

# Upper Black River Wetland Mitigation Site Butler County, MO



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## Contents

List of Figures .....	3
List of Tables .....	3
Introduction.....	4
Watershed Approach to Mitigation Site Selection.....	8
Mitigation Site Goals and Objectives .....	8
Site Selection .....	9
Site Protection Instrument.....	9
Baseline Information.....	9
Overview.....	9
Aquatic Resources .....	9
Photos.....	10
Determination of Credits.....	13
Wetland Credits .....	13
Mitigation Work Plan .....	14
Restoring Wetland Hydrology .....	14
Restoring Wetland Vegetation.....	15
Maintenance Plan.....	18
Ecological Performance Standards .....	18
Monitoring Plan .....	18
Long-Term Management and Maintenance.....	19
Adaptive Management plan .....	20
Financial Assurances .....	20
Other Provisions.....	21
References.....	21
Exhibits .....	21

## List of Figures

<b>Figure 1</b>	Upper Black River Wetland Mitigation Site Vicinity	Page 6
<b>Figure 2</b>	Upper Black River Wetland Mitigation Site Location and Surrounding Land Use	Page 7
<b>Figure 3</b>	Upper Black River Wetland Mitigation Site Overview	Page 15
<b>Figure 4</b>	Detail Map of Wetland Topography and Construction Areas	Page 16

## List of Tables

<b>Table 1</b>	Wetland Credit Factors for Upper Black River Mitigation Site	Page 14
<b>Table 2</b>	Emergent Wetland Seed Mix	Page 17
<b>Table 3</b>	Forested Wetland Seed Mix	Page 17
<b>Table 4</b>	Forested Wetland Tree and Shrub List	Page 17
<b>Table 5</b>	Wetland Performance Standards	Page 18
<b>Table 6</b>	Financial Assurance Amounts	Page 21

## Introduction

The main objective of the mitigation project is to restore and preserve functional wetland habitats within the Black River watershed. These activities will provide enhanced water quality and wildlife habitat in the region. The proposed mitigation project would restore approximately 25.7 acres of forested and emergent wetlands. This project will benefit habitat types that have historically been a part of the Black River watershed but have been historically removed and impaired to accommodate expanded agricultural practices and urbanization. The Black River watershed has undergone significant land use changes, primarily drainage of wetlands that corresponds to an increase in agricultural land. As a result of land use changes, stormwater runoff and nutrient pollution have drastically increased and remaining aquatic habitats are extremely impaired. The restoration and protection of wetland habitats, such as the ones proposed, will help slow runoff and prevent further input of sediment and nutrients into the Black River. This mitigation project represents a welcomed opportunity to protect a significant area of a highly altered watershed.

Mitico, LLC (the Plan Sponsor, or “Sponsor”) has developed a Mitigation Plan (Plan) for the Missouri Highways and Transportation Commission to provide mitigation for impacts associated with U.S. Army Corps of Engineers (USACE or Corps) project number SWL-2021-00025. The Compensatory Mitigation Plan Requirements (33 CFR, Part 332 and 40 CFR 230) detail the requirements for Permittee Responsible mitigation sites and how to initiate the planning and review process of the appropriate agencies. The Sponsor has acquired a suitable site for the development of a wetland mitigation project, under contract with the Commission, that will produce the necessary wetland mitigation credits to offset the impacts of Corps project number SWL-2021-00025.

This mitigation site consists of aquatic resource(s) that are restored and preserved expressly for the purpose of providing compensatory mitigation for authorized impacts. The purpose of the mitigation plan is to establish guidelines and responsibilities for the maintenance and protection of the restored wetland habitats. The restored and preserved habitats will be used to provide compensatory mitigation for the authorized impact to waters of the United States. The mitigation plan may be amended in accordance with the procedures used to establish the plan and subject to agreement by the signatories.

The establishment, maintenance, and protection of special aquatic sites of the mitigation area is carried out in accordance with the following authorities:

1. Federal:
  - a. The Clean Water Act (33 U.S.C. 1344)
  - b. Compensatory Mitigation for Losses of Aquatic Resources (FR, Vol. 73, No. 70, Pages 19594-19705, April 10, 2008)
  - c. Rivers and Harbors Act of 1899, Section 10 (33 U.S.C. 403 *et. seq.*)
  - d. Environmental Protection Agency, Section 404 (b)(1) Guidelines (40 CFR Part 230). Guidelines for Specification of Disposal Sites for Dredged or Fill Material.
  - e. Department of the Army, Section 404 Permits Regulations (33CFR Parts 320-332). Policies for evaluating permit applications to discharge dredged or fill material.
  - f. Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army concerning the Determination of Mitigation under the Clean Water Act, Section 404 (b)(1) Guidelines (February 6, 1990).
  - g. Title XII Food Security Act of 1985 as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (16 U.S.C. 3801 *et. seq.*)
  - h. National Environmental Policy Act (42 U.S.C. 4321 *et. seq.*), including the Council on Environmental Quality’s implementing regulations (40 CFR Parts 1500-1508).
  - i. Fish and Wildlife Coordination Act (16 U.S.C. 661 *et. seq.*)

- j. Fish and Wildlife Service Mitigation Policy (46 FR pages 7644-7663, 1981).
- k. National Historic Preservation Act, Section 106 (16 U.S.C. 470).

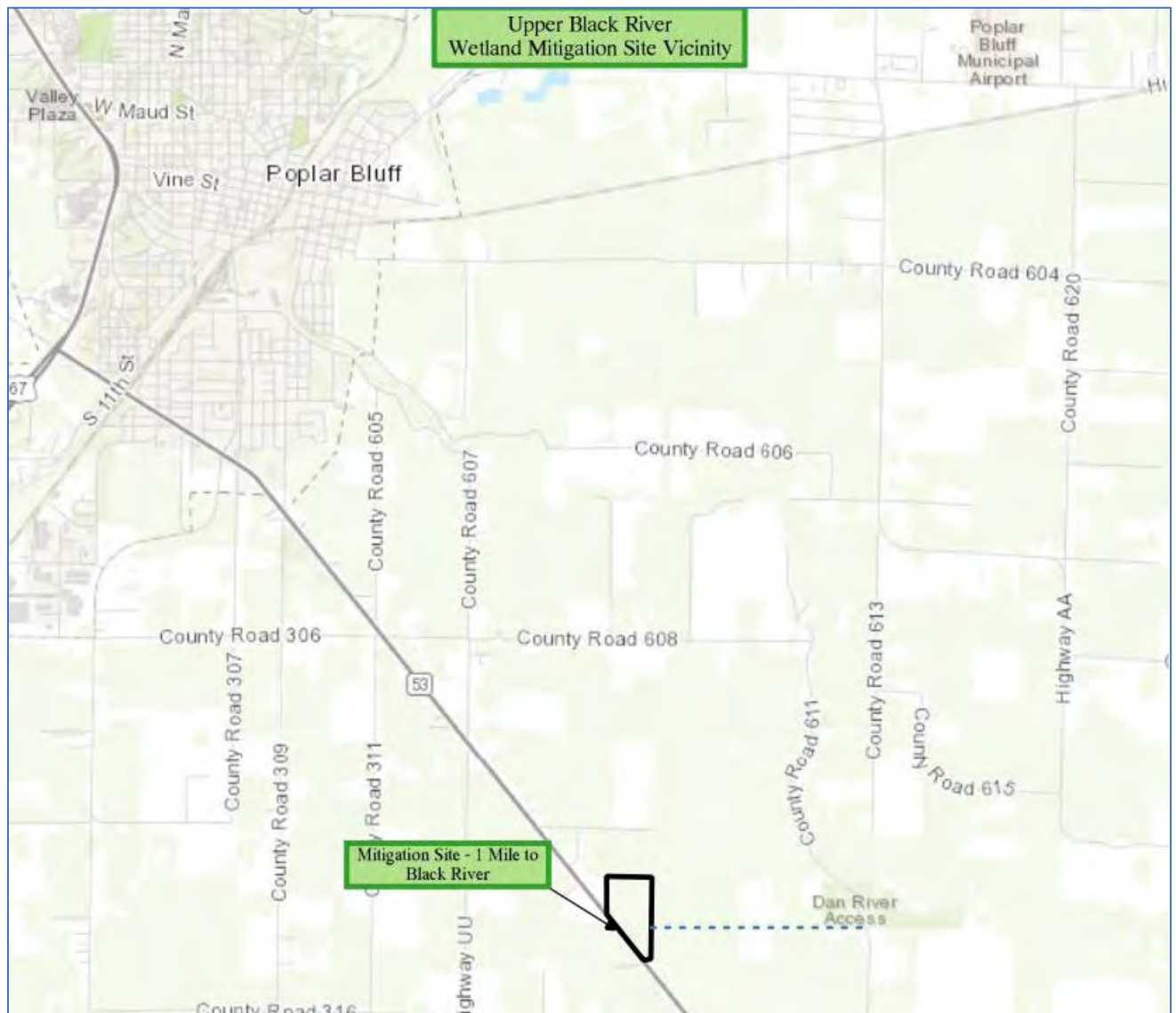
2. State:

- a. Missouri State Water Quality Certification (10 CSR 20-6.060.).
- b. Missouri State Water Quality Standards (10 CSR 20-7.031.).
- c. State of Missouri Wetland Mitigation Method
- d. State of Missouri Aquatic Resources Mitigation Guidelines
- e. Missouri Clean Water Law

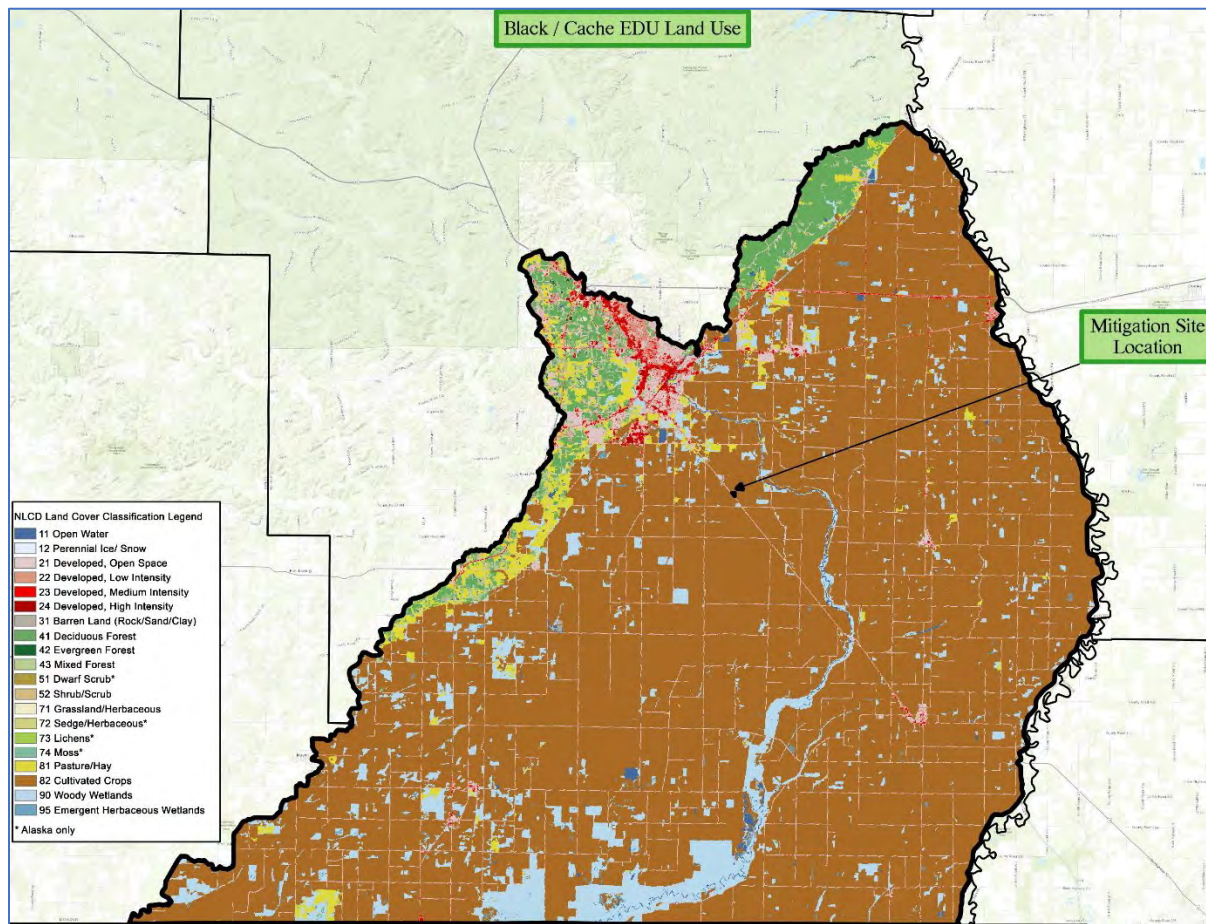
The main objective of the proposed mitigation site is to restore and protect forested and emergent wetlands with suitable hydrology a desirable plant community in accordance with conditions specified in Section 10, under the ecological performance standards, to facilitate enhanced water quality and wildlife habitat in the Black River watershed. The mitigation site will restore and protect 8.3 acres of forested wetlands and 17.4 acres of emergent wetlands. The protection of these wetland habitats will create wildlife habitat and reduce sediment and nutrient loads entering the Black River watershed. Widespread land use changes have resulted in loss of nearly all of the historic wetlands in the Black River watershed. As a result, runoff, sedimentation, flooding, and nutrient pollution are chronic problems throughout the watershed. Wetland restoration and protection, as proposed, will help slow and filter runoff and reduce nutrient pollution in an area where these issues are widespread.



**Figure 1.** Upper Black River Wetland Mitigation Site Vicinity



**Figure 2.** Upper Black River Wetland Mitigation Site Location and Surrounding Land Use



## Watershed Approach to Mitigation Site Selection

The proposed mitigation site is located along an unnamed perennial tributary to the Black River near Poplar Bluff in Butler County, Missouri. The unnamed perennial tributary is a 2<sup>nd</sup> order stream at the proposed mitigation site. The site lies in the floodplain of the Black River, which is a 6<sup>th</sup> order perennial stream where it flows approximately one mile to the east of the proposed site.

The Black River watershed covers 1.1 million acres in Southwest Missouri and Northwest Arkansas. This includes portions of Reynolds, Wayne, Butler, and Iron Counties in Missouri. There are more than 298,500 acres of public land in the Missouri portion of the Black River Watershed, majority owned by the U.S. Forest Service, followed by the Missouri Department of Conservation and the U.S. Army Corps of Engineers. The watershed is separated into two subbasins, the upper subbasin and lower subbasin, due to differences in land use, geology, hydrology, and habitat.

The proposed mitigation site is located in the lower subbasin, within the Mississippi Alluvial Plain. Historically, the entire alluvial plain region was inundated by the Mississippi River, and most of the land in the Black River watershed was forested wetland. The conversion of these swamplands to agriculture began as early as the late 1860s, so it is difficult to quantify the severity of wetland loss in the watershed. The 1867 Illustrated Gazetteer of Missouri describes the portion of Butler County where the proposed project lies as being a swamp that was inundated by the Mississippi River. Portions of Butler County further downstream along the Black River are described as a lake. Today, wetlands are absent from most of the watershed, and many streams have been channelized to do ditches and lack many of their historical ecological functions.

Water quality in the Black River watershed is generally fair, but several streams in the lower subbasin are impaired. Six waterbodies are listed as 303(d) impaired for various reasons, including heavy metal contamination, high water temperature, and low dissolved oxygen.

Despite highly altered aquatic systems, the lower subbasin of the Black River watershed is home to several state endangered fish: the Cypress Minnow, Taillight Shiner, Sabine Shiner, Mountain Madtom, Crystal Darter, Swamp Darter, Harlequin Darter, and Longnose Darter. These species depend on slow moving lowland streams and wetlands for their life cycle, and many such habitats have been lost in the watershed.

## Mitigation Site Goals and Objectives

The objectives of the Upper Black River Wetland Mitigation Site are to restore aquatic habitats that have been historically depleted in the Black River Watershed, including forested and emergent wetlands. Each of these habitat types has been depleted over time to accommodate expanded agricultural development, and the proposed site is located in a strategic position to meet the needs of the watershed. The proposed mitigation site will restore and protect 8.3 acres of forested wetlands and 17.4 acres of emergent wetlands, generating 121.7 wetland credits. These restored habitats will reduce nutrient pollution and runoff into the Black River Watershed while supporting a diverse community of native plants. Wetland habitats will support native wildlife including species of conservation concern found in the watershed, and the restored wetland hydrology will help reduce the impact of future flood events on areas downstream along the unnamed perennial tributary and the Black River. The proposed site is proximate to other restored and protected lands and contains soil types and current uses that are compatible with restoration.



## Site Selection

The proposed mitigation site was chosen based on characteristics that will meet the needs of the Black River Watershed. The watershed is impaired due to historic wetland loss and stream channelization, including widespread loss of forested habitats. This has led to increased nutrient pollution and other impairments related to agricultural runoff. This site will address multiple functions of the watershed by restoring emergent and forested wetland habitats. Its location is proximate to other restored and protected lands and high enough in the watershed to benefit a lengthy stretch downstream of the site.

The proposed wetland areas are highly suitable for wetland restoration with hydric soils and evidence of wetland vegetation. However, the site is currently drained and is not functioning as a wetland. The site is graded to drain eastward to the unnamed perennial tributary, which forms the eastern border of the site. There is a drainage feature exhibiting some erosion where runoff from the field enters the tributary. A water control berm will be placed across this drainage feature to prevent water from draining to the unnamed perennial tributary and across the southern boundary of the proposed mitigation area to prevent water from draining southward.

The surrounding land use is almost entirely agriculture. Missouri Highway 53 borders the site to the west. The site is well positioned to capture and filter agricultural runoff, and the restored wetlands will provide additional habitat to wetland species in the area. This region of Missouri is a major flyway for waterfowl and other migratory birds, including many species of conservation concern, that could benefit from the restored wetlands on the proposed mitigation site.

## Site Protection Instrument

The areas that will be restored and preserved will be placed under deed restriction in perpetuity.

A USACE approved Deed Restriction for mitigation sites will be filed and recorded with the Butler County Recorder of Deeds to ensure that the mitigation site is protected in perpetuity. A copy of the language that shall be used to deed restrict the mitigation site is included as Exhibit C.

## Baseline Information

### Overview

The proposed mitigation site is a 25.7 acre portion of a larger agricultural property. The project area is currently in row crop production.

### Aquatic Resources

The site is bordered by a perennial stream and contains conditions appropriate for restoring wetland habitats. A wetland delineation and additional baseline information, including a summary of all aquatic resources on site, is provided as Exhibit A, below.

## Photos



1 – Aerial overview of proposed project area facing southwest.



2 – Aerial overview of the proposed project area facing north.





3 – Detail view of eroding drainage feature connecting the agricultural field to the unnamed perennial tributary. This feature will be blocked to create the proposed wetland.



## Determination of Credits

### Wetland Credits

Wetland credits were calculated using the Missouri Wetland Mitigation Method (MWMM, 2017). Each credit generating element is defined below. Wetland areas are defined in **Figure 3**, below.

**Mitigation Activity:** The proposed work includes forested and emergent wetland restoration.

**Aquatic Resource Type:** MWMM defined resource types included in the proposed work are Type A (forested wetlands with canopy height > 6 meters) and Type B (emergent wetlands).

**Priority Category:** The proposed mitigation site is tertiary priority under the MWMM.

**Site Control:** The project will be placed under a perpetual deed restriction enforced by the Corps.

**Temporal Loss:** Site conditions are well suited to wetland restoration, so emergent wetlands will achieve desired ecological functions within five years. Forested wetlands will take ten to twenty years to mature, which introduces some temporal loss into credit calculations.

**Credit Schedule:** 80 to 100 percent of construction and planting activities proposed will take place before the wetland impacts associated with Corps project number SWL-2021-00025. This is considered Credit Schedule 1 under the MWMM.

**Kind:** Resources generating wetland credits include forested wetlands and emergent wetlands. These resources will be constructed at a ratio of 2.1 acres of emergent wetland for each acre of forested wetland. This is the same ratio as the impact from Corps project number SWL-2021-00025, so it is 100% in-kind.

**Location:** The proposed mitigation site is within the same EDU in an adjacent HUC 8 watershed to the associated impact from Corps project number SWL-2021-00025 and is Location 2 under the MWMM.

**Vegetation:** Wetland areas will be planted with appropriate native vegetation.

Wetland credits generated for each mitigation activity are detailed in **Table 1**, below.

**Table 1. Wetland Credit Factors for Upper Black River Mitigation Site**

	Emergent Wetland Restoration	Forested Wetland Restoration
Aquatic Resource Type	Type B – 0.40	Type A – 0.80
Priority Category	Tertiary - 0	Tertiary - 0
Site Control	Deed Restriction – 2.0	Deed Restriction – 2.0
Temporal Loss	0 to 5 years – 0	10 to 20 years – (-0.2)
Credit Schedule	Schedule 1 – 0.60	Schedule 1 – 0.60
Kind	Category 1 – 0.80	Category 1 – 0.80
Location	Location 2 – 0.4	Location 2 – 0.4
Vegetation	Planted – 0.20	Planted – 0.20
Sum of Factors	4.4	4.6
Mitigation Area	17.4 ac	8.3 ac
Credits	83.52	38.18

**Total Wetland Credits: 121.7<sup>1</sup>**

## Mitigation Work Plan

### Restoring Wetland Hydrology

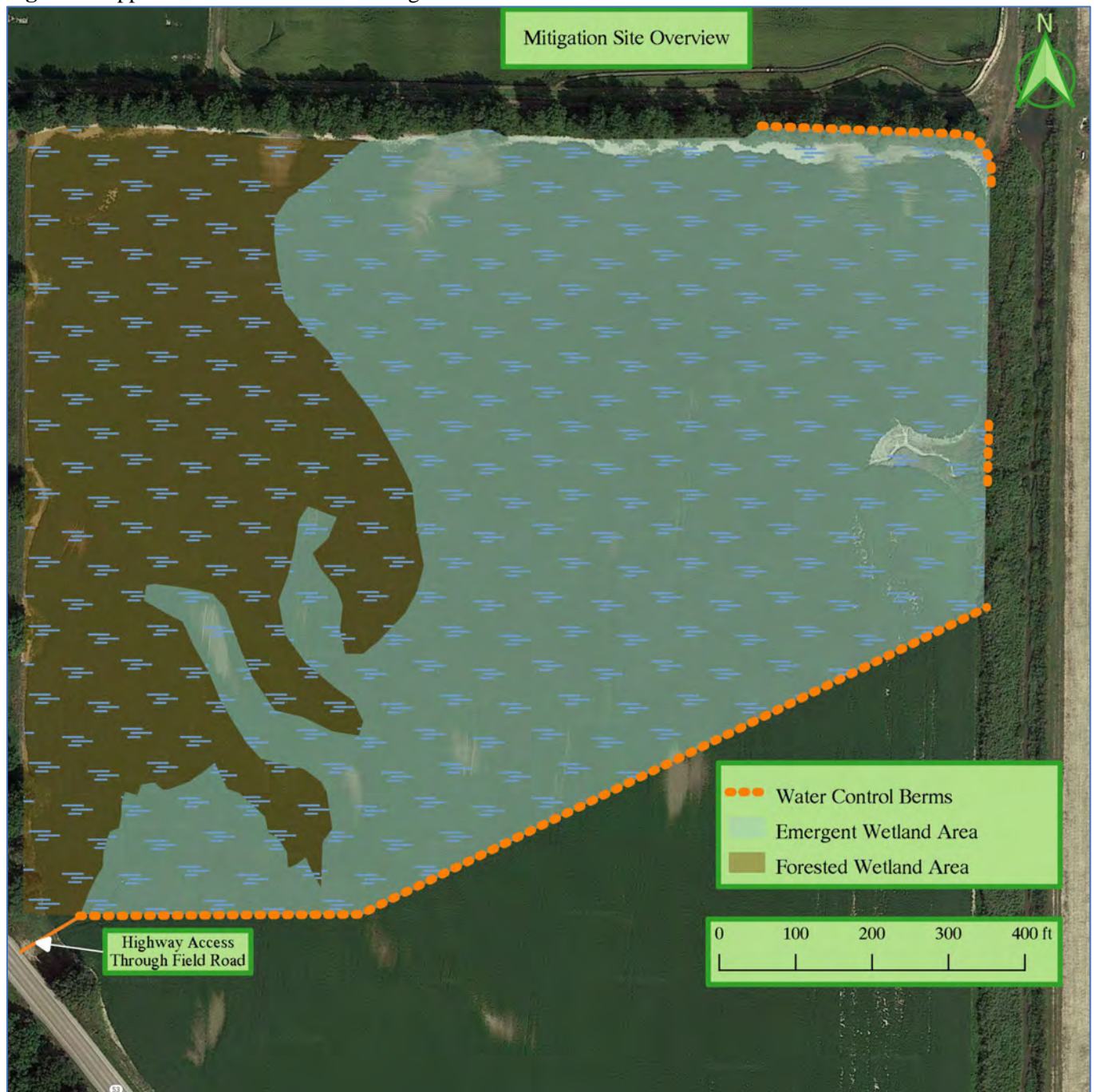
Mitico will restore hydrology to proposed wetland areas by reversing the drainage between the field and the unnamed perennial tributary. A topographic overview of the site with proposed construction areas is provided below.

Three low-profile berms will be created to retain hydrology in proposed wetland areas. The longest berm will run along the southern boundary of the proposed wetland area to prevent the site from draining southward, and another smaller berm will reverse the existing drainage feature that connects the site to the unnamed perennial tributary. A third berm will be placed along the northeast property boundary to prevent water from draining northward (**Figure 4**). Each proposed berm will be constructed to an elevation of 320 feet above sea level and will retain water in the proposed wetland area without flooding any adjacent properties. At full pool, the emergent wetland areas will be inundated to an average depth of one foot, and forested wetland areas will be saturated within one foot of the surface.

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<sup>1</sup> This amount is sufficient for, and exceeds, the Sponsor's requirements for Phase 1b and 2 of US Route 67 (I-57) upgrade project.

**Figure 3.** Upper Black River Wetland Mitigation Site Overview



### Restoring Wetland Vegetation

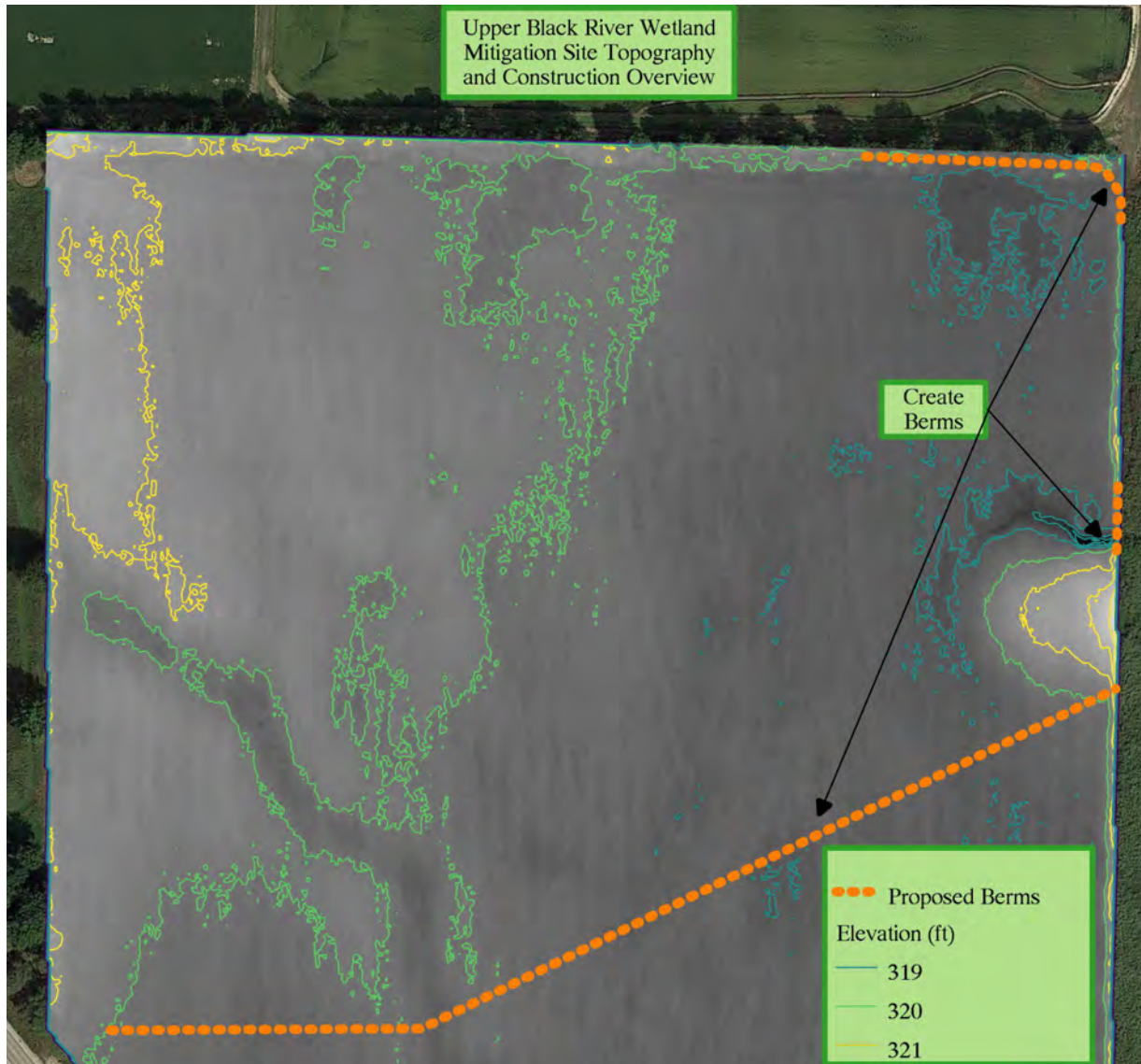
Upon completion of construction, all wetland areas will be seeded with an appropriate mix of native vegetation. Where appropriate, non-native species will be managed prior to seeding and during ongoing site maintenance. Emergent wetlands will be seeded with the mix of species found in **Table 2**, and forested wetlands will be seeded with the species found in **Table 3**.

Forested wetlands will be planted with a mix of native wetland trees with 25 foot spacing. Trees will be planted on low berms throughout the forested wetland areas. This will ensure that hydrology can be



distributed within the forested wetland without exposing the trees to constant inundation and should ensure higher survival rates. Trees will be planted from the list found in **Table 4** as appropriate and depending on tree availability. No species will account for greater than 10 percent of the individual trees planted.

**Figure 4.** Detail Map of Wetland Topography and Construction Areas





**Table 2.** Emergent Wetland Seed Mix

Common Name	Scientific Name	Common Name (cont.)	Scientific Name (cont.)
Small Yellow Fox Sedge	<i>Carex annectens</i>	Queen of the Prairie	<i>Filipendula rubra</i>
Bristly Sedge	<i>Carex comosa</i>	Sneezeweed	<i>Helenium autumnale</i>
Brown Fox Sedge	<i>Carex vulpinoidea</i>	Rose Mallow	<i>Hibiscus laevis</i>
Virginia Wild Rye	<i>Elymus virginicus</i>	Marsh St. John's Wort	<i>Hypericum virginicum</i>
Great Spike Rush	<i>Elocharis palustris</i>	Marsh Blazing Star	<i>Liatris spicata</i>
Fowl Manna Grass	<i>Glyceria striata</i>	Cardinal Flower	<i>Lobelia cardinalis</i>
Common Rush	<i>Juncus effusus</i>	Great Blue Lobelia	<i>Lobelia siphilitica</i>
Dark Green Bulrush	<i>Scirpus atrovirens</i>	Winged Loosestrife	<i>Lythrum alatum</i>
River Bulrush	<i>Scirpus fluviatilis</i>	Monkey Flower	<i>Mimulus ringens</i>
Prairie Cord Grass	<i>Spartina pectinate</i>	Ditch Stonecrop	<i>Penthorum sedoides</i>
Mud Plantain	<i>Alisma subcordatum</i>	Smartweed	<i>Polygonum pensylvanicum</i>
Swamp Milkweed	<i>Asclepias incarnata</i>	Pickering Plant	<i>Pontederia cordata</i>
Willow Aster	<i>Aster praealtum</i>	Common Arrowhead	<i>Sagittaria latifolia</i>
Nodding Bur Marigold	<i>Bidens cernua</i>	Riddell's Goldenrod	<i>Solidago riddellii</i>
Turtlehead	<i>Chelone glabra</i>	Ohio Goldenrod	<i>Solidago ohioensis</i>

**Table 3.** Forested Wetland Seed Mix

Common Name	Scientific Name	Common Name (cont.)	Scientific Name (cont.)
Fringed Sedge	<i>Carex crinita</i>	Sweet Joe Pye Weed	<i>Eupatorium purpureum</i>
Bristly Cattail Sedge	<i>Carex frankii</i>	White Snakeroot	<i>Eupatorium rugosum</i>
Common Bur Sedge	<i>Carex grayi</i>	Wild Geranium	<i>Geranium maculatum</i>
River Oats	<i>Chasmanthium latifolium</i>	Great Blue Lobelia	<i>Lobelia siphilitica</i>
Virginia Wild Rye	<i>Elymus virginicus</i>	Monkey Flower	<i>Mimulus ringens</i>
Fowl Manna Grass	<i>Glyceria striata</i>	Solomon's seal	<i>Polygonatum biflorum</i>
Fowl Bluegrass	<i>Poa palustris</i>	Wild Golden Glow	<i>Rudbeckia laciniata</i>
Calico Aster	<i>Aster lateriflorus</i>	Brown Eyed Susan	<i>Rudbeckia triloba</i>
Jack in the Pulpit	<i>Arisaema triphyllum</i>	Wild Senna	<i>Senna herbecarpa</i>
Common Beggarticks	<i>Bidens frondosa</i>	Cup Plant	<i>Silphium perfoliatum</i>
Marsh Marigold	<i>Caltha palustris</i>	Wingstem	<i>Verbesina alternifolia</i>
Tall Bellflower	<i>Campanula americana</i>	Golden Alexanders	<i>Zizia aurea</i>
Buttonbush	<i>Cephalanthus occidentalis</i>		

**Table 4.** Forested Wetland Tree and Shrub List

Common Name	Scientific Name	Common Name (cont.)	Scientific Name (cont.)
Box Elder	<i>Acer negundo</i>	American Sycamore	<i>Platanus occidentalis</i>
Silver Maple	<i>Acer saccharinum</i>	Eastern Cottonwood	<i>Populus deltoides</i>
Sugarberry	<i>Celtis laevigata</i>	Swamp White Oak	<i>Quercus bicolor</i>
Hackberry	<i>Celtis occidentalis</i>	Overcup Oak	<i>Quercus lyrata</i>
Buttonbush	<i>Cephalanthus occidentalis</i>	Pin Oak	<i>Quercus palustris</i>
Silky Dogwood	<i>Cornus amomum</i>	Sandbar Willow	<i>Salix interior</i>
Green Ash	<i>Fraxinus pennsylvanica</i>	Black Willow	<i>Salix nigra</i>
Water Tupelo	<i>Nyssa aquatica</i>	Bald Cypress	<i>Taxodium distichum</i>

## Maintenance Plan

The mitigation site will be operated and maintained by Mitico, a Missouri limited liability company, until all performance standards have been met, and performance will be assured through the bond described in this Plan at page 20. Fee title to the site is owned by Mitico, and the property will be subject to the perpetual deed restriction in a form approved by the Corps and attached to this Plan as Exhibit C. Monitoring, maintenance and long-term management will conform with the details outlined below at pages 18 & 19.

## Ecological Performance Standards

All wetland areas will be evaluated for performance based on objective attributes consistent with 33 CFR 332.5 and based on establishment of hydrology and wetland vegetation. **Table 5**, below, shows performance standards for forested and emergent wetlands.

**Table 5. Wetland Performance Standards**

Emergent Wetlands		
Performance Standards	Years 1-3	Years 4-5
<b>Hydrology</b>	<ul style="list-style-type: none"> <li>All wetland areas must be inundated or saturated to within 12 inches of the soil surface for at least 14 consecutive days each growing season.</li> <li>No more than 20% of the wetland area shall consist of unvegetated open water, measured no later than September 15<sup>th</sup> of each monitoring year.</li> </ul>	
<b>Vegetation</b>	<ul style="list-style-type: none"> <li>At least 50% of vegetative cover is Facultative or wetter (FAC, FACW, OBL)</li> <li>No more than 25% of vegetative cover is comprised of undesirable or non-native species</li> <li>No species shall account for more than 30% of vegetative cover</li> </ul>	<ul style="list-style-type: none"> <li>At least 80% of vegetative cover is Facultative or wetter (FAC, FACW, OBL)</li> <li>No more than 10% of vegetative cover is comprised of undesirable or non-native species</li> <li>No species shall account for more than 10% of vegetative cover</li> </ul>
Forested Wetlands		
Performance Standards	Years 1-3	Years 4-5
<b>Hydrology</b>	<ul style="list-style-type: none"> <li>All wetland areas must be inundated or saturated to within 12 inches of the soil surface for at least 14 consecutive days each growing season.</li> <li>No more than 20% of the wetland area shall consist of unvegetated open water, measured no later than September 15<sup>th</sup> of each monitoring year.</li> </ul>	
<b>Vegetation</b>	<ul style="list-style-type: none"> <li>At least 50% of herbaceous vegetative cover is Facultative or wetter (FAC, FACW, OBL)</li> <li>At least 50% of woody vegetative cover is Facultative or wetter (FAC, FACW, OBL)</li> <li>No more than 25% of vegetative cover is comprised of undesirable or non-native species</li> <li>No species shall account for more than 30% of the herbaceous vegetative cover</li> <li>No species shall account for more than 30% of the woody vegetative cover</li> </ul>	<ul style="list-style-type: none"> <li>At least 80% of herbaceous vegetative cover is Facultative or wetter (FAC, FACW, OBL)</li> <li>At least 50% of woody vegetative cover is Facultative or wetter (FAC, FACW, OBL)</li> <li>No more than 10% of vegetative cover is comprised of undesirable or non-native species</li> <li>No species shall account for more than 10% of the herbaceous vegetative cover</li> <li>No species shall account for more than 10% of the woody vegetative cover</li> </ul>

## Monitoring Plan

Annual monitoring will be conducted by the Sponsor, or its authorized agent, consistent with 33 CFR 332.6 to determine whether the compensatory mitigation project is meeting key performance milestones. Monitoring will begin prior to the end of the first growing season (understood to be May 1 to November 1) during which construction is complete or substantially complete and continue for a minimum of five years (monitoring cycles). It may be extended if the Corps determines that performance standards are not being met or that the mitigation site is not on track to meet them.

Monitoring will include a site visit with a schedule of monitoring events and a visual analysis showing site conditions and progress toward achieving performance standards consistent with Corps' Regulatory Guidance Letter 08-03 Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources and Section E of the 1987 Corps of Engineers Wetlands Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0), as these documents may be revised or updated from time to time.

For each resource type (emergent wetland, forested wetland), 10% of the total area will be evaluated through transects or randomized plots as determined to be appropriate by the Sponsor. Annual monitoring will document conditions and establish photo points to visually document conditions. The Sponsor will take any needed remedial actions, including repair of constructed elements and replanting, consistent with adaptive management principles.

If monitoring reveals site conditions or ecological responses that were not anticipated in this plan or that call for a change in plan design or parameters, the Sponsor will notify the Corps immediately and propose an adaptive management strategy.

Monitoring findings will be documented in a written report provided to the USACE for review within 60 days of the completion of each monitoring visit. The report, in accordance with Regulatory Guidance Letter 08-03, will identify how the observed site conditions have progressed toward and/or achieved the ecological performance standards identified above. The report will also include a list of invasive/undesirable plant species, and their coverage, along with recommendations for control, and a narrative description of any damage to the earthen berms and any damage from wildlife or insects. The report will also contain a photographic summary of all relevant features that support its findings.

If, at the end of the five-year monitoring period, the USACE has determined that the performance standards and mitigation objectives have been met, the mitigation will be considered self-sustaining, and further annual monitoring is not required. If five-year performance standards are met prior to the end of five years, monitoring will nevertheless continue to the fifth year. However, if the USACE determines that the mitigation project has not met the performance standards by the end of five years, then the USACE at its discretion may require additional monitoring, and/or corrective actions for an additional period.

## Long-Term Management and Maintenance

After performance standards are met and annual monitoring is discontinued, the Sponsor will enter into a contractual arrangement with Land Learning Foundation, a Missouri nonprofit corporation and land trust, (LLF) to manage the site for conservation consistent with adaptive management principles pursuant to the provisions of 33 CFR 332.7(c). This will include, when needed, addressing any serious condition that threatens project integrity consistent with adaptive management principles, and repairing or replacing damaged signs.

To ensure that sufficient resources are available for long-term management as required by 33 CFR 332.7(d)(3), the Sponsor will transfer funds to LLF for deposit to a nonwasting stewardship endowment. The amount of transfer is based on an actuarial risk-based model derived from the Land Trust Alliance that calculates the present value of annual long-term site management. It is estimated that an endowed fund of \$50,000 will be sufficient to cover these costs.

Should LLF for any reason wish to transfer long-term management responsibilities of the site to a third party, LLF will notify the Corps prior to transfer and the requirements of 33 CFR 332.7(d) will be met.

## Adaptive Management plan

If the compensatory mitigation project cannot be constructed in accordance with this plan, or if monitoring or other information indicates that the compensatory mitigation project is not progressing toward performance standard milestones as anticipated the Sponsor will notify the USACE pursuant to 33 CFR 332.7(c). The Sponsor will provide relevant details and submit a plan to address any deficiencies, including any needed modification of the project or revision of performance standards. The USACE will evaluate and approve or pursue measures to address deficiencies. Any significant modification of the project requires USACE approval. In evaluating and approving corrective measures or modifications, the USACE will consider whether the compensatory mitigation project is providing ecological benefits comparable to the original objectives of the compensatory mitigation project.

## Financial Assurances

In accordance with 33 CFR 332.3(n), financial assurances will be in the form of a performance bond. The bond issuer will enter an agreement with the Sponsor to fund fulfillment of mitigation obligations at the site in the event it is determined by USACE that the Sponsor has failed to meet those obligations as outlined in this Plan. The USACE has the sole authority to determine compliance with those obligations.

Should the USACE determine that remedial action is necessary because mitigations obligations have not been met the Sponsor will develop and implement an action plan in coordination with the USACE. The Sponsor assumes the financial and actual responsibility to implement that plan. If the Sponsor fails to complete the remedial action within 120 calendar days after approval of the remedial action plan, the USACE may make a claim by providing written notice to the bond issuer.

If such a claim is made, the bond issuer will satisfy any deficiencies determined by the USACE through payment to an approved USACE-designee. A claim can only be made by the USACE, and any corrective measures must be approved by the USACE.

The amount was determined in accordance with 33 CFR 332.3(n)(2) based on the size and complexity of the compensatory mitigation contemplated by this Plan, the degree of completion of the project, the likelihood of success, and the past performance of the project sponsor. Construction and maintenance cost estimates are set forth in the table below and are based on the Sponsor's experience with multiple restoration and mitigation sites throughout the State of Missouri. They reflect the best estimate of costs to complete the required element if remedial action becomes necessary.

Land has already been secured for this project plan, and administrative costs (design, legal, etc.) already expended. Therefore, based on 332.3(n)(2) factors, the initial dollar limit of liability secured by the bond will be 50% of initial construction and planting costs. The post-construction bond amount will be the estimated costs of repairs to constructed elements and replanting if needed. Bonding will terminate when performance standards are met.

Once construction and planting are complete and approved by the Corps, the initial bond amount will be reduced to the post-construction bond amount. Thereafter, should a claim not be made, the dollar limit of liability for the post-construction bond will be reduced by fifty percent (50%) after the second year's performance standards are met and bonding will terminate after the fifth year's performance standards are met. Any endorsement by the Corps acknowledging that these milestones have been met must be provided in writing to the bond issuer. The issuer may then reduce or adjust the limit of liability accordingly by issuing an endorsement to the Policy setting forth the new limit of liability.

**Table 6. Financial Assurance Amounts**



Element	Estimated Cost
Construction Cost, Including Planting	\$50,000
<b>Total Initial Bond Amount</b>	<b>\$25,000</b>
Forested Wetland Re-planting	\$5,000
Wetland Re-seeding	\$4,500
Wetland Berm Repairs (Material & Labor)	\$5,000
<b>Total Post-Construction Maintenance Bond Amount</b>	<b>\$14,500</b>

## Other Provisions

In the event of a complete or partial mitigation site failure attributed to natural catastrophes, such as a flood of historic proportion, fire, wind, drought, disease, regional pest infestation, etc.; the Sponsor will contact the USACE to evaluate the physical and functional changes to the mitigation area. If such events occur before performance standards are met, the USACE will determine the extent of site changes. The Sponsor in consultation with USACE will request changes to any corrective actions, modification to the performance standards, or credit availability for the mitigation site. The Sponsor may not be held responsible for natural catastrophes that may occur after the mitigation site has successfully met performance standards. If such events occur after performance standards are met the site will be evaluated to determine if additional efforts are necessary.

Mitico will not grant easements, rights of way, or any other property interest without the written consent of the Landowner and USACE.

## References

Black River Watershed and Inventory Assessment. Paul Cieslewicz, Missouri Department of Conservation (2004)

Missouri As It Is In 1867: an illustrated historical gazetteer of Missouri. George Clinton Swallow. (1867; <https://mdh.contentdm.oclc.org/digital/collection/mocohist/id/93441/rec/149>)

Missouri Spatial Data Information Service (<https://msdis.missouri.edu/>)

## Exhibits

Exhibit A: Wetland Delineation. 12 Pages.

Exhibit B: Soil Map. 3 Pages.

Exhibit C: Deed Restriction. 1 Page.

## **Exhibit A: Wetland Delineation**

## **Butler County Wetland Mitigation Site Baseline Conditions Report**

On-Site Soils performed a baseline conditions survey to record existing site conditions and evaluate the suitability of the site for restoration.

### **- Historic and existing plant communities**

Historically, the floodplains along the Black River watershed consisted of emergent and forested wetlands and bottomland forests. During the last 150 years much of this area has been drained, separated from the stream by levees, and cleared for agricultural purposes. Unfortunately, the subject site has experienced this same manipulation and lacks any pre-settlement habitat conditions. The entire site has been row cropped and has been for decades.

### **- Historic and existing hydrology**

Historically, this area would receive floodwater from the Black River. Today, due to levee construction, this area only sees floodwater during flood and rain events. The site does fall within FEMA's 100-year floodplain. According to the Butler County soil survey, the areas that are proposed for wetland restoration have a water table that exists at less than 12 inches. During soil sampling, many of the samples contained redoximorphic conditions starting at a depth of 3-12 inches.

### **-Soil Conditions**

Our soil sampling methods focused on the potential area for wetland development. The area chosen for wetland development contained broad swales and drainage patterns that focus overland water.

The soils found within the entire site were classified as silty clay with some silt loam. In all soil samples, redoximorphic features were observed which gives evidence to the presence of saturated conditions. Many of these features consisted of a reduced matrix with few masses and depletions of iron.

### **-Wetland Delineation**

Since the site has been row cropped for many decades, the traditional wetland characteristics have been masked or altered. Due to row cropping, the vegetation has been altered from its natural state therefore our focus was on hydrology and soils. The site is adjacent to an existing drainage ditch that has been present since the early 1900's. A historic slide review was conducted to determine the frequency of saturation or inundation. Historic aerial photos were reviewed that covered years 1985 through 2020. During those years, there were areas that showed inundation during the growing season. Below is an aerial photo showing the location of the sample sites.



# WETLAND DETERMINATION DATA FORM – Midwest Region (DRAFT)

Project/Site: Butler County Wetland Mitigation Site City/County: Butler Co Sampling Date: 11/8/22

Applicant/Owner: MITICO State: MO Sampling Point: T1S1

Investigator(s): On-Site Soils – Matt Roth Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none

Slope (%): 0-2% Lat 36.699089 Long: -90.358109 Datum: \_\_\_\_\_

Soil Map Unit Name: Calhoun silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No x

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes NA No NA

Hydric Soil Present? Yes x No \_\_\_\_\_

Wetland Hydrology Present? Yes x No \_\_\_\_\_

Is the Sampled Area Within a Wetland? Yes x No \_\_\_\_\_

Remarks: The entire project site was under cultivation during the growing season.

## VEGETATION – Use scientific names of plants.

**Tree Stratum** (Plot sizes: 10 meter radias )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Sapling/Shrub Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Herb Stratum** ( 10 meter radias )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
Total Cover: _____			

**Woody Vine Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
Total Cover: _____			

### Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)

Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

### Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____	(A) _____

Prevalence Index = B/A = \_\_\_\_\_

### Hydrophytic Vegetation Indicators:

\_\_\_\_ Dominance Test is >50%

\_\_\_\_ Prevalence Index is < or = to 3.0\*

\_\_\_\_ Morphological Adaptations\* (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_ Problematic Hydrophytic Vegetation\* (Explain)

\*Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.) Vegetation was not used as a determining factor due to cultivation and time of year



**SOIL**Sampling Point: T1S1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10 YR 4/4		10 YR 5/8	20	D	M	sil	
6-10	10 YR 5/4		10 YR 5/8	20	D	M	sil	
10-15	10 YR 5/3		10 YR 5/6	20	D	M	sil	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A18)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes ☒ No ☐

Remarks:

**Hydrology**

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reductions in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge of Well Data D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available

Remarks:

Hydrology has been altered by drainage ditches to remove water. It is probably due to these conditions that only secondary indicators are apparent.

# WETLAND DETERMINATION DATA FORM – Midwest Region (DRAFT)

Project/Site: Butler County Wetland Mitigation Site City/County: Butler Co Sampling Date: 11/8/22

Applicant/Owner: MITICO State: MO Sampling Point: T1S2

Investigator(s): On-Site Soils – Matt Roth Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none

Slope (%): 0-2% Lat 36.699559 Long: -90.357528 Datum: \_\_\_\_\_

Soil Map Unit Name: Calhoun silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No x

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes NA No NA

Hydric Soil Present? Yes x No \_\_\_\_\_

Wetland Hydrology Present? Yes x No \_\_\_\_\_

Is the Sampled Area Within a Wetland? Yes x No \_\_\_\_\_

Remarks: The entire project site was under cultivation during the growing season.

## VEGETATION – Use scientific names of plants.

**Tree Stratum** (Plot sizes: 10 meter radias )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Sapling/Shrub Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Herb Stratum** ( 10 meter radias )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
Total Cover: _____			

**Woody Vine Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
Total Cover: _____			

### Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)

Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

### Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____	(A) _____

Prevalence Index = B/A = \_\_\_\_\_

### Hydrophytic Vegetation Indicators:

\_\_\_\_ Dominance Test is >50%

\_\_\_\_ Prevalence Index is < or = to 3.0\*

\_\_\_\_ Morphological Adaptations\* (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_ Problematic Hydrophytic Vegetation\* (Explain)

\*Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.) Vegetation was not used as a determining factor due to cultivation and time of year

**SOIL**Sampling Point: T1S2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10 YR 4/4		10 YR 5/8	20	D	M	sil	
8-11	10 YR 5/4		10 YR 5/8	20	D	M	sil	
11-15	10 YR 5/3		10 YR 5/6	20	D	M	sil	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A18)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes ☒ No ☐

Remarks:

**Hydrology**

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reductions in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge of Well Data D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)
Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available

Remarks:

Hydrology has been altered by drainage ditches to remove water. It is probably due to these conditions that only secondary indicators are apparent.

# WETLAND DETERMINATION DATA FORM – Midwest Region (DRAFT)

Project/Site: Butler County Wetland Mitigation Site City/County: Butler Co Sampling Date: 11/8/22

Applicant/Owner: MITICO State: MO Sampling Point: T1S3

Investigator(s): On-Site Soils – Matt Roth Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none

Slope (%): 0-2% Lat 36.699761 Long: -90.356750 Datum: \_\_\_\_\_

Soil Map Unit Name: Calhoun silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No x

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes NA No NA

Hydric Soil Present? Yes x No \_\_\_\_\_

Wetland Hydrology Present? Yes x No \_\_\_\_\_

Is the Sampled Area Within a Wetland? Yes x No \_\_\_\_\_

Remarks: The entire project site was under cultivation during the growing season.

## VEGETATION – Use scientific names of plants.

**Tree Stratum** (Plot sizes: 10 meter radius)

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Sapling/Shrub Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Herb Stratum** ( 10 meter radius )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
Total Cover: _____			

**Woody Vine Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
Total Cover: _____			

### Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)

Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

### Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____	(A) _____

Prevalence Index = B/A = \_\_\_\_\_

### Hydrophytic Vegetation Indicators:

\_\_\_\_ Dominance Test is >50%

\_\_\_\_ Prevalence Index is < or = to 3.0\*

\_\_\_\_ Morphological Adaptations\* (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_ Problematic Hydrophytic Vegetation\* (Explain)

\*Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.) Vegetation was not used as a determining factor due to cultivation and time of year



**SOIL**Sampling Point: T1S3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10 YR 4/4		10 YR 5/8	20	D	M	sil	
8-110	10 YR 5/4		10 YR 5/8	20	D	M	sil	
10-15	10 YR 5/3		10 YR 5/6	20	D	M	sil	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A18)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes ☒ No ☐

Remarks:

**Hydrology**

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reductions in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge of Well Data D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available

Remarks:

Hydrology has been altered by drainage ditches to remove water. It is probably due to these conditions that only secondary indicators are apparent.

# WETLAND DETERMINATION DATA FORM – Midwest Region (DRAFT)

Project/Site: Butler County Wetland Mitigation Site City/County: Butler Co Sampling Date: 11/8/22

Applicant/Owner: MITICO State: MO Sampling Point: T2S1

Investigator(s): On-Site Soils – Matt Roth Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none

Slope (%): 0-2% Lat 36.698286 Long: -90.357499 Datum: \_\_\_\_\_

Soil Map Unit Name: Calhoun silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No x

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes NA No NA

Hydric Soil Present? Yes x No \_\_\_\_\_

Wetland Hydrology Present? Yes x No \_\_\_\_\_

Is the Sampled Area Within a Wetland? Yes x No \_\_\_\_\_

Remarks: The entire project site was under cultivation during the growing season.

## VEGETATION – Use scientific names of plants.

**Tree Stratum** (Plot sizes: 10 meter radias )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Sapling/Shrub Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			

**Herb Stratum** ( 10 meter radias )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
Total Cover: _____			

**Woody Vine Stratum** ( \_\_\_\_\_ )

	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
Total Cover: _____			

### Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)

Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

### Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____	(A) _____

Prevalence Index = B/A = \_\_\_\_\_

### Hydrophytic Vegetation Indicators:

\_\_\_\_ Dominance Test is >50%

\_\_\_\_ Prevalence Index is < or = to 3.0\*

\_\_\_\_ Morphological Adaptations\* (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_ Problematic Hydrophytic Vegetation\* (Explain)

\*Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.) Vegetation was not used as a determining factor due to cultivation and time of year

**SOIL**Sampling Point: T2S1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10 YR 4/4		10 YR 5/8	20	D	M	sil	
6-110	10 YR 5/4		10 YR 5/8	20	D	M	sil	
10-15	10 YR 5/3		10 YR 5/6	20	D	M	sil	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A18)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes ☒ No ☐

Remarks:

**Hydrology**

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reductions in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge of Well Data D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available

Remarks:

Hydrology has been altered by drainage ditches to remove water. It is probably due to these conditions that only secondary indicators are apparent.



# WETLAND DETERMINATION DATA FORM – Midwest Region (DRAFT)

Project/Site: Butler County Wetland Mitigation Site City/County: Butler Co Sampling Date: 11/8/22

Applicant/Owner: MITICO State: MO Sampling Point: T2S2

Investigator(s): On-Site Soils – Matt Roth Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none

Slope (%): 0-2% Lat 36.698579 Long: -90.356591 Datum: \_\_\_\_\_

Soil Map Unit Name: Calhoun silt loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation yes, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No x

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>NA</u> No <u>NA</u>	Is the Sampled Area Within a Wetland? Yes <u>x</u> No _____
Hydric Soil Present? Yes <u>x</u> No _____	
Wetland Hydrology Present? Yes <u>x</u> No _____	

Remarks: The entire project site was under cultivation during the growing season.

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot sizes: <u>10 meter radias</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			
Sapling/Shrub Stratum ( _____ )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
Total Cover: _____			
Herb Stratum ( <u>10 meter radias</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
Total Cover: _____			
Woody Vine Stratum ( _____ )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
Total Cover: _____			

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)

Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____	(A) _____

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**

\_\_\_\_ Dominance Test is >50%

\_\_\_\_ Prevalence Index is < or = to 3.0\*

\_\_\_\_ Morphological Adaptations\* (Provide supporting data in Remarks or on a separate sheet)

\_\_\_\_ Problematic Hydrophytic Vegetation\* (Explain)

\*Indicators of hydric soil and wetland hydrology must be present.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.) Vegetation was not used as a determining factor due to cultivation and time of year

**SOIL**Sampling Point: T2S2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10 YR 4/4		10 YR 5/8	20	D	M	sil	
6-12	10 YR 5/4		10 YR 5/8	20	D	M	sil	
12-15	10 YR 5/3		10 YR 5/6	20	D	M	sil	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix. <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A18)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes ☒ No ☐

Remarks:

**Hydrology**

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reductions in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge of Well Data D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

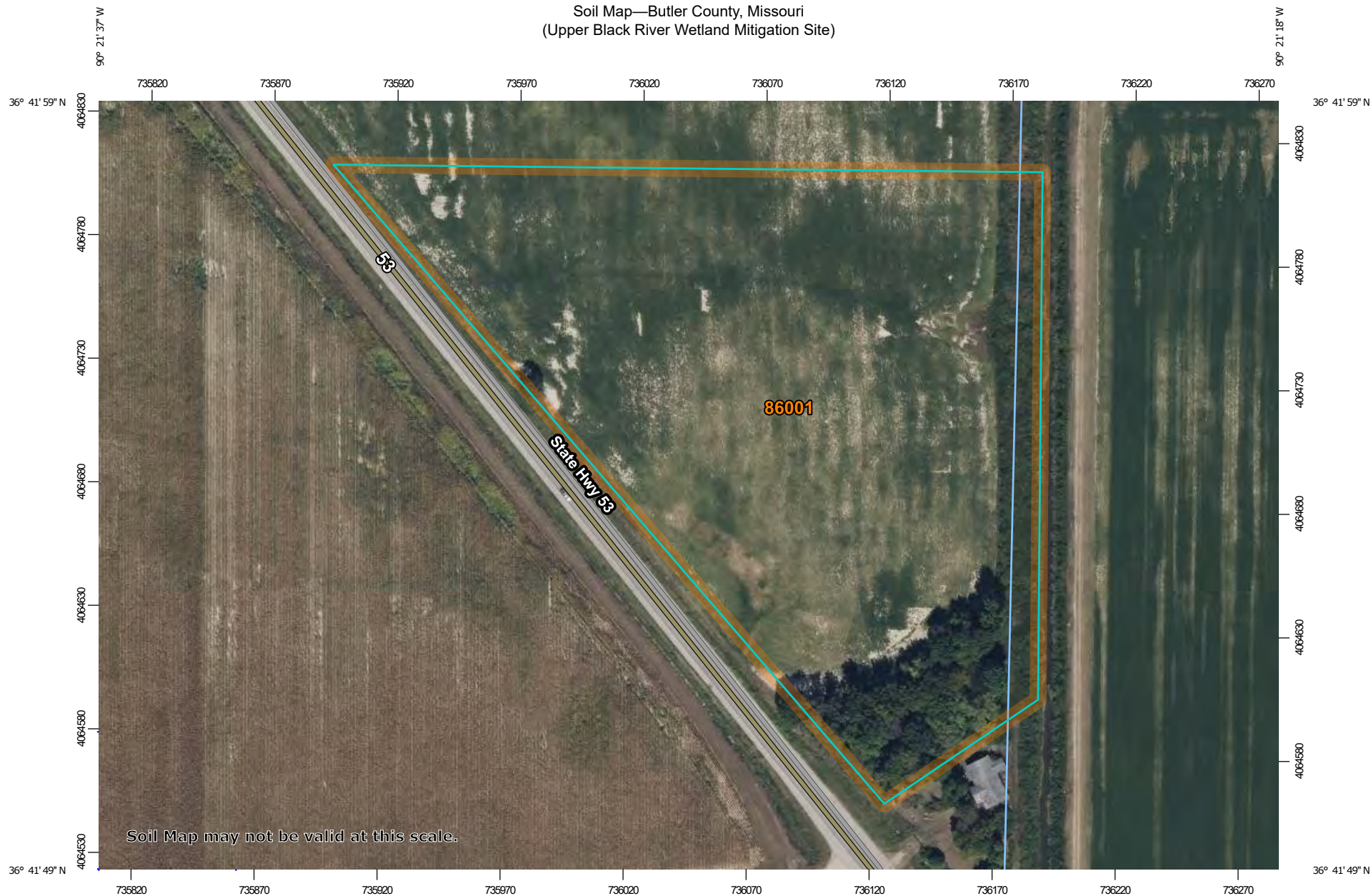
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available

Remarks:

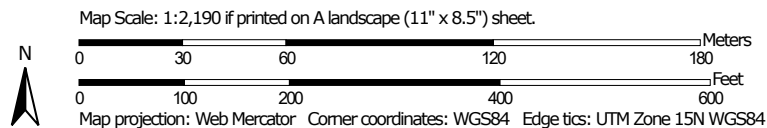
Hydrology has been altered by drainage ditches to remove water. It is probably due to these conditions that only secondary indicators are apparent.

## **Exhibit B: Soil Map**

Soil Map—Butler County, Missouri  
(Upper Black River Wetland Mitigation Site)



Soil Map may not be valid at this scale.



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

12/19/2022  
Page 1 of 3



Soil Map—Butler County, Missouri  
(Upper Black River Wetland Mitigation Site)

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butler County, Missouri

Survey Area Data: Version 25, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 18, 2022—Sep 25, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
86001	Calhoun silt loam, 0 to 1 percent slopes, occasionally flooded	10.8	100.0%
<b>Totals for Area of Interest</b>		<b>10.8</b>	<b>100.0%</b>

# Exhibit C: Deed Restriction

## NOTICE OF DEED RESTRICTION

STATE OF MISSOURI  
COUNTY OF \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS THAT \_\_\_\_\_ is the owner of that real property more particularly described in the enclosed legal description and shown in the enclosed map of the mitigation site based on a survey performed by a registered professional land surveyor; the legal description and the map attached as Exhibit A are both made a part hereof. For all purposes throughout this document, that real property will be referred to as the "Property." As of the date executed, the Property has been designated as a mitigation site associated with US Army Corps of Engineers Section 404 Permit No. <<Action Number>>, or a revision thereof. The permit grants authorization to the Missouri Department of Transportation for the placement of fill material in waters of the United States, and the mitigation site on the Property is intended to offset the impact of that placement. Any purchaser of all or any part of the Property or any person having an interest in or proposing to acquire an interest in all or any part of the Property, or any person proposing to develop or improve all or any part of the Property, is hereby notified of the following development restriction affecting the Property:

Any activity on the Property must comply with the terms and special conditions described in US Army Corps of Engineers Section 404 Permit No. <<Action Number>>, or a revision thereof. It should be noted that the Property has been designated to be preserved for riparian buffer and wildlife habitat mitigation, and may not be converted to another use, including but not limited to: clearing, logging, bushhogging, mowing, spraying with herbicides, filling, leveling, draining, dumping, construction of any structure other than for wildlife enhancement, or any other activity that would adversely impact the natural state of the area. Natural resource management or wildlife enhancement activities involving alteration of the Property would require prior approval from the Little Rock District Corps of Engineers.

EXECUTED this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ By:  
\_\_\_\_\_  
\_\_\_\_\_

SUBSCRIBED AND SWORN TO BEFORE ME by \_\_\_\_\_, on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ to certify which witness my hand and seal of office.

\_\_\_\_\_  
Notary Public in and for the State of Missouri

My Commission expires:

Printed Name of Notary: