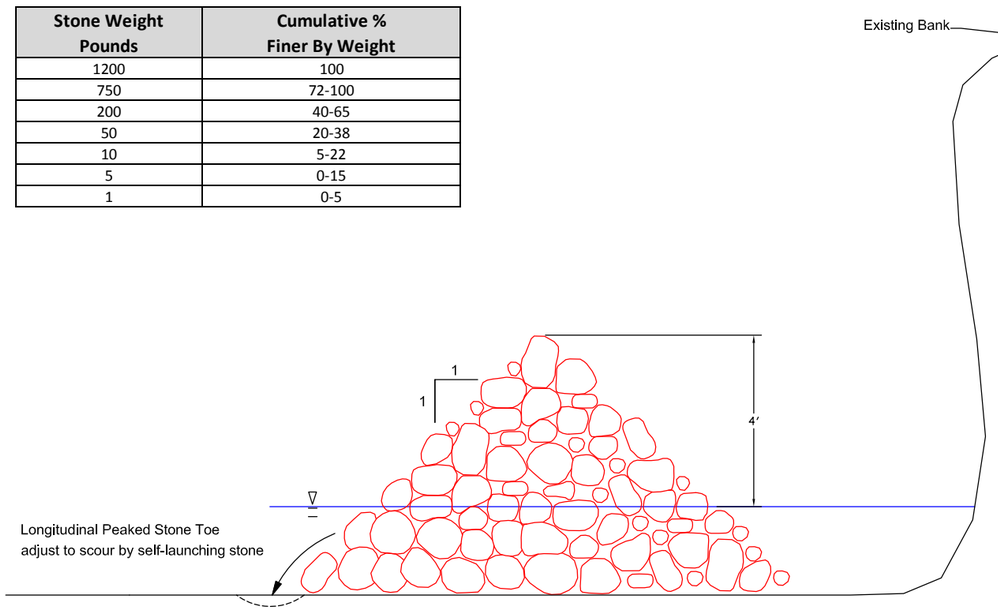
TYPICAL SECTION INTERMITTENT STREAM RESTORATION DETAIL



Typical Longitudinal Peaked Stone Toe Protection (LPST)

N.T.S.

Stone Weight Pounds	Cumulative % Finer By Weight
1200	100
750	72-100
200	40-65
50	20-38
10	5-22
5	0-15
1	0-5

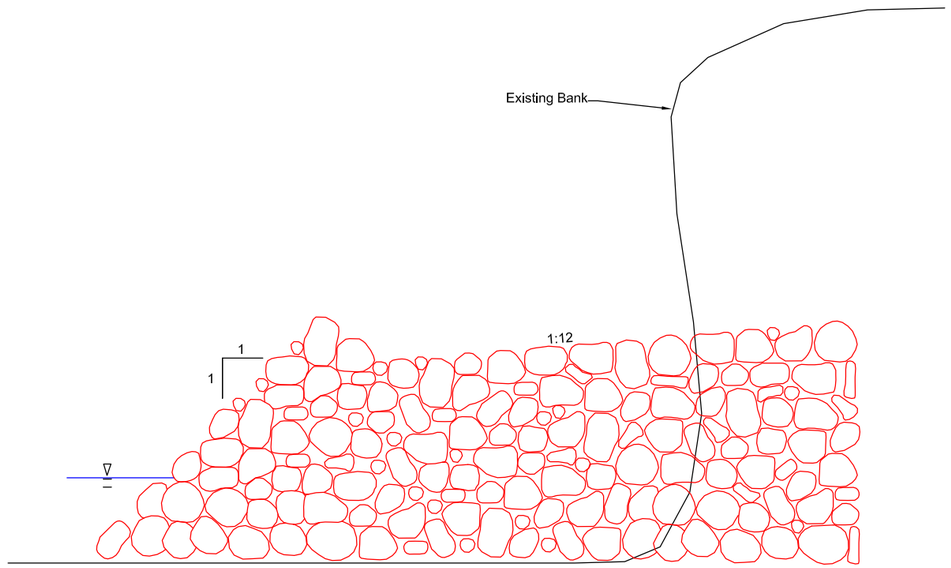


Longitudinal Peaked Stone Toe (LPST)

N.T.S.

NOTES:

1. LPST is well suited when continuous bank protection is needed for the toebut the mid and upper banks are relatively stable and/or biotechnical practices are suitable.
2. The success of LPST depends on the ability of the well-graded stone to self adjust or "launch" into any scour holes formed on the stream side of the LPST.



Typical Longitudinal Peaked Stone Toe Protection (LPST) Section A-A

N.T.S.

Terra Technologies
1920 W. 143rd St., Ste. 140
Leawood, Kansas
66224
Tel 913.385.9560 Fax 913.385.5295

SHEET TITLE: CONSTRUCTION DETAILS
PROJECT: STRANGER CREEK WETLAND & STREAM MITIGATION BANK
CLIENT: SWALLOW TAIL, LLC

REVISIONS

DATE	DESCRIPTION

DATE 04/19/10
CHECKED BY CAG
DRAWN BY JMG
SHEET NO. 2
JOB NO. XXX

Stranger Creek Planting Plan

Riparian Corridor Restoration

Vegetation Layer	Common Name	Scientific Name	Wetland Indicator Status	Number to be Planted	%
Tree	Silver Maple	Acer saccharinum	FACW	116	4.9
Tree	Ohio Buckeye	Aesculus glabra	FAC+	116	4.9
Tree	Shellbark Hickory	Carya ovata	FAC	116	4.9
Tree	Shagbark Hickory	Carya laciniosa	FACU	116	4.9
Tree	Hackberry	Celtis occidentalis	FAC-	116	4.9
Tree	Eastern Redbud	Cercis canadensis	FACU	116	4.9
Tree	Persimmon	Diospyros virginiana	FAC	116	4.9
Tree	Green Ash	Fraxinus pennsylvanica	FACW	116	4.9
Tree	Black Walnut	Juglans nigra	FACU	116	4.9
Tree	American Sycamore	Platanus occidentalis	FACW	126	5.4
Tree	White Oak	Quercus alba	FACU	116	4.9
Tree	Shingle Oak	Quercus imbricaria	FAC-	116	4.9
Tree	Bur Oak	Quercus macrocarpa	FAC-	116	4.9
Tree	Pin Oak	Quercus palustris	FACW	116	4.9
Tree	Chinkapin Oak	Quercus prinoides	FACU-	116	4.9
Tree	Northern Red Oak	Quercus rubra	FACU	116	4.9
Tree	Post Oak	Quercus stellata	FACU-	116	4.9
Tree	Black Oak	Quercus velutina	UPL	116	4.9
Tree	American Basswood	Tilia americana	FACU	116	4.9
Tree	American Elm	Ulmus americana	FACW	116	4.9
			TOTAL TREES:	2,330	
Scrub-Shrub	Rough-leaved Dogwood	Cornus drummondii	FAC	233	10
Scrub-Shrub	Flowering Dogwood	Cornus florida	FACU	233	10
Scrub-Shrub	Spicebush	Lindera benzoin	FACW-	233	10
Scrub-Shrub	Ninebark	Physocarpus opulifolius	FACW-	233	10
Scrub-Shrub	Fragrant Sumac	Rhus aromatica	UPL	233	10
Scrub-Shrub	Smooth Sumac	Rhus glabra	UPL	233	10
Scrub-Shrub	Peach-leaved Willow	Salix amygdaloides	FACW	233	10
Scrub-Shrub	Elderberry	Sambucus canadensis	FACW-	233	10
Scrub-Shrub	Southern Arrowwood	Viburnum dentatum	FAC	233	10
Scrub-Shrub	Nannyberry	Viburnum lentago	FAC+	233	10
			TOTAL SHRUBS	2,330	

Riparian Corridor Enhancement

Vegetation Layer	Common Name	Scientific Name	Indicator Status	Number to be Planted	%
Tree	Ohio Buckeye	Aesculus glabra	FAC+	10	16.5
Tree	Paw Paw	Asimina triloba	FACU	10	16.5
Tree	Sugarberry	Celtis laevigata	FACW	10	16.5
Tree	Eastern Redbud	Cercis canadensis	FACU	10	16.5
Tree	Chinkapin oak	Quercus muehlenbergii	FAC	10	16.5
Tree	Pin Oak	Quercus palustris	FACW	10	16.5
			TOTAL TREES:	60	
Scrub-Shrub	Rough-leaved Dogwood	Cornus drummondii	FAC	10	16.5
Scrub-Shrub	Flowering Dogwood	Cornus florida	FACU	10	16.5
Scrub-Shrub	Possum haw	Ilex decidua	FACW	10	16.5
Scrub-Shrub	Elderberry	Sambucus canadensis	FACW-	10	16.5
Scrub-Shrub	Southern Arrowwood	Viburnum dentatum	FAC	10	16.5
Scrub-Shrub	Nannyberry	Viburnum lentago	FAC+	10	16.5
			TOTAL SHRUBS:	60	

Stranger Creek Riparian Seed Blend

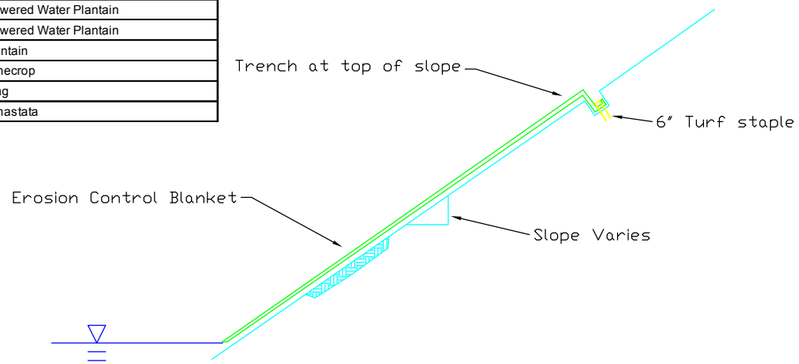
Item#	Identification
1	Blue Joint Grass
2	Big Bluestem
3	Little Bluestem
4	Buffalo Grass
5	Prairie Cordgrass var. Red River
6	Eastern Gamma Grass
7	Sideoats Grama
8	Indiangrass
9	Oats, Inland Sea
10	Porcupine Sedge
11	Switchgrass var. Blackwell
12	Canada Wild Rye
13	Riverbank Wild Rye
14	Virginia Wild Rye
15	Aromatic Aster
16	Parsely, Prairie
17	False Aster
18	New England
19	Sky Blue Aster
20	Smooth Aster
21	Smooth Beardtongue
22	Horsemint
23	Wild Bergamont
24	Blazing Star, pycnostachya
25	Bundleflower
26	Prairie Cinquefoil
27	Purple Prairie Clover
28	White Prairie Clover
29	Grey Headed Coneflower
30	Coneflower, Orange
31	Pale Purple Coneflower
32	Coneflower, Prairie (Yellow)
33	Purple Coneflower
34	Lanceleaf Coreopsis
35	Prairie Coreopsis
36	Eupatorium, Boneset
37	Stiff Goldenrod
38	Blue False Indigo
39	Indigo, White
40	Showy Primrose
41	Roundhead Lespedeza
42	Bur Marigold
43	Butterfly Milkweed
44	Mint, Virginia Mountain
45	Pale Indian Plantain
46	Rattlesnake Master
47	Sage, Pitchers
48	Compass Plant
49	Cup Plant
50	Rosinweed
51	Ohio Spiderwort
52	Sunflower, Ashy
53	Maxmillian's Sunflower
54	Ox Eye Sunflower
55	Missouri Black Eyed Susan
56	Sweet Black Eyed Susan
57	Wingstem, Yellow

Stranger Creek Wetland Seed Blend

Item#	Identification
1	Beak Grass
2	Creeping Bentgrass
3	Bulrush, Dark Green
4	Hardstem Bulrush
5	Bulrush, Olneys
6	River Bulrush
7	Softstem Bulrush
8	Bulrush, Woolgrass
9	Prairie Cordgrass
10	Rice Cutgrass
11	Flatsedge, Chufa
12	Fowl Mannagrass
13	Rush, Interior
14	Path Rush
15	Soft Rush
16	Rush, Torrey's
17	Fox Sedge
18	Sedge, Longhaired
19	Bebb's Sedge
20	Copper Oval Sedge
21	Sedge, lacustris
22	Awlfruit Sedge
23	American Sloughgrass
24	Creeping Spikerush
25	Riverbank Wild Rye
26	Small Flowered Agrimony
27	False Aster
28	New England
29	Purple Stemmed Aster
30	Marsh Blazing Star
31	Giant Bur Reed
32	Tall Boneset
33	Eupatorium, coelestinum
34	Spotted Joe Pye Weed
35	Boneset
36	Foxglove, Slender False
37	Riddell's Goldenrod
38	Sneezeweed
39	Water Horehound
40	Yellow Giant Hyssop
41	Blue Flag Iris
42	Lobelia, cardinalis
43	Blue Lobelia
44	Mallow, Rose
45	Bur Marigold
46	Nodding Bur Marigold
47	Beggar's Tick
48	Marsh Milkweed
49	Slender Mountain Mint
50	Horsemint
51	Monkey Flower
52	Large Flowered Water Plantain
53	Small Flowered Water Plantain
54	Water Plantain
55	Ditch Stonecrop
56	Sweet Flag
57	Verbena hastata

Rolled Erosion Control Product Specifications

Material	Component	Requirement
Erosion Control Blanket (ECB)	Organic Material	Straw/Coir, Sudangrass
	Mass/Square Yard	0.50 pounds
	Reinforcement Configuration	Double reinforced
	Reinforcement Composition	Biodegradable
	Stitch Configuration	Double sided
	Stitch Composition	Cotton or equivalent
	Manufacturers	SI Geosystems
		North American Green
		Greenfix



TYPICAL SECTION STREAM BANK MODIFICATION DETAIL

Terra Technologies
1920 W. 143rd St., Ste. 140
Leawood, Kansas
66224
Tel 913.385.9560 Fax 913.385.5295

SHEET TITLE: CONSTRUCTION DETAILS
PROJECT: STRANGER CREEK WETLAND & STREAM MITIGATION BANK
CLIENT: SWALLOW TAIL, LLC

REVISIONS

DATE	DESCRIPTION

DATE 04/19/10
CHECKED BY CAG
DRAWN BY JMG
SHEET NO. 3
JOB NO. XXX

APPENDIX D

FINANCIAL ASSURANCES:

First Central Bank

February 25, 2011

Midwest Mitigation Oversight Association

Gentlemen:

We hereby open our irrevocable credit in favor of the Midwest Mitigation Oversight Association for the sum or sums not to exceed a total of **Thirty-Six Thousand Dollars ($36,000.00),** to be made available by the request of the United States Army Corps of Engineers for payment at sight upon the presentation of a draft accompanied by the following statement:

The undersigned certifies that a claim is presented against the Stranger Creek Wetland and Stream Mitigation Bank, as it has been determined by the United States Army Corps of Engineers and the rest of the Interagency Review Team that Swallow Tail, LLC has defaulted on some or all of the obligations, covenants, terms, and conditions of the Stranger Creek Wetland and Stream Mitigation Banking Instrument and the amount of the drawing will be used to implement corrective measures on the mitigation bank. Under Letter of Credit No. 194282-8099, we are providing this documentation instruction the First Central Bank to pay proceeds in the amount of $36,000.00 (or a lesser amount determined by the United States Army Corps of Engineers to be sufficient to bring the mitigation bank back into compliance with its Mitigation Banking Instrument) to the Midwest Mitigation Oversight Association to direct the activities requested by the United States Army Corps of Engineers. Please wire said proceeds to Midwest Mitigation Oversight Association."

This Letter of Credit is valid until Swallow Tail, LLC receives a letter from the United States Army Corps of Engineers, in consultation with the rest of the Interagency Review Team, stating that they are satisfied that the Stranger Creek Wetland and Stream Mitigation Bank has met all of its success criteria as well as all of the terms and conditions of the Stranger Creek Wetland and Stream Mitigation Banking Instrument and Bank Development Plan or until all credits have been sold, whichever is later. The notice required hereunder will be deemed to have been given when received by you.

First Central Bank

Michael L Terry

APPENDIX E

SITE PROTECTION INSTRUMENT

2011R01513 9
Doc #: 2011R01513
STACY R. DRISCOLL/REGISTER OF DEEDS
LEAVENWORTH COUNTY
RECORDED ON
02/25/2011 02:57PM
RECORDING FEE: 40.00
INDEBTEDNESS: 0.00
PAGES: 9

1.	Title of Document:	Conservation Easement
2.	Date of Document:	February 14, 2011
3.	Grantor:	Swallow Tail, L.L.C. 24820 Miller Road Harrisonville, MO 64701
4.	Grantees:	Midwest Mitigation Oversight Association, Inc., a Missouri non-profit corporation and its successors in interest
5.	Statutory Mailing Address:	Mr. James Drake c/o Midwest Mitigation Oversight Association 21301 Shelby Lane Belton, MO 64012
6.	Property Descriptions:	See Exhibit "A",page 7; and Exhibit "B",page 8
7.	Reference Books and Pages:	None

CONSERVATION EASEMENT

THIS DEED OF CONSERVATION EASEMENT is given this 24th day of February, 2011, by Swallow Tail LLC, a Missouri Limited Liability Company, their successors and assigns, having an address of 24820 Miller Road Harrisonville Missouri 64701 ("Grantor") to Midwest Mitigation Oversight Association, Inc., a Missouri non-profit corporation, its successors and assigns, having an address of 21301 Shelby Lane Belton, MO 64012 ("Grantee"). As used herein, the term "Grantor" shall include any and all heirs, successors, or assigns of the Grantor, and all subsequent owners of the Property (as hereinafter defined), and the term "Grantee" shall include any successor or assignee of Grantee.

WITNESSETH:

WHEREAS, Grantor is the sole owner in fee simple title of certain lands situate in Leavenworth County, KANSAS, more particularly described in Exhibit A, attached hereto and incorporated herein ("Property"), and

WHEREAS, Department Permit No. 2008-1302 and 2006-1003, of the U.S. Army Corps of Engineers ("Corps") (hereinafter referred to as the "Permit") authorizes certain activities which affect waters of the United States; and

WHEREAS, the permits require that Grantor preserve, enhance, restore, or mitigate wetlands or uplands located on the Property and under the jurisdiction of the Corps; and

WHEREAS, Grantor, in consideration of the issuance of the permits to construct and operate the permitted activity, and as an inducement to Grantee and the Corps to issue the Permits, is willing to grant a perpetual Conservation Easement over the Property; and

NOW THEREFORE, in consideration of the above and mutual covenants, terms conditions, and restrictions contained herein, together with other good and valuable consideration, the adequacy and receipt of which is hereby acknowledged, Grantor hereby voluntarily grants and conveys a perpetual Conservation Easement for and in favor of Grantee upon the property, which shall run with the land and be binding upon the Grantor, and shall remain in full force and effect forever.

The scope, nature, and character of this Conservation Easement shall be as follows:

1. **Purpose:** The purpose of this Conservation Easement is to retain and maintain land or water areas on the Property in their natural, vegetative, hydrologic, scenic, open, agricultural, or wooded condition and to retain such areas as suitable habitat for fish, plants, or wildlife. Those wetland or upland areas that are to be restored, enhanced, or created pursuant to the Permit shall be retained and maintained in the restored, enhanced, or created condition required by the Permit.

2. **Rights of Grantee:** The following rights are conveyed to Grantee and the Corps by this easement:

a. The right to take action to preserve and protect the environmental value of the Property; and

b. The right to prevent any activity on or use of the Property that is inconsistent with the purpose of this Conservation Easement, and to require the restoration of areas or features of the Property that may be damaged by any inconsistent activity or use;

c. The right to enter upon and inspect the Property in a reasonable manner and at reasonable times to determine if Grantor is complying with the covenants and prohibitions contained in this Conservation Easement; and

d. The right to proceed at law or in equity to enforce the provisions of this Conservation Easement, and to prevent the occurrence of any of the prohibited activities hereinafter set forth.

3. **Prohibited Uses:** Except for restoration, creation, enhancement, maintenance, and monitoring activities, or surface water management improvements, which are permitted or required by the Permit, the following activities are prohibited on the Property:

a. Construction or placing of buildings, roads, signs, billboards or other advertising, utilities, or other structures on or above the ground, or the construction or placing of structures below the ground that may impact the surface of the Property;

b. Dumping or placing of soil or other substance or material as landfill, or dumping or placing of trash, waste, or unsightly or offensive materials;

c. Removal or destruction of trees, shrubs, or other vegetation, except as may be permitted by the Permit, and except for the removal of nuisance, exotic, or non-native vegetation in accordance with a maintenance plan approved by Grantee;

d. Planting of nuisance, exotic, or non-native plants as listed by the State of KANSAS;

e. Exploration for, or extraction of, oil or gas in such a manner as to affect the surface, or excavation, dredging, or removal of coal, loam, peat, gravel, soil, rock, or other material substance, except as may be permitted or required by the Permit;

f. Use of motorized and non-motorized vehicles, the keeping or riding of horses, grazing, livestock confinement, or other surface use that may affect the natural condition of the Property, except for vehicle use for purposes of maintenance and upkeep, or as otherwise may be permitted or required by the Permit;

g. Tilling, plowing, planting of crops, digging, mining, or other activities that are or may be detrimental to drainage, flood control, water conservation, water quality, erosion

control, soil conservation, or fish and wildlife habitat preservation, including but not limited to ditching, diking, and fencing, except as permitted or required by the Permit;

h. The extraction of water from the Property or adjacent properties owned by Grantor, or the impoundment of water on the Property or on adjacent properties owned by Grantor, so as to affect the hydrology of the Property;

i. Acts or uses detrimental to the aforementioned retention and maintenance of land or water areas;

j. Acts or uses detrimental to the preservation of the structural integrity or physical appearance of sites or properties of historical, architectural, archaeological, or cultural significance.

4. **Reserved Rights:** Grantor reserves all rights as owner of the Property, including the right to engage in uses of the Property that are not prohibited herein and that are not inconsistent with any Corps rule, criteria, permit, or the intent and purposes of this Conservation Easement.

5. **Taxes:** Grantor shall pay any and all applicable real property taxes and assessments levied by competent taxing authority on the Property.

6. **Maintenance:** Grantor shall, at Grantor's sole expense, operate, maintain and keep up the Property consistent with the purpose of this Conservation Easement. Grantor shall remove from the Property any nuisance, exotic, or non-native plants as listed by the State of KANSAS and shall maintain the hydrology of the Property as it currently exists or as otherwise required by the Permit.

7. **Hazardous Waste:** Grantor covenants that if any hazardous substances or toxic waste exist or has been generated, treated, stored, used, disposed of, or deposited in or on the Property, or there are or have been any underground storage tanks on the Property, Grantor shall be responsible for any and all necessary costs of remediation.

8. **Public Access:** No right of access by the general public to any portion of the Property is conveyed by this Conservation Easement, and Grantor further covenants not to hold any portion of the Property open to general use by the public except with the written permission of the Corps and Grantee.

9. **Liability:** Grantor shall continue to retain all liability for any injury or damage to the person or property of third parties that may occur on the Property arising from ownership of the Property. Neither Grantor, nor any person claiming by or through Grantor, shall hold Grantee or the Corps liable for any damage or injury that may occur on the Property.

10. **Recording Requirements:** Grantor shall record this Conservation Easement in the official records of Leavenworth County, KANSAS, and shall re-record it at any time Grantee or the Corps may require to preserve their rights. Grantor shall pay all recording costs, fees and taxes necessary at any time to record this Conservation Easement in the public records. Grantor

shall thereafter insert the terms and restrictions of this Conservation Easement in any subsequent deed or other legal instrument by which Grantor divests himself/herself/itself of any interest in the Property, and shall provide a photocopy of the recorded Conservation Easement to the new owner(s).

11. **Enforcement:** The terms and conditions of this Conservation Easement may be enforced in an action at law or equity by the Grantee or the Corps against the Grantor or any other party violating or attempting to violate these Restrictions. Venue for any such action shall be in Leavenworth County, KANSAS. Enforcement of this Conservation Easement shall be at the reasonable discretion of the Grantee or the Corps, and any forbearance on behalf of Grantee or the Corps to exercise its or their rights hereunder in the event of any breach by Grantor shall not be deemed or construed to be a waiver of rights. Any costs incurred in enforcing, judicially or otherwise, the terms, provisions, and restrictions of this Conservation Easement, including without limitation, the costs of suit, and attorney's fees, shall be borne by and recoverable against the non-prevailing party in such proceedings, except that such costs shall not be recoverable against the Corps. In addition, if the Grantee or the Corps shall prevail in an enforcement action, such party shall also be entitled to recover that party's cost of restoring the land to the natural vegetative and hydrologic condition existing at the time of execution of these Restrictions or to the vegetative and hydrologic condition required by the Permits.

12. **Assignment of Rights:** Grantee shall hold this Conservation Easement exclusively for conservation purposes. Grantee will not assign its rights and obligations under this Conservation Easement, except to another legal entity qualified to hold such interests under applicable state and federal laws and committed to holding this Conservation Easement exclusively for the purposes stated herein. Grantee shall notify the Corps in writing of any intention to reassign this Conservation Easement to a new grantee at least sixty (60) days in advance thereof, and the Corps must accept the assignment in writing. The new grantee shall then deliver a written acceptance to the Corps. The assignment instrument must then be recorded and indexed in the same manner as any other instrument affecting title to real property and a copy of the assignment instrument shall be furnished to the Corps. Failure to comply with the assignment procedure herein stated shall result in invalidity of the assignment. In the event of dissolution of the Grantee or any successor, or failure for 60 days or more to execute the obligations of this Conservation Easement, the Grantee shall transfer this Conservation Easement to a qualified and willing grantee. Upon failure of the Grantee or any successor to so transfer the Conservation Easement, the Corps shall have the right to sue to force such an assignment to a grantee to be identified by the Court.

13. **Successors:** The covenants, terms, conditions, and restrictions of this Conservation Easement shall be binding upon, and inure to the benefit of the parties hereto and their respective personal representatives, heirs, successors, and assigns, and shall continue as a servitude running in perpetuity with the Property.

14. **Notices:** All notices, consents, approvals, or other communications hereunder shall be in writing and shall be deemed properly given if sent by United States certified mail, return receipt requested, addressed to the appropriate party or successor-in-interest.

APPENDIX F

QUALIFICATIONS OF SPONSOR'S TECHNICAL CONSULTANT

INTRODUCTION

Terra Technologies Inc. is an innovative consulting firm with a focus on Clean Water Act Section 404 and 401 permitting and compensatory mitigation as well as biotechnical and environmental engineering. This focus requires an extensive amount of horticultural and biological expertise that also has application in a broad range of areas including large and small scale wetland and stream system development, wildlife habitat enhancement projects, ecologically-sensitive stream stabilization design and environmental remediation. The scientists and engineers at Terra Technologies provide a wide array of services including Clean Water Act 404/401/402 permit applications, compensatory mitigation design, rare and endangered species audits, environmental investigations, development of erosion and sediment control plans, and rain garden/natural stream channel design.

Terra Technologies has successfully completed numerous biotechnical design projects across the Midwest. No less than 40 mitigation, constructed wetland, and stream bank stabilization projects are currently in construction or design in the greater St. Louis, Columbia, and Kansas City areas. Our scientists will also perform 100+ wetland delineations, covering approximately 15,000 development acres annually.

Terra Technologies combines the skills and experience of licensed professional engineers with the fields of wetland ecology, horticulture, soil bioengineering, stream geomorphology, agrohistology, botany, wildlife biology and agronomy. This unique combination allows for the consideration and implementation of a broad range of solutions for Clean Water Act permitting, compensatory mitigation and storm water problems in both urban and rural areas. With a professional staff of experienced scientists and engineers, our clients have the advantage of diversified resources and the expertise of the entire firm.

Terra Technologies has been involved with numerous compensatory mitigation projects, including several large wetland and stream mitigation banks. Our design approach considers the existing site topography, hydrology, soils, and vegetation and then increases the amount of surface hydrology

through the manipulation of water inputs and the creation of extensive and varied microtopography. This microtopography creates a variety of hydrologic gradients within the onsite soils which leads to a diversity of microhabitats that support a wide diversity of plant life. All compensatory projects are seeded and planted with a large number of appropriate native herbaceous and woody species.

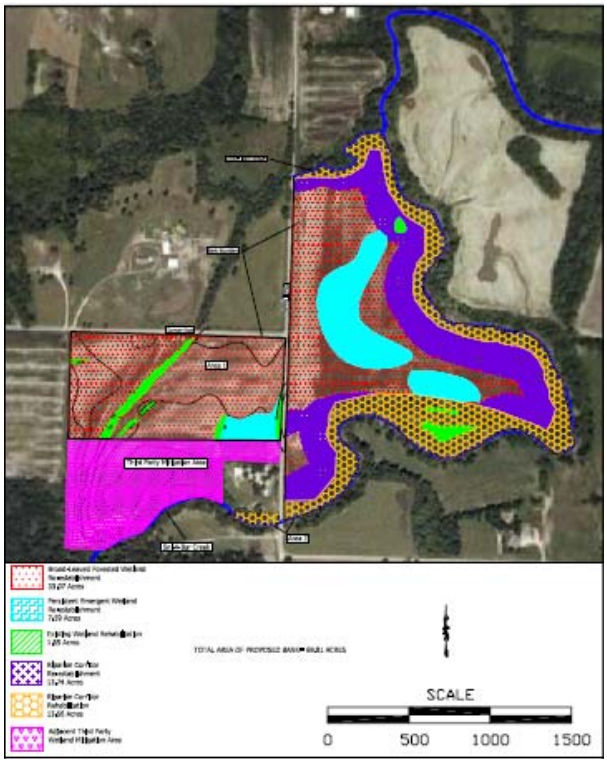
Our firm also has extensive expertise with stream stabilization and restoration projects. Terra Technologies can specify and implement a variety of materials and techniques including erosion control blankets, turf reinforcing matrices, wire reinforced turf reinforcing matrices, geocellular confinement, biogabions, preplanted coir fiber logs, landscaped open-face modular wall systems, articulated concrete block systems, pool and riffle systems, bonded fiber matrices, and others. Terra Technologies constantly looks at new applications for existing products that can be used for biotechnical solutions. When appropriate, pure vegetative stabilization approaches can also be effective. In all of our compensatory mitigation approaches Terra Technologies strives to provide long term solutions that work with, rather than against, natural environmental processes.

The key to any compensatory mitigation project is the long-term establishment of appropriate site hydrology as well as self-sustaining and low maintenance vegetation that is indigenous to the area. If the vegetation fails to establish, the long-term success of the project is in serious question. Pioneering vegetation often invades the initial establishment phase but is usually considered undesirable over the long term. Many of the initial plant materials mature and die within the first few growing seasons or dominate the environment such that more desirable plant materials cannot become established. A mature restoration project should contain

a balanced mix of desirable riparian vegetation and grasses that do not require extensive maintenance to preserve the balance and control undesirable vegetation. Therefore, a complete understanding of the succession of plant communities is necessary to assure the long-term success of the project. Terra Technologies brings the necessary knowledge of agrohistology, horticulture, soil bioengineering, and botany to the project to assure long-term success.

Terra Technologies is comprised of highly qualified professionals with extensive experience and a range of engineering and scientific disciplines. We are recognized by our clients for providing value-added environmental engineering alternatives while responding rapidly to clients' needs. In total, more than 600 mitigation projects have been completed since the Company was founded in 1992.

Sni-A-Bar Creek Wetland & Stream Mitigation Bank
Jackson County, Missouri



Terra Technologies has designed and will oversee construction and management of a 70 acre Wetland and Stream Bank near Grain Valley, Missouri.

This will be the first wetland or stream mitigation bank to be available for the Missouri side of the Kansas City metro area. This project will transform floodplain agricultural land that has been plated with row crops for several decades into a functioning wetland mitigation site and riparian buffer.

The design of the site took advantage of its location adjacent to a perennial stream for the restoration of a significant riparian buffer, as well as the enhancement of the existing buffer to thin undesirable trees and to re-establish a large amount of herbaceous diversity to the corridor. These activities will provide a large quantity of stream credits to sell to third parties.

Areas further from the stream have soils that are more conducive for wetland development. Large amounts of microtopography will work in tandem with the poorly drained soils to capture sufficient surface water to develop wetland conditions. Additionally, the excavation will enhance the hydrology of the site by bringing the soil surface closer to the shallow ground water table.

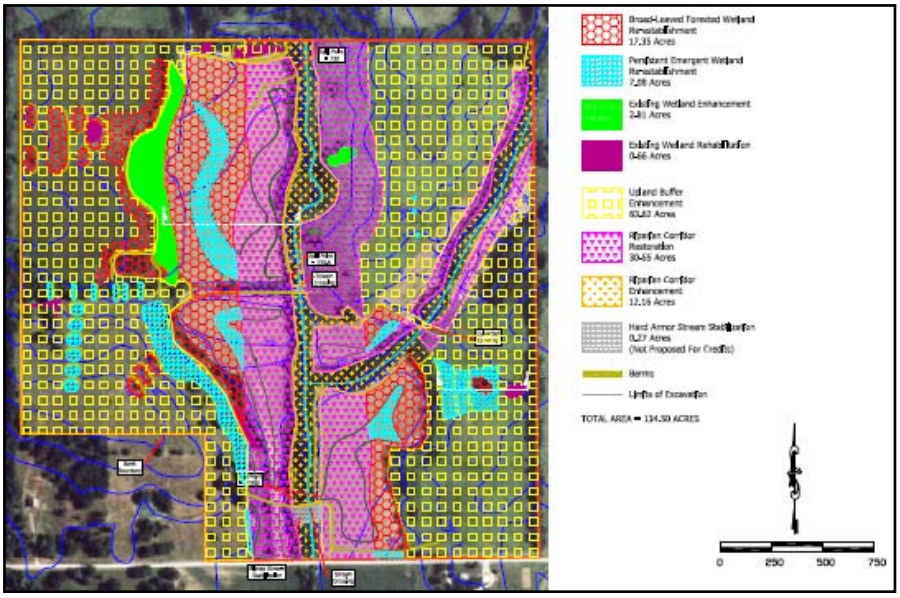
Most of the site will be planted as a forested wetland, which is appropriate based on the landscape position of the site within the floodplain of a large river. Within the forested areas, large spaces will be excavated to a greater depth to create shallow marsh areas, which will provide an additional amount of habitat diversity and will enhance habitat for migrating waterfowl, which already use a shallow swale on the site as resting ground.

The proposed service area of this bank will include virtually all of Jackson, Ray, Lafayette, Saline and Pettis counties as well as parts of Clay, Cass, Johnson, Benton, Morgan, Moniteau, Cooper, Chariton, Carroll, Clinton and Caldwell counties.

Earthwork, seeding, and planting are complete on approximately half of the property. The remaining work is expected to be completed by the end of 2007.

North Grand River Wetland & Stream Mitigation Bank
Carroll County, Missouri

Terra Technologies has designed the restoration of a 137-acre farm property to a Wetland and Stream Mitigation Bank and began construction on the property in the summer of 2007. This site is located in rural Carroll County, where the wetlands created should help to improve water quality by removing agricultural pollutants. Additionally, a significant amount of wildlife habitat will be created or enhanced as a result of this project.



Encompassing nearly a quarter section, this site has rolling upland pastures which will be restored to prairie fields as well as low-lying floodplain areas planted in row crops. These areas surround a perennial stream and an intermittent tributary.

Terra Technologies plans to back up water across much of the floodplain areas by installing a water control structure in the main stream channel and by controlling the points where the resulting floodwaters would enter and exit the adjacent fields. The fields have been excavated to create a patchwork of microtopography as well as deeper marsh swales. Most of the areas with microtopography have been planted with more than 30 species of appropriate native woody species characteristic of floodplain wetland forests as well as a diverse mixture of wetland grasses and forbs. The marsh swales follow the natural contours of the land, including aspects of the original pre-channelization stream alignment. These areas have been planted with a mixture of shrub swamp and emergent herbaceous wetland species to create habitat diversity. Existing drainages along the hill slopes were enhanced through excavation and plantings to create numerous small hillside wetlands that receive drainage from the uplands as well as from subsurface water flows.

Construction will be completed in 2008. Terra Technologies will manage and monitor the property as well as market and sell the resulting wetland and stream credits.

Osage Plains Wetland & Stream Mitigation Bank
Cass County, Missouri

Terra Technologies designed and is performing construction oversight, marketing, and monitoring of a Wetland and Stream Mitigation Bank located south of Kansas City in Cass County, Missouri. The proposed bank service area will include virtually all of Cass, Henry, and Bates counties as well as parts of Jackson, Johnson, Benton, St. Clair, Cedar, Barton, and Vernon counties.

Terra Technologies recognized that the site, which had been in row crop production for decades, had a significant amount of local topographic variability and a favorable position in the landscape for wetland development. This topographic variability was enhanced to facilitate the creation of wetland hydrology and hydric soil development.

The enhancement of the site's intricate topography led to a wide variety of microhabitats along a hydrologic gradient, which allowed for the establishment of a high amount of botanical diversity. Terra Technologies has planted appropriate native plant species to match the unique topography, soil, and hydrologic conditions of the site. The forested areas support more than 30 woody species including pin oak, shellbark hickory, and swamp white oak, the scrub-shrub communities include no less than 12 woody species including buttonbush, silky dogwood, shrub indigo, and elderberry, and the herbaceous communities included no less than 50 species including a diverse sedge mix, bulrushes, and numerous attractive wildflowers such as iris and bur marigold.

This project has provided numerous water quality benefits including, but not limited to: flood control, reconnection of a perennial river with its floodplain, and the removal agricultural pollutants from runoff (71% of Cass County is cultivated or cultural grasslands; 1% is marsh/wet herbaceous vegetation; Downstream is Section 303(d) listed Lake of the Ozarks). In addition, numerous wildlife benefits have been established including amphibian breeding sites, a water source for birds & mammals, a wildlife corridor along river (no fences) and establishment of small mammal habitat.

ACTIONS

- Intercept & disperse existing hydrology
- Removed 6-12" of topsoil in some areas to lower elevations
- Graded to desired contours
- Created significant microtopography
- Installed surge pipe to capture flow from East Branch of South Grand River
- Planted and hydroseeded

RESULTS

- Restored: 18.43 acres of wetlands
  Forested wetland (6.06 acres)
  Scrub - Shrub wetland (6.84 acres)
  Herbaceous wetland (5.53 acres)
- Enhanced Existing Floodplain Forest (2.12 acres)
- Restored Prairie (0.82 acres)
- Enhanced Existing Forested & Herbaceous Wetlands (1.14 acres)
- Reforested 17.98 acres along more than 3,000 feet of stream bank along one side (stream credits)

Smith Creek Wetland & Stream Mitigation Bank
Moniteau County, Missouri

Terra Technologies is designing the first Wetland and Stream Mitigation Bank in mid-Missouri. This 172-acre restoration site will restore and enhance a 300 foot buffer to more than 3,300 linear feet of a perennial stream as well as restore and enhance native prairie and woodland habitats to areas that are currently in pasture or have been unmanaged.

Most importantly, Terra Technologies will convert a large area currently in agricultural production to forested and herbaceous wetlands. This will be accomplished through the diversion of existing sheet flow, the removal of agricultural berms, the creation of microtopography, and the construction of large and small berms across the site. The position of this site low in the landscape as well as the predominance of poorly drained soils make the likelihood of success very high.

Terra Technologies' dedication to botanical diversity will result in the planting of more than 30 species of trees and shrubs across the site as well as more than 100 species of herbaceous plants across a variety of habitat types. The combination of forested wetland, herbaceous wetland, prairie, dry woodland, and riparian corridor will provide significant improvements to local wildlife habitat. Additionally, the creation of such a large amount of wetlands will provide a significant impact to water quality as local agricultural runoff will filter through the onsite wetlands.

Terra Technologies will oversee the construction of the mitigation bank as well as perform monitoring, navigate the regulatory requirements, and sell the wetland and stream credits.

Construction is expected to begin in 2008.

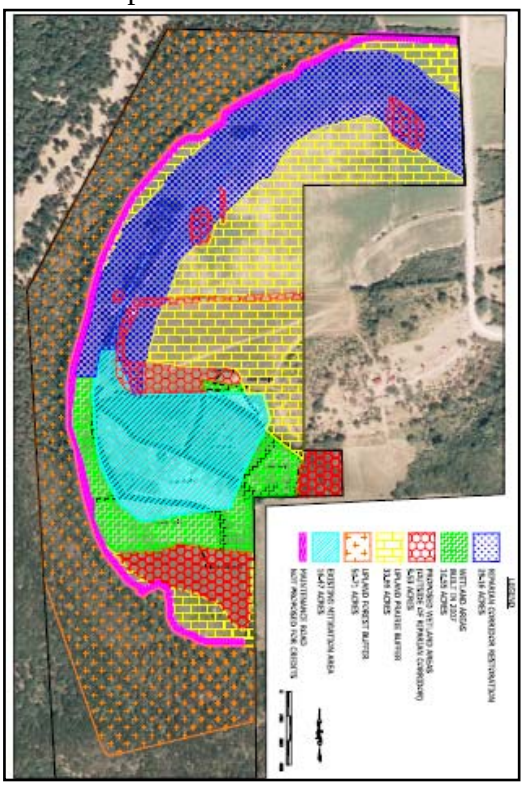
Gasconade River Wetland & Stream Mitigation Bank
Gasconade County, Missouri

Terra Technologies has designed and started construction on a Wetland and Stream Mitigation Bank in Gasconade County, Missouri. This unique site surrounds a low-lying area bordering a shallow intermittent swale.

Historically, this site has been in agricultural production for many years. Additionally, the low-lying area was likely logged for green ash lumber.

Terra Technologies recognized the potential of this site as the site topography and the shallow swale presented the opportunity of spreading the water carried by the swale across a wide area through the proper placement of berms and through the excavation of the surrounding areas. Additionally, excavation and microtopography capture runoff from the surrounding Ozark hills.

When completed, this site will contain approximately 29 acres of stream buffer and 11 acres of wetlands surrounded by upland prairie and forest buffers. The herbaceous layer in parts of the proposed restoration areas had a high level of diversity, but the tree layer contained only a handful of species. Additional herbaceous species have been planted and numerous tree and shrub species have been introduced to the site to drastically enhance the woody diversity. In addition, some areas in fallow fields surrounding the low-lying area have been excavated and planted with the same diverse mixture of appropriate native wetland species.



Terra Technologies will oversee the construction of the site, monitor the progress of the restoration, and sell the resulting wetland and stream credits.

Construction is expected to be completed by the end of 2008.

APPENDIX G

KANSAS STATE HISTORIC PRESERVATION OFFICE CORRESPONDENCE

KANSAS

KSR&C No. 08-07-196

Kansas State Historical Society
Jennie Chinn, *Executive Director*

KATHLEEN SEBELIUS, GOVERNOR

July 30, 2008

David Flick
Swallow Tail LLC
4707 West 135th Street, Suite 280
Leawood, Kansas 66224

RE: Phase II Survey Report
Linwood Wetland Project
Leavenworth County

Dear Mr. Flick:

In accordance with 36 CFR 800, the Kansas State Historic Preservation Office has reviewed a report entitled *Cultural Resource Investigations: Phase II Survey, Linwood Wetland Project, Leavenworth County, Kansas,* prepared by the Environmental Research Center of Missouri, Inc., Craig Sturdevant, Principal Investigator. We find the report to be acceptable and concur with its conclusion that the proposed project will have no effect on historic properties as defined in 36 CFR 800. This office has no objection to implementation of the wetland project.

Any changes to the project, which include additional ground disturbing activities, will need to be reviewed by this office prior to beginning construction. If construction work uncovers buried archeological materials, work should cease in the area of the discovery and this office should be notified immediately.

This information is provided at your request to assist you in identifying historic properties, as specified in 36 CFR 800 for Section 106 consultation procedures. If you have questions or need additional information regarding these comments, please contact Tim Weston at 785-272-8681 (ext. 214) or Kim Norton at 785-272-8681 ext. 225. Please refer to the Kansas Review & Compliance number (KSR&C#) above on all future correspondence relating to this project.

Sincerely,

Jennie Chinn
Executive Director and
State Historic Preservation Officer

Timothy Weston for

Patrick Zollner
Deputy State Historic Preservation Officer

6425 SW Sixth Avenue • Topeka, KS 66615-1099
Phone 785-272-8681 Ext. 205 • Fax 785-272-8682 • Email jchinn@kshs.org • TTY 785-272-8683
www.kshs.org