

**Management-Monitoring Plan**  
**for the**  
**Embarras River Bottoms State Habitat Area**  
**July 1, 2018 – June 30, 2020**

**Prepared by**  
**ERBSHA Restoration Planning Workgroup**

This plan was developed by the ERBSHA Restoration Planning Workgroup. The workgroup consists of the following IDNR staff: Terry Esker (Office of Resource Conservation-Natural Heritage), Bob Edgin (Illinois Nature Preserves Commission-retired), Sami Childerson (Illinois Nature Preserves Commission), Trent Thomas (Office of Resource Conservation-Fisheries), John Bunnell (Office of Resource Conservation-Wildlife Resources), Dusty Taylor (Office of Law Enforcement), Tony Holtschlag (Office of Land Management-Red Hills State Park), Wade Bloemer and Jenny Lesko (Office of Resource Conservation-Forestry), Gary Iles (Office of Realty and Capital Planning), Jessica Riney and Beth Whetsell (Office of Resource Conservation-Contaminant Assessment Section).

FACT SHEET

July 1, 2018 – June 30, 2020 Management-Monitoring Plan for the Embarras River Bottoms State Habitat Area, Lawrence County, Illinois.

LEAD AGENCY FOR the Management-Monitoring Plan:  
Illinois Department of Natural Resources

COOPERATING AGENCY:  
Illinois Environmental Protection Agency

ABSTRACT:

This Management-Monitoring Plan (MMP) describes for the general public and interested parties the terms of the settlement, and a phased approach to restoration with focus on baseline monitoring and site preparation activities. This plan is effective July 1, 2018 through June 30, 2020.

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COPIES:

The MMP is available for download at <http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx>

## INTRODUCTION

Releases of hazardous substances and oil into our environment can pose a threat to human health and natural resources. Natural resources are plants, animals, land, air, water, groundwater, drinking water supplies, and other similar resources. When the public's natural resources are injured by a release of hazardous substances or oil, federal law provides a mechanism, Natural Resource Damage Assessment (NRDA) that authorizes Natural Resource Trustees to seek compensation for the public for injuries to natural resources. Due to NRDA action taken by the Illinois Natural Resource Trustees (State Trustees), Illinois Department of Natural Resources (IDNR) and Illinois Environmental Protection Agency (IEPA), and the Illinois Attorney General's Office (IAGO), Texaco Incorporated (Texaco) agreed to compensate the public based on determination that natural resources were injured resulting from releases into the environment of hazardous substances, contaminants, and pollutants, including but not limited to petroleum, petroleum constituents, including xylene, toluene, benzene, and Polyaromatic hydrocarbons (PAHs), metals, including lead, zinc, cadmium, and copper, and acid and caustic waste at and from a former petroleum refinery at Lawrenceville, Illinois, that was originally known as the Indian Refinery. The settlement, entered in the US District Court on December 30, 2010, provided approximately \$1.3 million for natural resource restoration.

This Management-Monitoring Plan (MMP) describes for the general public and interested parties the terms of the settlement, and a phased approach to restoration with focus on baseline monitoring and site preparation activities. For information about the former Indian Refinery NRDA, visit <http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx>

In an effort to keep the public informed of the progress of site activities, IDNR issues updates in the form of factsheets and progress reports twice a year (Spring and Fall). A formal restoration plan per NRDA guidance<sup>1</sup> will be developed and subject to a 30-day public review period. Management and monitoring updates and the formal restoration plan will be posted at <http://www.dnr.illinois.gov/programs/NRDA/Pages/ERBSHA.aspx> and available at the Lawrence Public Library, 814 12th St., Lawrenceville, IL 62439.

## NRDA OF REFINERY

The Former Indian Refinery (the Refinery) in Lawrenceville, Illinois, operated from 1907 to 1985 and from 1990 to 1995. This 990-acre facility on the banks of the Embarras River (Figure 1) produced liquid petroleum gas, motor gasoline, aviation gasoline, jet fuel, burner oil, diesel oil, home heating oil, fuel oil, asphalt materials, lube oil, and motor oil. Waste products from refining this petroleum included oily sludges, leaded tank bottoms, acidic lube oil filter clay, lime sludge, catalyst waste, and tar/asphalt wastes. These wastes frequently were placed in the Embarras River floodplain, exposing natural resources to hazardous substances and/or petroleum products. In addition, surface and subsurface petroleum product spills have exposed vegetation, birds, wildlife, aquatic biota, and groundwater to hazardous substances and/or petroleum products.

To make the public whole for injuries to natural resources as a result of hazardous substance And/or petroleum product releases, floodplain forest habitat will be restored and preserved. In addition, funding for habitat restoration and projects to reduce groundwater consumption and improve

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<sup>1</sup> 43 Code of Federal Regulations (CFR) Part 11 provides guidance for the Natural Resource Damage Assessment process, including, steps to complete a formal restoration plan.

groundwater quality in Lawrence County has been secured. Table 1. summarizes the agreement between Texaco and the State Trustees.

## **SITE DESCRIPTION OF ACQUIRED PROPERTIES**

The settlement includes approximately 2400 acres of floodplain habitat along the Embarras River, Lawrence County, Illinois.

As of May 2012, ~2200 of the 2400 acres have been transferred to State ownership.

In June 2011, approximately 2000 acres, formerly known as the White Farm, was transferred to the State. This property consists of bottomland wetland and forest, encompassing the Embarras River south of Lawrenceville to almost the confluence with the Wabash River (Figure 2). However, the majority of the property was former cropland and is now in varying stages of succession. The property includes 16 shallow water wetlands created under a Natural Resource Conservation Service (NRCS) Emergency Wetland Protection Floodplain Easement. These wetlands have not been consistently maintained by the previous landowner and much overgrowth has taken place.

In May 2012, ~160 acres, formerly known as Siddens' property, was transferred to the State. This property is located immediately south of Refinery property (Figure 2). Approximately 27 acres of the Siddens' property historically were in agricultural production and were enrolled in the United States Department of Agriculture (USDA) Farm Service Agency (FSA) Conservation Reserve Program (CRP) in 2004. The remaining approximately 133 acres of the 160 acres consist of floodplain forest in varying successional stages.

The remaining 185 acres has yet to be transferred to the State. This property, formally known as AWR property, includes a former agricultural area on the east side of the Embarras River and floodplain forest immediately south and east of the Refinery (Figure 2). The floodplain forest is a mosaic of smaller forest parcels in varying successional stages, and the agricultural area has been allowed to revert to scrub-shrub.

Historically, the ~2400-acre area was forested, both closed and open woodlands, with swamp and sand barren communities intermixed along the river corridor. Prairie communities skirted the upland boundary. As a result of lack of natural community management, invasion of non-native plants, negligent oil well management and trespassing, the historic natural communities have degraded or have disappeared entirely. Generally speaking, the majority of the property has been disturbed in some fashion or another (ag, oil or otherwise).

The subject area has been named and classified as the Embarras River Bottoms State Habitat Area (ERBSHA). The following categorical descriptions of a State Habitat Area reflect the goal and objective of the Natural Resource Damage Assessment and Restoration (NRDAR) effort for this property:

- The **Purpose of Establishment** is to reserve and manage land and water areas for fish and/or wildlife habitat and to make them available for regulated hunting, fishing, trapping and nature observation.



- The **Natural Resource/Cultural Base Characteristics** should contain aquatic and/or terrestrial habitats which can be managed to sustain fish and wildlife species.
- The **Potential for Recreation** is to accommodate some recreational use; however, convenient public access is not mandatory.
- The **Size** should facilitate effective management of the resource and users.
- The **Establishment** should be of regional significance and have the following characteristics: 1) Not subject to high local use; 2) Lack of attractive nuisances and barriers to effective management; 3) Nearness to other departmental areas to facilitate satellite management.
- The **Development and Management Policies** include: 1) resource management emphasizing conserving and restoring fish and/or wildlife habitat. Natural and cultural resources within an area will be protected and managed as appropriate; 2) resource use limited to hunting, fishing, trapping and nature observation; 3) physical development limited to only those access and sanitary facilities necessary to accommodate the planned limited resource-based recreational use.

The properties are located along the lower segment of the Embarras River, nearly to the confluence with the Wabash River and encompass much of the former Embarras River channel and related floodplain within their boundaries; therefore, the suggested name reflects the resource.

## VISION

The overall goal of the NRDAR effort is to restore and maintain a complex consisting of bottomland forest with depressional pools, shallow-water wetlands, sedge meadows, oxbow ponds and sloughs as well as remnants of the former river channel, sand barrens, prairie, and river that is able to support an array of natural resources.

Target community types include but are not necessarily limited to, mesic floodplain forest, dry-mesic upland forest, depressional pool, shallow-water wetland, sedge meadow, oxbow pond, slough, sand barren, prairie, and river.

Areas of the property continue to overgrow with undesirable vegetation. The longer undesirable vegetation is uncontrolled/unmanaged, the more difficult implementing restoration measures becomes. Other areas are not secure, resulting in a significant amount of trespass. Trespassing issues, such as liability for injuries, property damage, etc., have the potential to hinder the timing of the implementation of restoration actions and the longevity of such actions.

The State recognizes the need to implement site preparation/management activities to control areas of overgrowth and trespassing, while utilizing the least intensive, most cost-effective restoration activities; therefore, it is proceeding with a phased approach to restoration and management of the site.

The phased approach ultimately consists of four stages: 1) Management, monitoring and site preparation; 2) Restoration; 3) Long-term management and monitoring; 4) Recreational use planning. The focus of this document is Phase I: management, monitoring and site preparation. Similar documents will be generated for Phase 2, 3, and 4. A restoration plan for the groundwater resource is forthcoming and not discussed in this document. All documents will be available to the public for review.

Phase I will consist of information focused on securing the site, monitoring baseline conditions, and preparing the site for restoration and managing the restoration into the future. Actions included in the Phase I are, but not necessarily limited to, marking the property boundary, limiting trespassing, baseline monitoring, and management activities such as prescribed burning, invasive species management, brush-cutting, mowing, bank stabilization, and oil well field management.

The goals of this management and monitoring plan are two-fold: 1) to establish baseline conditions through monitoring for the purposes of documenting successful measures and/or providing the basis for adaptive management; and 2) to prepare the site for restoration actions and managing such actions in the future by implementing such activities as prescribed burns, invasive and exotic species control measures, clearing/mowing, and/or timber stand improvement.

## **MONITORING**

The following monitoring strategies, but not necessarily limited to, will continue for the timeframe of this plan:

### Monitoring Stations:

A number of stations have been established across the site representing the diverse community types present. Photos have been and will continue to be taken at all the monitoring stations to visually track the habitat changes over time. Basic observations may also be recorded, for example: the overall habitat condition, management actions taking place at the time of the visit, and wildlife observed in the vicinity of the monitoring station.

Some of the stations will have a more intensified sampling strategy, for example: vegetation, terrestrial insect, and bird sampling will be conducted; which will provide quantitative data that can track biological changes over time. The frequency of sampling will depend on the community type present. Some stations may be sampled annually, others will be sampled once every three years, and others may not be repeated but once every five years.

### Other Sampling Approaches:

Other intensified sampling approaches will be utilized across the site, but not necessarily at the established monitoring stations mentioned above. For example, appropriate locations will be identified for surveying mammals, amphibians & reptiles, fish, mussels, and aquatic insects.

### Sampling Methodology:

Below is a general description of the methodology being implemented for each ecological attribute:

- a. *Vegetation:* A transect- and quadrat-based method will be followed to collect data on the abundance and cover of all species of herbaceous and woody vegetation. At the sampling location, a center point is established with sampling areas in all four cardinal compass directions. Vegetation surveying takes place anytime during August and September.
- b. *Insects:* For terrestrial insects, sweep-netting has been conducted along multiple transects to date. Aquatic insects may be sampled in the oxbows and/or stream channel by dip netting of appropriate habitats (undercut banks, brush, rocky substrate etc.). Both for the terrestrial and aquatic insects sampled the specimens will be separated from debris and identified to the furthest classification possible. The surveying completed to date has taken place during the appropriate sampling



timeframe.

- c. *Birds*: A point-count based method has been and will continue to be utilized, whereby the observer stands at a fixed point and records everything they hear and see. In wetlands, calls of secretive species can be broadcast to improve detection of these species. Bird surveying takes place during the appropriate sampling timeframe, potentially multiple times throughout a sampling season. Trail cameras have been placed at various locations throughout the site and have documented wild turkey movements.
- d. *Mammals*: Trail cameras have been placed at various locations throughout the site and have documented large mammal movements (i.e, deer and bobcat). In the future, mammals may be surveyed according to IDNR Division of Wildlife procedures. For example, for small mammals bait stations could be used as well as live trapping using Sherman traps placed in a grid system. Mist netting could be conducted for bats. Furbearer routes could be sampled in the spring for spring feeding activity and a summer spotlight route could be conducted to add reproduction data.
- e. *Amphibians and reptiles*: Amphibians and reptiles have been surveyed according to IDNR Division of Natural Heritage procedures and the Illinois Natural History Survey. Surveys have included timed visual encounters including looking under set cover boards. Traps have been used in a capture and release sampling approach. The monitoring period for amphibians and reptiles is March-October. Auditory surveys may be completed during the spring breeding season, March-June, in future field seasons.
- f. *Fish*: Appropriate water bodies have been selected and fish surveying has followed IDNR Division of Fisheries procedures. At a few locations onsite, an electrofishing method has been utilized. All fish collected over 100 mm are measured to the nearest millimeter in total length and weighed to the nearest gram then released back to the site. Cyprinids and fish fewer than 100 mm are euthanized and preserved in 10% formalin solution for identification in the laboratory. Fish surveying has taken place May-October.
- g. *Mussels*: Appropriate water bodies will be selected and mussel surveying will follow the typical four person hour timed grubbing session. All collected mussels will be identified to species and recorded as number of individuals by species. Each mussel may also be measured, sexed, and their approximate age determined. Mussel surveying typically takes places during summer months when water levels are low.
- h. *Other*: Other ecological attributes not documented herein may be added to the list in the future.

Changes to the ecological attributes and description of proposed methodology may occur. Additions and changes will be noted in site factsheets and progress reports.

### Research Plots

In an effort to better understand the potential outcomes of large-scale timber stand improvement practices in mesic floodplain forest communities, a small plot will be created in the easternmost timber stand.

Research plots of native species, catchfly and winged sedge, have been established in existing dry-mesic forest/seep. Such plots are providing an understanding of how practical a larger-scale reintroduction of such rare plant species would be.

Other test plots for additional restoration measures for other community types may be planned. Such plans will be presented in future planning documents, site factsheets and/or progress reports.

## Statewide Efforts

As part of the statewide recovery effort of the barn owl, another nestbox has will be erected at the site (Figure 3). The boxes will be monitored as part of the statewide effort. The barn owl recovery plan can be viewed at <http://www.dnr.illinois.gov/espb/documents/illinoisbarnowlrecoveryplannovember2010.pdf>.

Other nesting structures may be placed throughout the property. Notification of such placement will be included in factsheets and progress reports or incorporated into the restoration plan for the site.

## **MANAGEMENT**

In an effort to secure the site, to more thoroughly evaluate site conditions, to monitor the site, and to control overgrowth in areas, utilizing the least intensive, most cost-effective restoration activities, the following activities will be planned and/or are ongoing:

1. Posting of IDNR signs along the perimeter of the property (Figure 2).
2. Installing IDNR gates and/or pickets at various access points of the property (Figure 3).
3. Place gravel at Billett Road access lot (Figure 4).
4. Mowing of existing wetland berms (Figure 4).
5. Mowing of paths and access points (Figure 4).
6. Grinding of invasive woody growth with a hydro-axe for large woody species or denser stands.
7. Mowing, disking or grinding of existing wetland units to control unwanted woody growth.
8. Controlling invasive and/or exotic vegetation by mechanical, biological, cultural and chemical means, including the treatment of woody growth subject to grinding.
9. Relocating downed trees from access paths to immediately adjacent areas.
10. Stabilizing the banks of the former channel of the Embarras River and the new channel to prevent the drainage of the former channel (Figure 3).
11. Creating earthen berms around the oil wells and associated structures as an oil spill preventative measure (Figure 3).
12. Establishing fire breaks by mowing, disking, and roto-tilling. Firebreaks will likely consist of 15 feet-wide mowed paths with 6 feet-wide roto-tilled paths along the outside edge of mowed paths. Additional mowing and roto-tilling may be necessary depending on the fuel loads of a given area.
13. Prescribed burning of designated areas will occur between October 1 and April 30<sup>th</sup> (Figure 5).
14. Removing debris, including, but not necessarily limited to garbage, from property.
15. Removing concrete, pipe and other debris remaining from previous structures or activities that occurred on the property.
16. Conducting general maintenance activities, including repairs, associated with existing wetland berms and associated water control structures and access paths.

Posting IDNR signs along the perimeter of the property as well as installing gates and/or pickets at access points of the property will be completed in an effort to limit trespassing, fly-dumping and other illegal activities. Gravel will be added to the area identified as the Billett Road access lot in Figure 4. to finish the access lot for vehicles associated with management, monitoring, and restoration efforts. An additional parking area along Billett Rd and the easternmost boundary is planned.

Mowing berms, paths, and access points will allow for more accurate and efficient surveying and posting of property boundary signage. Mowing will reduce undesired woody vegetation allowing for a more thorough evaluation of the present condition of berms associated with existing created wetlands and aid in the development of an appropriate plan for restoration, maintenance and future operation/functionality of 8



these wetlands. Disking and/or mowing of the existing wetland units will reduce vegetative cover and allow for a more detailed and precise evaluation of the extent and function of the wetlands themselves, thus also aiding the development of an appropriate plan for restoration, maintenance and future operation/functionality of these wetlands.

Mechanical, biological, cultural and chemical control of exotic and invasive species will reduce such species from competing with native, desirable species and allow for a more thorough evaluation of infested areas to aid in the development of an appropriate plan for maintenance and future operation/functionality of the existing wetlands.

In the southwestern corner of the property, bankstabilization is necessary between the former channel of the Embarras River and the new channel (Figure 3). If the riverbank fails, the former channel may drain. Presently, the former channel provides backwater slough-type habitat for many natural resources. IDNR aspires to preserve this natural feature and the resources it provides habitat for.

In the center of the property, immediately north of Billet Road, active oil wells, salt injection wells, and a tank battery are present. In an effort to contain an oil release in the future, earthen berms will be created around these features (Figure 3).

Firebreaks will be established to contain prescribed burning of floodplain communities within designated areas as much as possible. Prescribed burning will encourage the establishment of native floodplain communities and will maintain such communities. Prescribed burning will reduce vegetative cover and encroachment by undesirable vegetation enabling the evaluation of extent and function of existing created wetlands. An IDNR burn plan has been developed and approved for units delineated in Figure 5.

The activities outlined above will be performed consistent with IDNR current policies and procedures associated with such management. When completing any ground impacting activities identified in this plan in the vicinity of mound site 11\_LW\_70, a 100-ft buffer will be maintained between the mound and work area in an effort to preserve the area of potential cultural resource significance. All activities within NRCS easement designations will be approved by NRCS prior to implementation.

## **Figures and Table**

**Figures 1 and Table 1** were originally created and included in the former Indian Refinery Natural Resource Damage Assessment Report of Assessment completed for NRDA settlement purposes; therefore, their format varies from other content of this plan.

**Figures 4 and 5** were originally created and submitted for NRCS Compatible Use Agreement request submittals; therefore, their format varies from other content of this plan.

Figure 1. Former Indian Refinery property, Lawrenceville, IL.

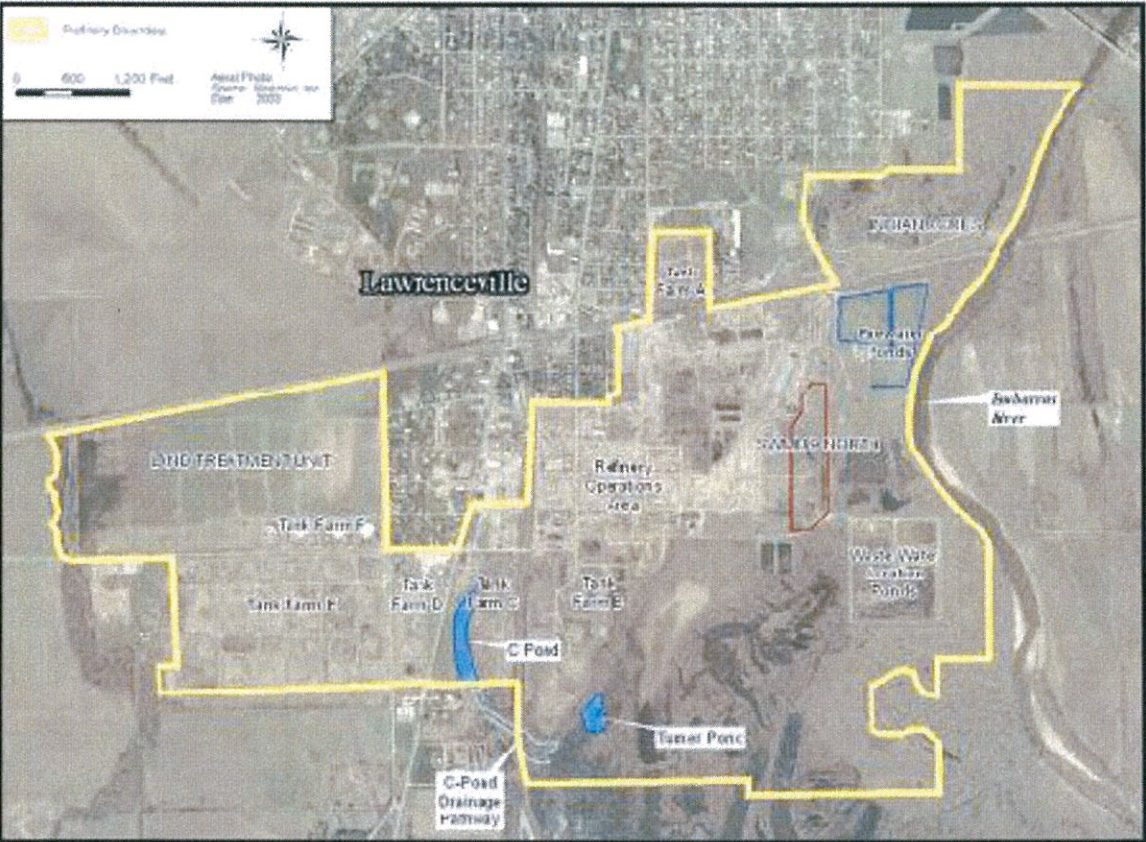
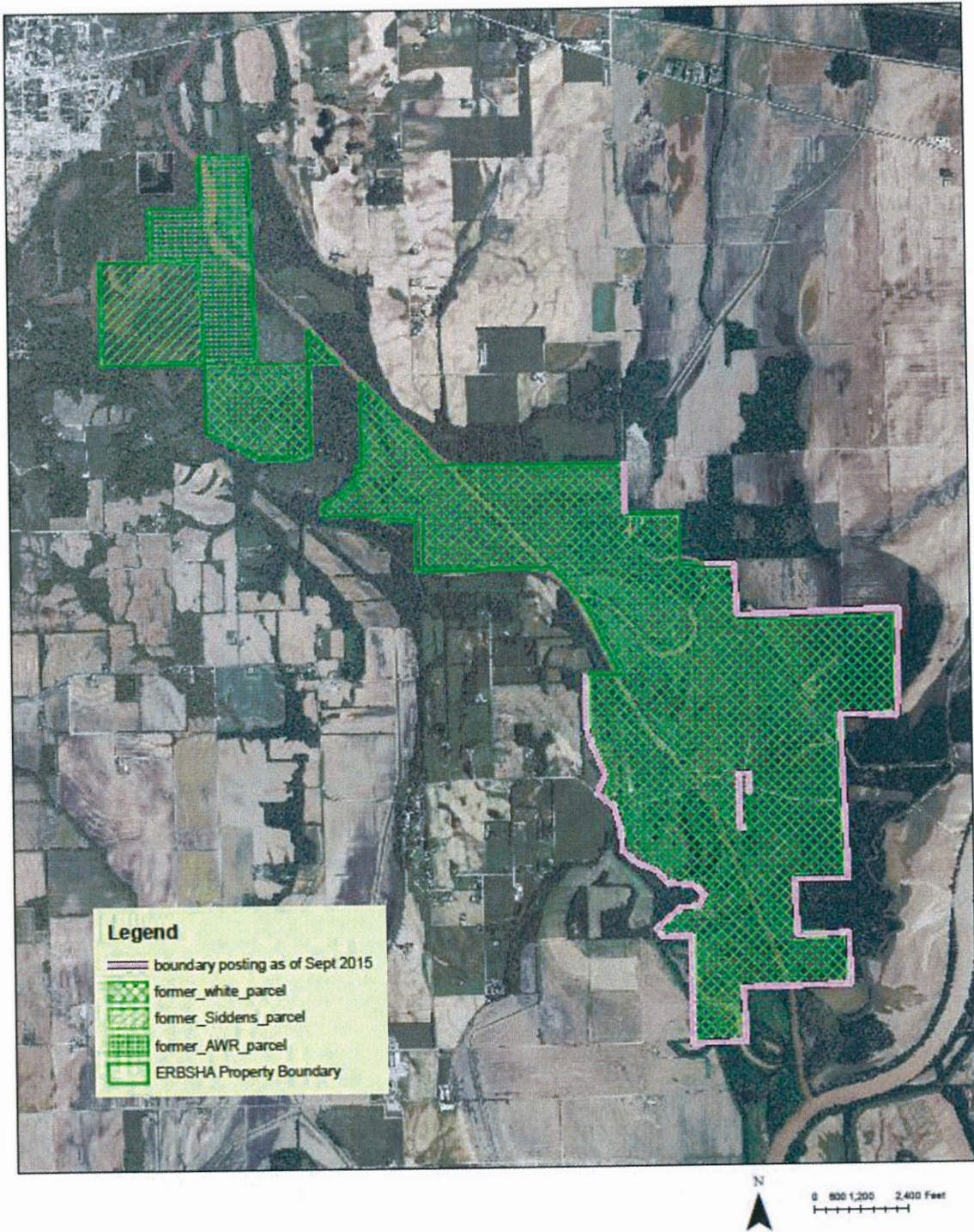


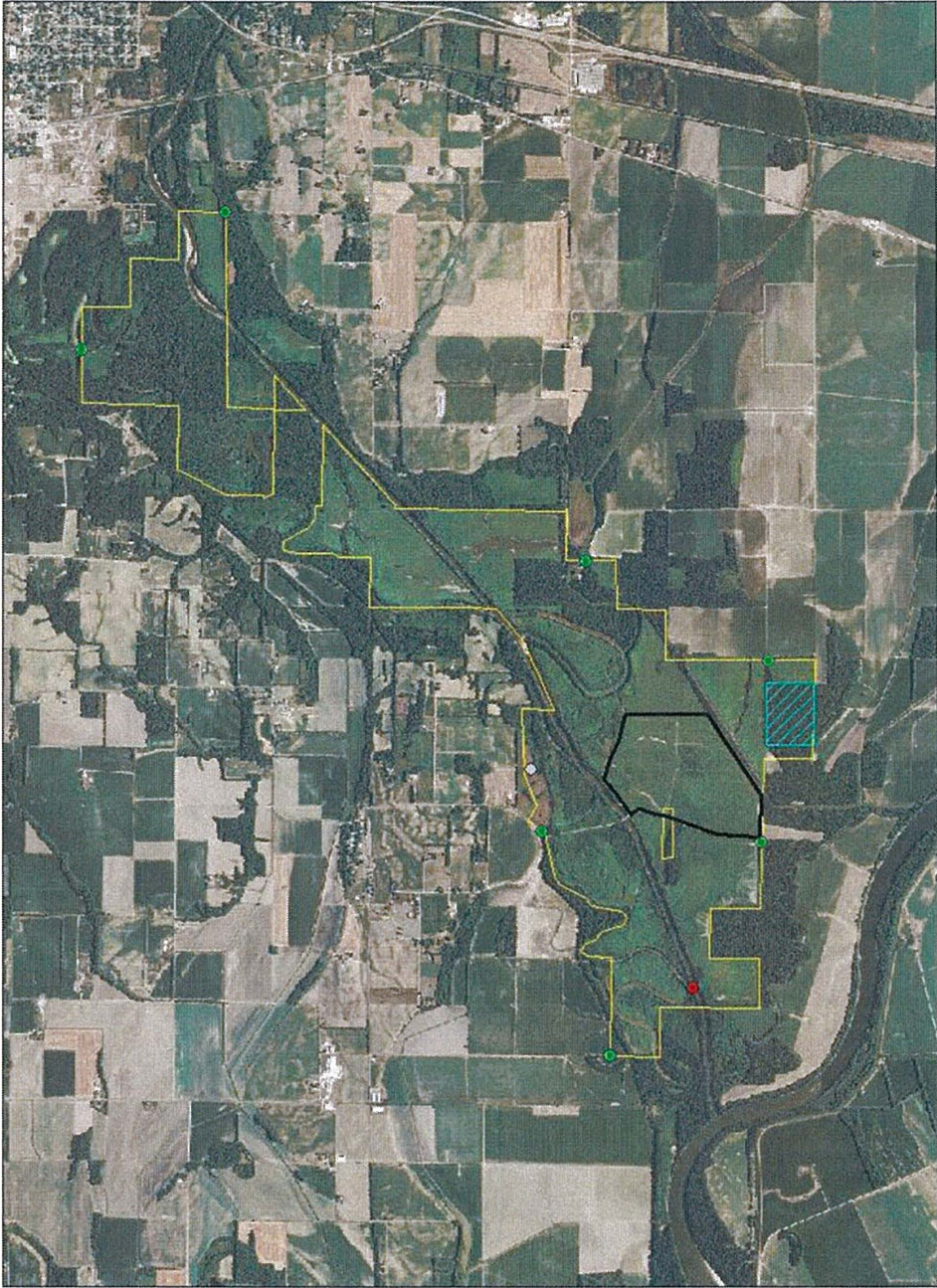


Figure 2. Properties associated with NRDA settlement.





**Figure 3.** Existing and proposed gate locations (green dot), Timber Stand Improvement (TSI) research plot (blue hashed square), oil field (black outline), barn owl box (gray dot), and bank stabilization project (red dot) at ERBSHA.





**Figure 4.** Paths to access areas to be managed and to post boundary signs and NRCS water control structures. Acres not included in the NRCS easement boundary as well as the Billett Rd access lot are also depicted on this figure.

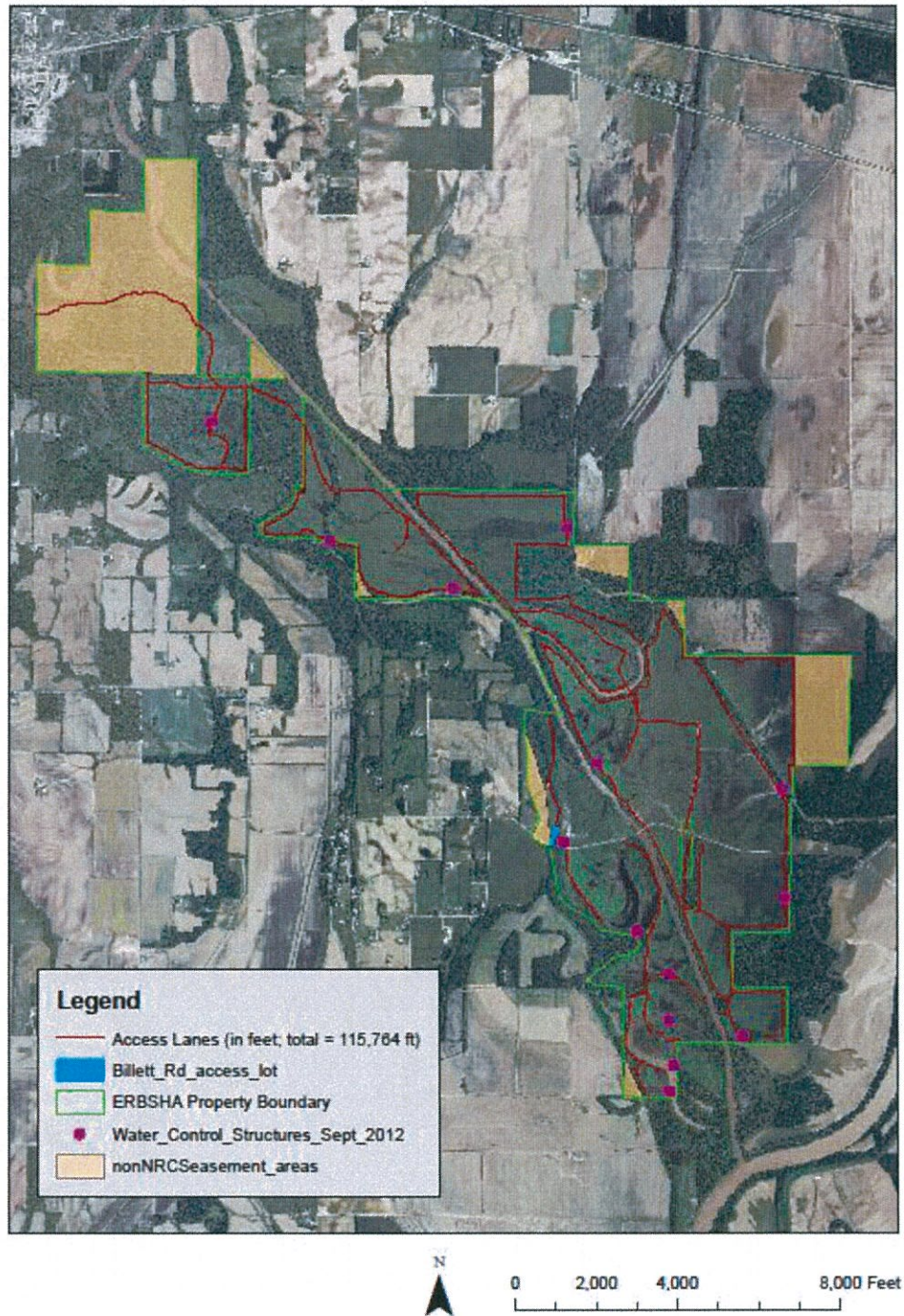
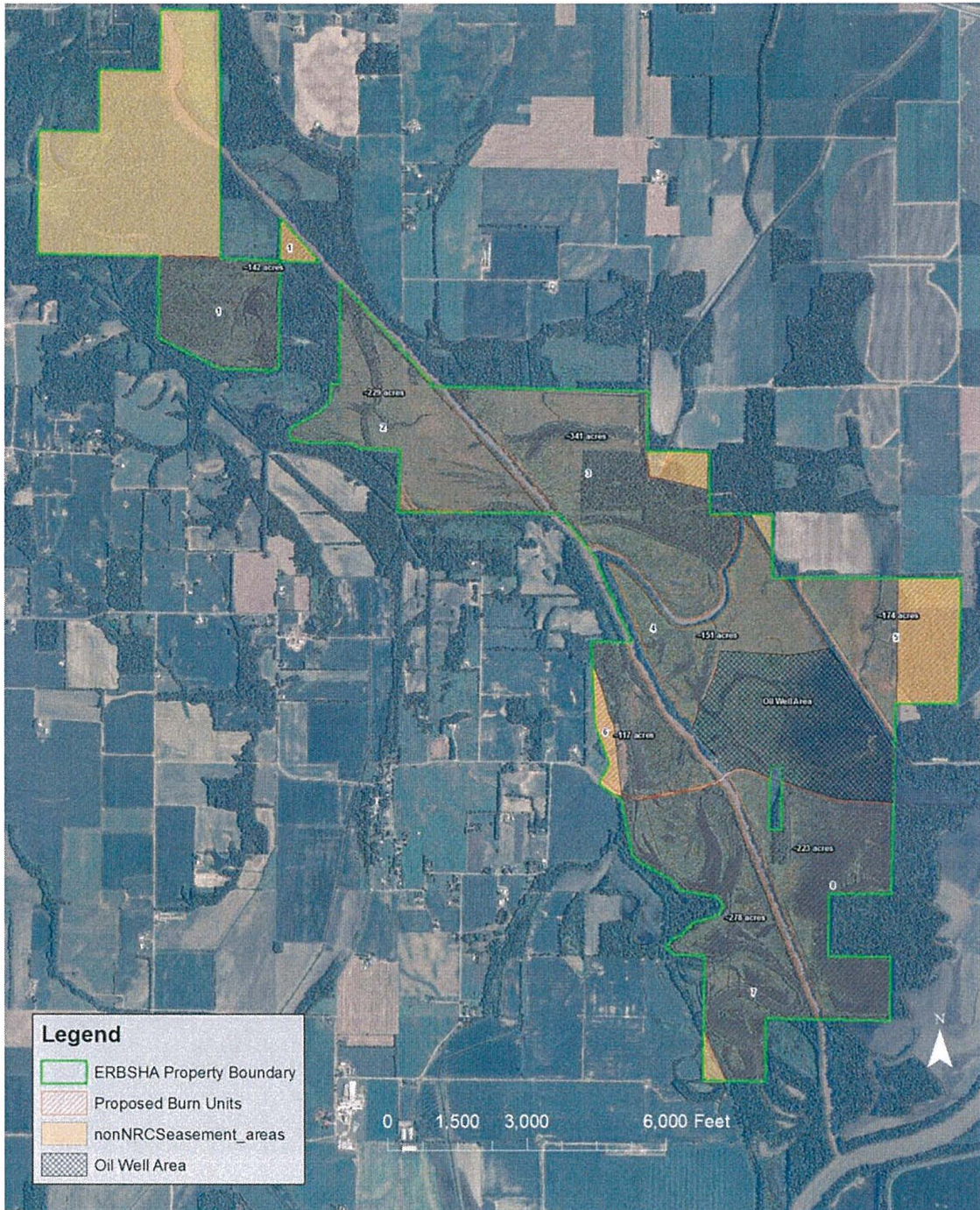




Figure 5. Prescribed Burning Units of ERBSHA.





**Table 1.** Terms of the former Indian Refinery NRDA settlement.

<b>Project</b>	<b>Description</b>	<b>Cost/property</b>
Siddens acquisition	Provide Siddens property to the State for permanent habitat conservation	160 acres <sup>a</sup>
AWR acquisition	Provide AWR property to the State for permanent habitat conservation	200 acres <sup>a</sup>
White Farm acquisition	Provide White Farm property to the State for permanent habitat conservation	1,954 acres
<b>Land acquisition and conservation subtotal</b>		<b>2,314 acres</b>
Habitat restoration and additional land acquisition <sup>b</sup>	Restoration of floodplain forest habitat on Siddens, AWR, and White Farm properties; restoration of aquatic habitat in oxbow ponds; additional restoration/acquisition/preservation to cover uncertainty in the restoration benefits and cost analyses	\$1,362,000
<b>Restoration and/or additional acquisition subtotal</b>		<b>\$1,362,000</b>
SCADA and BMP	Purchase SCADA system for City of Lawrenceville and provide funding for University of Illinois Extension to conduct BMP seminars for Lawrence County farmers	\$115,000
Assessment costs	Future costs for the State Trustees, including the Restoration Plan, restoration oversight, and administrative costs associated with land transfers	\$250,000
<b>SCADA, BMP, and assessment cost subtotal</b>		<b>\$365,000</b>
<b>Total</b>	<b>Habitat restoration, floodplain forest acquisition, groundwater conservation, groundwater quality improvement, and project administration</b>	<b>2,314 acres + \$1,727,000</b>

a. The exact acreage of the Siddens and AWR parcels will be verified in a final survey.

b. The proposed settlement between the State Trustees and Texaco includes a lump sum payment for the habitat restoration as presented in this document as well as for supplemental acquisition and restoration. A forthcoming Restoration Plan will include more details about the proposed restoration projects, including project-specific cost estimates.