

# **PROSPECTUS**

## **Proposed Beech River Canal Wetland and Stream Mitigation Bank**

### **INTRODUCTION**

This prospectus provides an overview of Beech River Farms, LLC's (BRF) proposed Beech River Canal Wetland and Stream Mitigation Bank (Bank) and is the basis for initial public and Interagency Review Team (IRT) comment on the proposed Bank. This prospectus also provides a summary of the information available relating to the proposed Bank at a sufficient level of detail to support informed public and IRT comment.

BRF, acting as the Bank's Sponsor, will restore and enhance a large portion of a parcel it owns in Henderson County, Tennessee that lies adjacent to Beech River Canal, a major drainage of the Beech River. BRF estimates that over the life of the bank, which will be developed in two or three phases, the bank will provide between 70 and 75 wetland credits and a yet-to-be determined number of stream mitigation credits to offset permitted impacts in the proposed service area.

### **LOCATION / LANDSCAPE FEATURES**

The Bank would be located on a 103.17-acre row crop farm located adjacent to Beech River Canal near Darden, Henderson County, Tennessee. The site drains directly to Beech River Canal (HUC 06040001080 in the Beech River Sub-Watershed). The site is situated on the Parsons and Scotts Hill USGS quad maps (Figure 1). Prominent landscape features include 3,150 feet (0.58 acres) of a channelized and highly-degraded "blue-line" stream, identified as Darden Branch; 16 emergent wetlands totaling 14.97 acres; and nine man-made drainage ditches totaling 8,335 feet (1.50 acres) (Figures 2 and 3).

### **REQUIRED INFORMATION**

The mitigation rule states that a complete prospectus must include the information contained in the following subheadings:

#### **Objectives of the Proposed Bank**

The objective of the Bank is to provide wetland and stream mitigation credits for commercial use to offset permitted impacts in the Bank's service area.

*Wetlands* – In concept, wetland credits will be derived through restoration of hydric soil areas on the site, enhancement of 14.97 acres of existing farmed wetlands (emergent), and possibly through buffering of restored and enhanced wetlands. BRF anticipates developing the Bank in 2 or 3 phases. The first phase would be undertaken on a 37.25-acre portion of the site (Figure 4) and would contain 31.52 acres of wetland restoration and 5.73 acres of wetland enhancement (i.e., on the delineated wetlands 3-14 shown on Figure 3). All of the mitigation work associated with the first phase would occur within areas mapped at Beechy silt loam (see Figure 5), which is a hydric soil. The first phase is expected to generate 34.45 wetland credits as shown in the following table:

**Beech River Farms Wetland and Stream Mitigation Bank – Table of Wetland Mitigation**

Mitigation Type	Acreage	Ratio	Credits
Restoration	31.52	1:1	31.52
Enhancement	5.73	2:1	2.87
<b>Total</b>	37.25		<b>34.45</b>

Subsequent phases of the Bank would be developed based on future wetland mitigation needs in the Service Area. Those phases would occur on the remaining portions of BRF as shown in Figure 4.

*Streams* – Conceptually, stream credits from the site will be derived through full-scale restoration of Darden Branch via natural channel design principles and techniques. Darden Branch is a channelized intermittent stream and direct tributary of Beech River. The site currently has approximately 3,150 linear feet of channelized stream channel. A moderate increase in stream sinuosity (from 1.0 to 1.5) would yield a restored stream that was more than 4,600 linear feet in length. This stream restoration would: 1) create and enhance aquatic habitat, 2) stabilize streambanks and reduce sedimentation that degrades downstream water quality and impairs aquatic habitat and species, and 3) restore, enhance, and preserve riparian areas. Mitigation credit estimates for stream mitigation cannot be determined at this time but would be derived using standard crediting methods used by the Nashville District and the IRT. A conceptual representation of the proposed stream restoration is shown on Figure 6.

Additional details on how wetland and stream mitigation would occur will be provided in the draft and final Banking Instruments.

Bank Establishment and Operation

The Bank will be established by experienced contractors, with oversight by BRF, immediately upon approval of the Banking Instrument.

*Vegetation Restoration*

BRF evaluated forested wetlands that occur on state-owned property adjacent to the proposed Bank. Tree communities in those areas contained the following bottomland hardwood species in the table below:

Water oak	Shumard oak	American elm	Hackberry	River birch
Willow oak	Swamp white oak	Persimmon	Green ash	Sweet gum
Pin oak	Black gum	Bitter pecan	Sycamore	

To restore the bottomland hardwood forest community within the Bank, BRF will plant 435 native hardwood seedlings per acre (i.e., a 10-ft by 10-ft spacing) from the following species – water oak, willow oak, pin oak, Shumard oak, swamp white oak, black gum, and bitter pecan. No one species will comprise any more than 25 percent of the total tree planting effort. Planting will occur using bare-root seedlings during the dormant period (i.e., fall through winter).

### *Hydrologic Restoration*

Hydrologic restoration associated with the wetlands in the first phase of the bank would involve the following primary actions: (a) filling in or blocking the lateral drainage ditches that dissect the site, (b) breaching the levees that prevent overflow from the Beech River canal and Darden Branch, and (c) reshaping and leveling the spoil piles associated with the ditches and previous channelization of Darden Branch. A graphic representation of this area is presented in Figure 7 that shows the ditches and adjacent stream corridors.

### *Monitoring*

BRF will undertake annual monitoring of the site for a period of 5 years. Monitoring will be based on physical and ecological performance measures identified in the Banking Instrument in order to document the establishment of stable stream channels and bottomland hardwood wetlands. The monitoring effort will be comprised of the following components:

*Vegetation Monitoring* – Vegetation monitoring during the first phase will occur annually within four permanent plots to document the establishment of bottomland hardwoods on the site. The success criterion for vegetation establishment will be 300 trees per acre surviving at the end of the five year monitoring period, of which, no more than 50% will be volunteers. The permanent plots will be 0.05-acre in size. For the first four years of the monitoring period BRF will only count planted tree seedlings and make note of volunteer species that are present within the plots. In year five of the monitoring period, BRF will count and record all trees within each plot. In the annual monitoring report, BRF will determine if the success criterion has been met.

*Hydrologic Monitoring* - Hydrologic monitoring during the first phase will occur to document that wetland hydrology has been restored to the site. Four hydrologic monitoring wells will be established and monitored during the growing season. BRF will provide hydrologic data and an analysis of wetland hydrologic conditions in each annual report.

NRCS growing season dates for Henderson and Decatur Counties, TN was not available, so BRF proposes to use the growing season dates for adjacent Madison County to establish typical growing season dates for hydrologic monitoring purposes. The published growing season for Madison County is March 20 – November 11, which is a period of 236 days. Therefore, to demonstrate wetland hydrology, the site would need to be inundated or saturated within 1 foot of the surface for a minimum of 12 consecutive days (i.e., 5 percent) between March 20 and November 11 on a 50 percent re-occurrence interval (i.e., at least 1 of every 2 years) during normal precipitation years.

*Soil Monitoring* – Soil monitoring will not occur on an annual basis. Instead, soil conditions will be reported once the final wetland delineation is conducted to establish the final number of wetland credits upon closure of the Bank.

### *Reporting*

Annual monitoring reports and accounting ledgers will be provided to the Corps and IRT. These reports will be provided on or before December 31<sup>st</sup> of each year that monitoring occurs.

*Long-term Protection Mechanism*

A permanent deed restriction or conservation easement that meets the requirements of the Corps and IRT will be recorded on the Bank prior to the initial credit release.

*Long-term Management Plan*

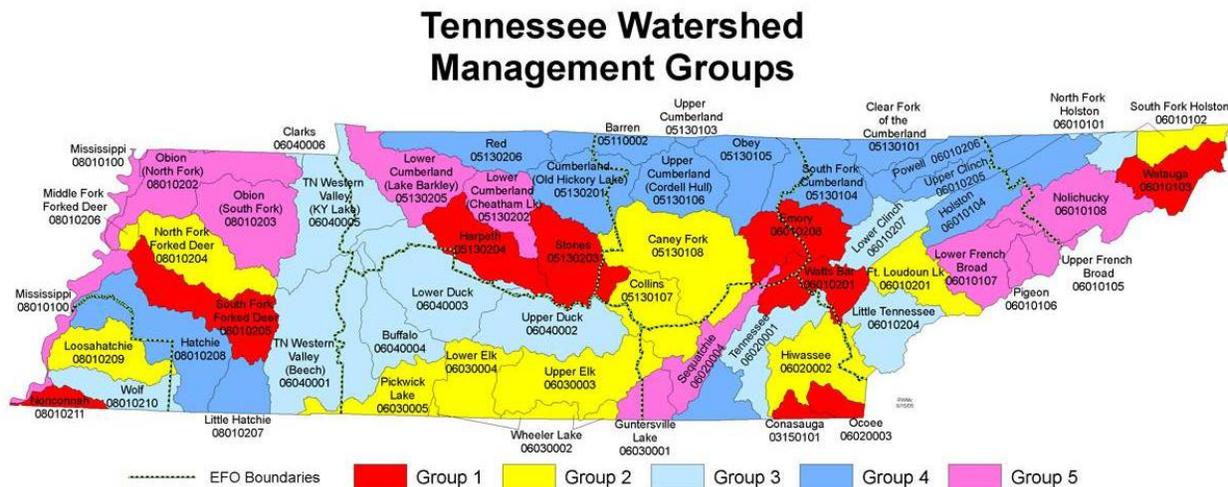
BRF anticipates maintaining ownership and management of the Bank. Management will include protection efforts to ensure that incompatible uses do not occur, annual surveillance of the Bank to detect and remove/treat invasive species, and implementation of other management actions to address any specific requirements identified in the Banking Instrument.

*Other Aspects of the Banks Operation and Establishment*

The draft and final Banking Instrument will provide addition details on the construction, vegetation restoration, monitoring, credit tracking, long-term management, and other aspects of the Bank. BRF will operate the bank according to the provisions of the approved Banking Instrument.

Service Area

The mitigation rule establishes that service areas for mitigation banks may be based on the watershed, ecoregion, or physiographic province, and/or other geographic area in which the bank is authorized to provide compensatory mitigation. For the Bank, the portions of the Lower Tennessee-Beech (HUC 06040001) and Lower Tennessee-Kentucky Lake (HUC 06040005) hydrologic units lying west of the Tennessee River are proposed as the service area (see reference below - Tennessee Watershed Management Groups). These watersheds are dominated by 2 Level III ecoregions (Southeastern Plains and Interior Plateau) and 2 Level IV subcoregions (Southeastern Plains and Hills (65e) and Western Highland Rim (71f), with the Bank located is the Southeastern Plains and Hills (65e). These watersheds share numerous commonalities including: (a) their presence and adjacency within the lower Tennessee River system, (b) physiography, (c) vegetation communities, and (d) aquatic species and communities, among others, thus providing additional support for establishment of the proposed service area.



### Need and Technical Feasibility

Currently, an approved, commercial wetland or stream mitigation bank does not exist in the watersheds covered by the proposed service area. As a result, permit applicants in the service area must provide compensatory wetland and stream mitigation through other options (e.g., on-site mitigation or in-lieu-fee mitigation), but the use of these options may mean that there would be some temporal loss of wetland functions and values in the service area. Establishment of the Bank will help address and eliminate these temporal losses while creating permanent watershed benefits adjacent to state-owned protected lands.

The two 8-digit HUC watersheds within the proposed service area are greater than 50 percent forested and generally contain municipalities with <20,000 citizens. As a result of these and other factors, demand for wetland and stream mitigation credits in the service area is not expected to be great, but this will allow for establishment prior to the use of the Bank's credits, thus minimizing temporal wetland loss. This service area also improves the long-term financial viability of the Bank when compared to a service area comprised of only one 8-digit HUC.

There are many factors that would support the technical feasibility of a mitigation bank on the site. Collectively, these factors suggest that the site will support wetland and stream restoration and enhancement and, thus, the successful establishment of a mitigation bank. The specific factors are discussed in the sections below and include:

#### *Hydric Soil Factors*

- There are extensive areas of mapped hydric soils present within the agricultural areas present on-site (Figure 5). This suggests the presence of wetlands prior to agricultural conversion. The primary hydric soil present on the site is Beechy silt loam, poorly drained and frequently flooded, which occupies approximately 83.0 acres of the site. There is also a portion of the site, covering approximately 17.7 acres, that is mapped as Almo silt loam, which is poorly drained and frequently flooded. The site also contains approximately 1.0 acres of Hymon silt loam and Ina fine sandy loam. Additional soil information is contained in Figure 5.
- Numerous hydric soil indicators are present on the site, including oxidized root channels, low chroma soils, and extensive soil mottling.
- Hydric soil areas and hydric soil indicators will be mapped and described in detail in the Banking Instrument.

#### *Vegetation Factors*

- The vegetation in most of the hydric soil areas has been altered to support agricultural crops suggesting that vegetative restoration is possible. The agricultural fields are currently planted in a crop-rotation system (e.g., corn, grain sorghum, and/or soybeans in rotation).
- There are small areas of existing, degraded wetlands on the site that can be enhanced through vegetation enhancement (e.g., native hardwood tree planting and hydrologic enhancement). These areas are currently dominated by early-successional, herbaceous wetland plants.

- The site is of sufficient size to ensure adequate vegetated buffers around any wetlands that are restored or enhanced.

#### *Hydrology Factors*

- The hydrology in most of the hydric soil areas has been altered by extensive ditching and clearing or land leveling to support agricultural crops.
- Wetland hydrology can be restored to ditched/drained areas through relatively minor restoration actions, such as ditch filling and plugging.
- Other sources of hydrology exist, such as overbank flows from Beech Canal during flood stages and from precipitation.
- There is evidence of periodic flooding within the site, as evidenced by debris/rack lines, ponding, and other hydrologic indicators.

#### Ownership and Long-term Management

BRF owns the site where the Bank will be located and will be responsible for construction and restoration activities, monitoring, and long-term management of the Bank. Once the Bank is established, the perpetual deed restriction is applied to the Bank, and the forest canopy and stream resources have become established, the site should be self-sustaining and unlikely to require any active, long-term management. BRF will provide any necessary financial assurances to ensure the successful long-term management of the site.

#### Qualifications of the Sponsor

BRF will have the lead for the project and will (a) contract with qualified engineering firms to design the project, (b) hire local contractors to construct the design with oversight from the engineering design firm, (c) restore native vegetation or contract that work, (d) monitor the project's success or contract that work, and (e) ensure permanent protection of the Bank through its continued ownership of the site and the recording of a deed restriction suitable to the IRT.

BRF's operations will be overseen by one of its partners and land steward, a person with 20 years of applied service at restoring, enhancing, and protecting wildlife habitats, and extensive experience managing bottomland and wetland ecosystems and associated uplands. The land steward has worked with civil engineers and construction contractors in several southeastern states in design and delivery of the USDA-NRCS Wetlands Reserve Program and other wetland and aquatic restoration and enhancement programs.

#### Ecological Suitability

The ecological suitability of the site to achieve the objectives of the bank is outlined in the Technical Feasibility section above. In general, however, the site contains the physical, chemical, and biological characteristics necessary to support the planned types of aquatic resources and functions (i.e., bottomland hardwood wetlands). In particular, the site contains (a) topography and position adjacent to Beech Canal that already supports or will (in the case of agricultural fields) support bottomland hardwood wetlands, (b) numerous field indicators of hydric soils demonstrating that the chemical processes associated with bottomland hardwood wetlands either already exist or have existed and can be restored, (c) adjacent remnant wetland plant communities suggest what the site can look like in the future, (d) remnant and degraded animal communities that would be enhanced through the creation of additional, higher-quality habitats, and (e) sufficient sources of hydrology.

The proposed wetland restoration also would provide additional watershed benefits to the Lower Tennessee-Beech River watershed. These would include (a) the elimination of sediment to downstream portions of the Tennessee-Beech River watershed that is derived from the agricultural operations currently on-site, (b) the on-site storage of flood waters and sediment from upstream sources, and (c) additional acreage of bottomland hardwood wetland habitat in the watershed. In addition, the Bank would be located adjacent to other conservation lands owned by the Tennessee Wildlife Resources Agency.

#### Water Rights

The Mitigation Rule includes a requirement for bank proponents to assure and demonstrate that sufficient water rights are available to support long-term sustainability of the mitigation bank. There are no water rights issues that would negatively affect the Bank once established. The hydrology of the site is controlled by natural hydrologic processes, such as rainfall, flooding in Beech Canal, and ponding within hydric soil areas. As the owner of the site, BRF would exercise control over the site.

Figure 1. General location of Beech River Farms proposed mitigation bank, Henderson County, Tennessee.

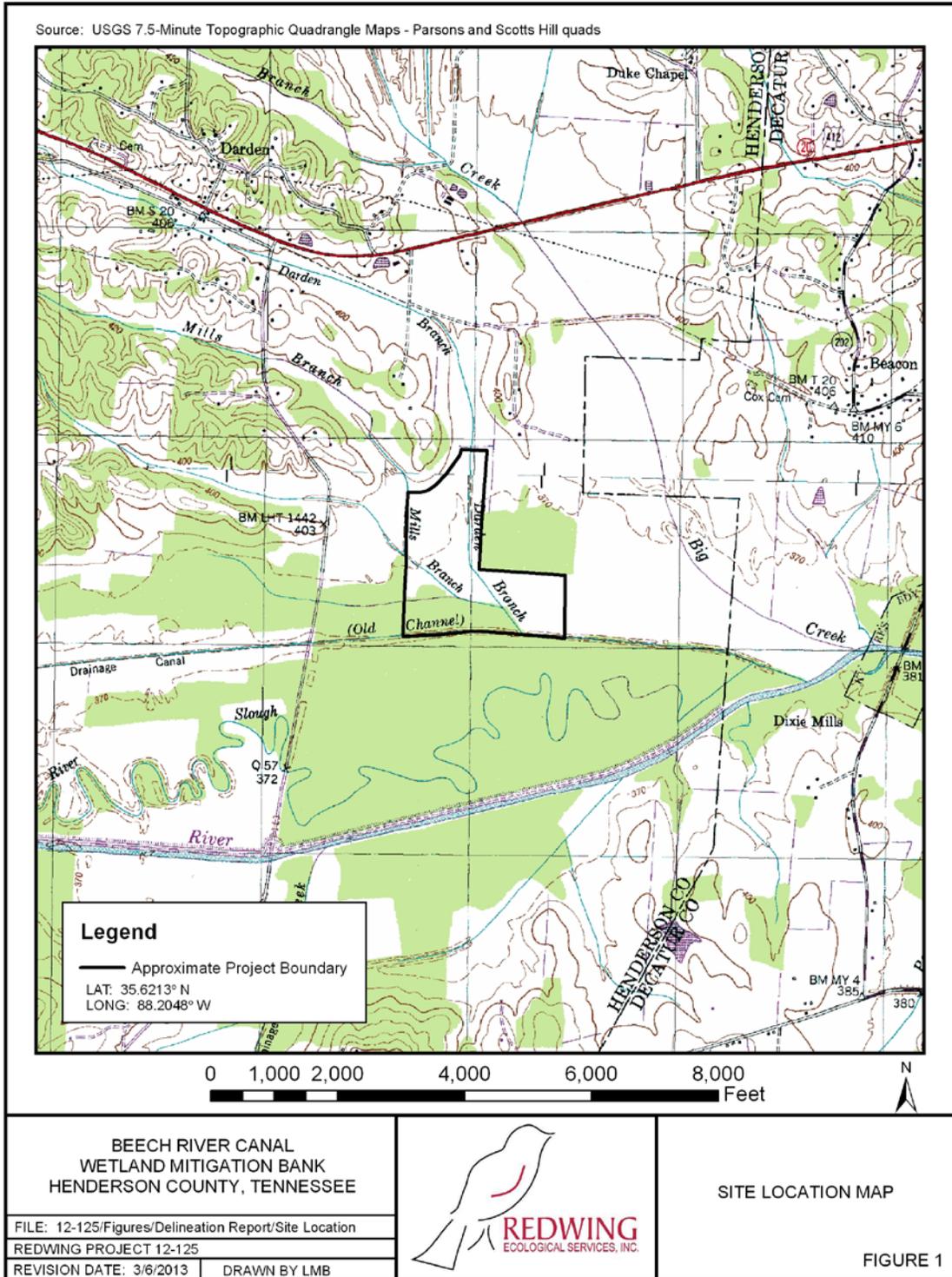


Figure 2. Aerial View of Beech River Farms proposed mitigation bank, Henderson County, Tennessee.

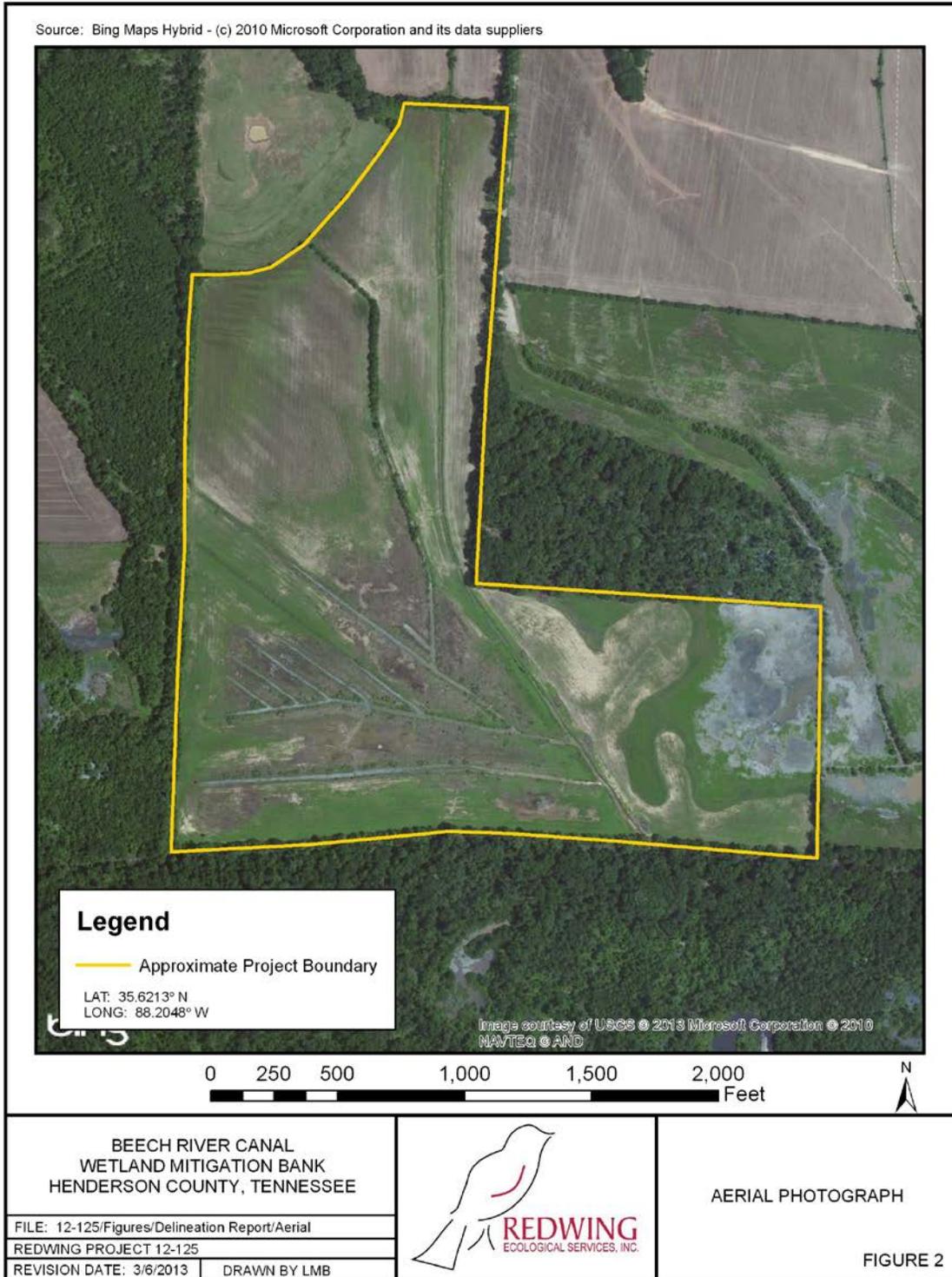


Figure 3. Map of jurisdictional areas on Beech River Farms proposed mitigation bank, Henderson County, Tennessee.

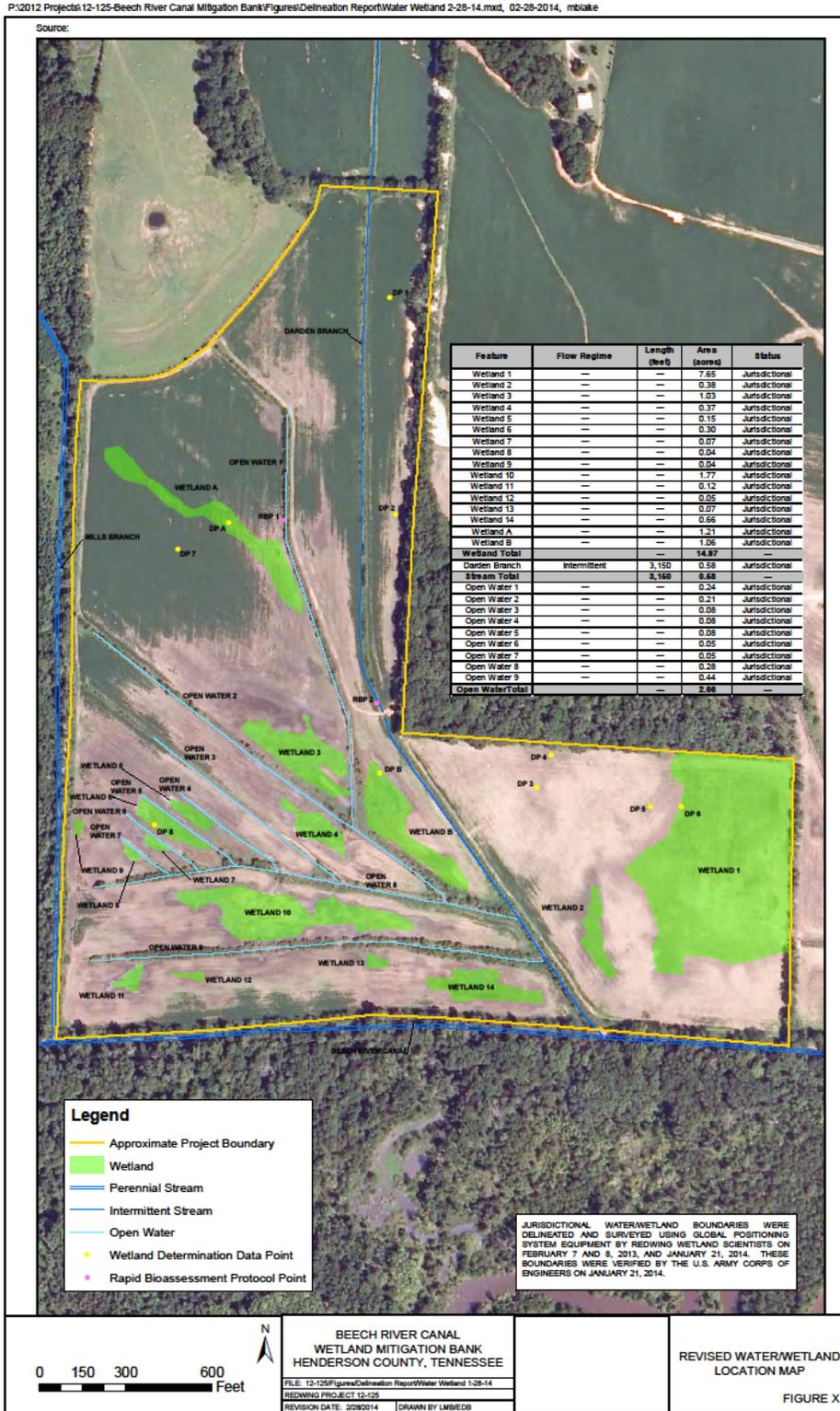


Figure 4. Beech River Farms Mitigation Bank showing conceptual locations of Phase 1 and subsequent phases of mitigation bank development



Figure 5. Soil survey of Beech River Farms proposed mitigation bank, Henderson County, Tennessee.



Figure 6. Conceptual plan for stream restoration on the Beech River Farms Mitigation Bank, Henderson County, Tennessee.



Figure 7. Phase 1 wetland restoration site on the Beech River Farms Mitigation Bank, Henderson County, Tennessee

