Appendix J
Biological Assessment

PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

PAGE INTENTIONALLY LEFT BLANK

1 INTRODUCTION

1.1 Purpose

The U.S. Army Corps of Engineers, St. Louis District (USACE) is preparing a Feasibility Report with Integrated Environmental Assessment for implementation of the Oakwood Bottoms Habitat Rehabilitation and Enhancement Project (HREP), referred to as the Study. The primary goal of this ecosystem study is to restore and improve the quality and diversity of bottomland hardwood forest and wetland ecosystem resources. The purpose of this Draft Feasibility Report with Integrated Environmental Assessment (EA), including the draft unsigned Finding of No Significant Impact (FONSI), is to evaluate the proposal for the UMRR-HREP at Oakwood Bottoms. The Draft Feasibility Report and Integrated EA meet Corps of Engineers planning guidance and meet NEPA requirements. The draft feasibility report presents a detailed account of the planning, engineering, construction details, and environmental considerations.

The need for this Project is described fully in the draft feasibility report, and only briefly summarized here. Bottomland hardwood forest and emergent wetland have been identified as habitat needs for the Middle Mississippi River (MMR) (Theiling et al., 2000). Existing bottomland hardwood forest is currently in a state of decline with over 30% of the forest composition consisting of oak species that are over the age of 80 years. Without action, the existing bottomland hardwood forest quality would continue to decline impacting the overall forest health and resiliency. In addition, the continued degradation would lead to conversion of forest cover to swamp scrub/shrub translating to a quantitative loss of habitat (resting, foraging, and breeding) for migratory and resident wildlife. Furthermore, floodplain forest within the MMR have been adversely affected due to past land human-induced actions and have resulted in loss resource for resident and migrant wildlife. The need for this Project is now since there is an opportunity to restore a diverse suite of habitats that have all been identified as a habitat need for the MMR within the Study area. The restoration of ecosystem structure and function at the Project would contribute to restoring ecological health and resiliency of the Upper Mississippi River System. Refer to the main report for more details.

The purpose of this Biological Assessment (BA) is to review the proposed Oakwood Bottoms HREP in sufficient detail to evaluate whether the proposed actions may affect any federally threatened, endangered, proposed, or candidate species identified by the U.S. Fish and Wildlife Service (USFWS). This BA is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (15 U.S.C. 1536 (c)) and applicable guidance documents. The BA includes the description of the Study Area, proposed actions, species accounts and status, effects of the proposed actions, and effects determinations.

1.2 Proposed Action

The proposed Federal action involves selecting and recommending one of the alternatives for implementation to restore ecosystem structure and function at Oakwood Bottoms HREP. The proposed Federal action for this Biological Assessment includes the feasibility level of design for the tentatively selected plan. For more details on the quantities for the feasibility level of design, see Appendix B – *Civil Engineering*.

1.3 Project Description

USACE is preparing to implement a habitat rehabilitation and enhancement project at Oakwood Bottoms, located Jackson County, Illinois. The project is in the Middle Mississippi River (MMR) between river miles 79.5 and 85.0. The study area is approximately 4,500 acres of bottomland hardwood forest and emergent wetland habitat (Figure 1).

The proposed alternative plan involves degrading some berms within the Study Area that were unsystematically constructed beginning in the 1940s and continuing until approximately 20 years ago. Berm degrading would allow for more efficient and effective water transport throughout the Study Area. The water transport would be improved by the construction of a pump station to the Big Muddy River, allowing the Study Area to be drained and filled more quickly during the spring and fall, respectively. Approximately 4,500 acres of bottomland hardwood forest would benefit from degrading berms and the construction of a pump station. Additionally, 94 acres would be reforested where the degraded berms occurred. Approximately, 94 acres of emergent wetland habitat would be improved with the degrading of several berms and the placement of new water control structures, allowing these emergent wetland areas to be effectively managed with water finite water level manipulations (Figure 2).

The details of the proposed plan are further described below.

1.3.1 Berm Degrades

Approximately 94 acres of existing berms would be degraded and material would be placed into the adjacent borrow ditches from which it was originally excavated. The former berm area would then be reforested. This activity would restore natural contours to the landscape and would be considered wetland restoration and would have Major effect on wetlands. Overland sheet flow and water conveyance would be restored through this action and the forested wetland community health would improve.

1.3.2 Structure Replacement

A total of 62 structures in the project area would be removed with a total of 30 structures that would be upgraded for additional capacity.

1.3.3 Moist Soil Unit Enhancement

Approximately 87.0 acres of wetland would be enhanced within the Project Area. The emergent wetlands currently do not have acceptable infrastructure to drain and fill at times appropriate for moist-soil unit management. Berm degrades, upgrading structures, and sloping the area appropriately for water drainage will improve management capability. Discing of the area will reset the vegetation from non-desirable species. Additionally, approximately 27 acres would be cleared in Unit 14 to expand existing moist-soil unit habitat for migratory waterfowl. As this unit is currently managed as moist-soil, conflicting management dates exist. For example ideal time to remove water from a moist-soil unit is typically June to July to facilitate the growth of moist-soil vegetation. Whereas for a greentree reservoir management scenario, the ideal time to remove water is before the start of the growing season, which is typically early to mid-March in this area, to limit the impacts of the water on the trees. Since Unit 14 is already

being managed for moist-soil, the trees present would not survive long term.

1.3.4 Pump Installation

A pump would be installed within the lower portion of the green tree reservoir. This pump would allow the Forest Service the capability to remove water from the interior of the Grand Tower Levee when water levels in the Big Muddy River are higher than the gravity drains, preventing normal draining. The pump station would sit atop a concrete pad that is approximately 40 feet by 40 feet.

1.3.5 Reforestation

Approximately 94 acres where berm degrades would occur, would reforested with tree plantings. The species use would be dictated by the surrounding forest community and the specified by the Forest Service Silviculturist but would primarily consist of Oak (*Quercus* spp.) such as cherrybark oak and pin oak.

1.3.6 Berm Creation

Approximately 9 acres of additional berms would be constructed. New berms will consist of placement of embankment to create berms for subunit boundaries. Embankment will be brought up to the required elevation so the subunits can be flooded to an elevation which allows for the needed depth of inundation within the subunits and to provide adequate freeboard to prevent overtopping of the berms. Berms will have a minimum top width of 12 feet. Berm side slopes will be a minimum of 1 Vertical to 3 Horizontal to allow for maintenance equipment to traverse the slopes. 1 Vertical to 4 Horizontal slopes were assumed for quantities. The slope of the side slopes will be further refined during and determined during PED when further geotechnical analysis is completed. Trees and other large diameter vegetation will be removed within the new berm footprints along with grubbing of the foundation soils. New berms footprints will be stripped and the stripped material will be stockpiled for use as final dressing on the new berms. The new berms and other associated disturbed areas will be seeded.

Of this area, approximately 9 acres would need to be cleared of trees. The additional berms would serve as connecting pieces to the modified unit layout.

1.3.7 Berm Enhancements

Berm enhancements will consist of adding additional embankment to existing berms to bring them up to the required elevation so the subunits can be flooded to an elevation which allows for the needed depth of inundation within the subunits and to provide adequate freeboard to prevent overtopping of the berms. Berms will have a minimum top width of 12 feet. Berm side slopes will be a minimum of 1 Vertical to 3 Horizontal to allow for maintenance equipment to traverse the slopes. 1 Vertical to 4 Horizontal slopes were assumed for quantities. The slope of the side slopes will be further refined and determined during PED when further geotechnical analysis is completed. Trees and other large diameter vegetation will be removed within the berm raise footprint along with grubbing of the foundation soils. Berms will be stripped prior to raising and the stripped material will be stockpiled for use as final dressing on the raised berms. The berm raise footprint and other associated disturbed areas will be seeded. The total area of the berm enhancements would be approximately 55 acres. Of the 55 acres,

approximately 14 acres currently have trees of various sizes and species growing upon them that would require removal in order to place additional material.

1.3.8 Channels to Increase Water Conveyance

Channels, both new and with modifications, are required to increase water conveyance. Construction of channels will consist of excavation of material to the required depth and grades. Channels will vary in dimensions but will be either v-shaped or trapezoidal. Dimensions will be based on the required capacity of the channel. Assumptions were made for the dimensions of the channel based on output from the hydraulic model and engineering experience. Those assumptions are documented in the quantities. Slopes will be 1 Vertical to 3 Horizontal or flatter to meet operation and maintenance requirements. Trees and other large diameter vegetation will be removed within the footprints along with grubbing of the foundation soils. This area includes approximately 5 acres of trees that are of various size and species. New channel footprints will be stripped and the stripped material will be stockpiled for use as final dressing. The channels will not be seeded as they will natural vegetate as seeding and other organic material is deposited when the management units are flooded.

Of this area, approximately 19 acres would need to be cleared of trees.

1.3.9 Timber Stand Improvement

Timber Stand Improvement would consist of approximately 1,608 acres of forest improvement activities such as midstory removal, crop tree release, and gap formation with the use of cutting and herbicide. Planting of hard mast trees such as oaks would also be done to improve the forest composition and replace the hard mast seed source where oaks have been overtaken and are no longer existent. These activities have already completed the NEPA process and coordinated with the USFWS through the 2014 *Phase Two and Three-Oakwood Bottoms Moist Soil Openings and Shallow-Watered Areas Project* and the 2013 *Oakwood Bottoms Moist Soil Openings Mastication Project,* which outline the proposed methods for understory thinning. This includes removing existing understory and mid-story vegetation up to 9 inches in diameter and grinding stumps to retard re-sprouting.

1.3.10 Wildlife Openings

Wildlife openings currently exist in Units 2, 3, 4, 6, 8, 9,11, 16W, 19, 20, 21 and 27 however they cannot be managed due to down woody debris. The woody debris would be removed and additional removal of early successional scrub/shrub and non-desirable mid-story trees (i.e. TSI) would occur. This area would be approximately 57 acres total. These areas would be maintained to allow emergent wetland via mowing and potentially light discing.

Within Units 3, 5, 10, 10N, openings would be maintained and expanded to allow for emergent wetland management via mowing and potentially light disking. Within these openings downed trees, early successional scrub/shrub, and non-desirable mid-story trees (i.e. TSI) would be removed. Large desirable trees would be avoided or maintained unless it is necessary to remove in order to accomplish project objectives. Overall overstory tree removal would be minimal in these units. The area would be approximately 46 acres in size.

Within the Otter Slough area in Unit 25, historic aerial imagery from 1984 shows that the area was more open and did not have a closed canopy. The forest inventory data further supports this by showing that the stands within the open area in the photo are younger in age class than surrounding areas. A polygon was drawn in ArcMap using the aerial photo to determine the acreage of the previously open area, which is approximately 25 acres. Within this area, early successional scrub/shrub and non-desirable mid-story trees (i.e. TSI) would be removed. Large desirable trees would be avoided or maintained unless it is necessary to remove to accomplish project objectives. Overall removal of overstory trees would be minimal in this unit. Overall, this proposed action would fit under the 2018 *Big Muddy River Bottoms Habitat Improvement II Project* which has already completed the NEPA process and has been coordinated with the USFWS.

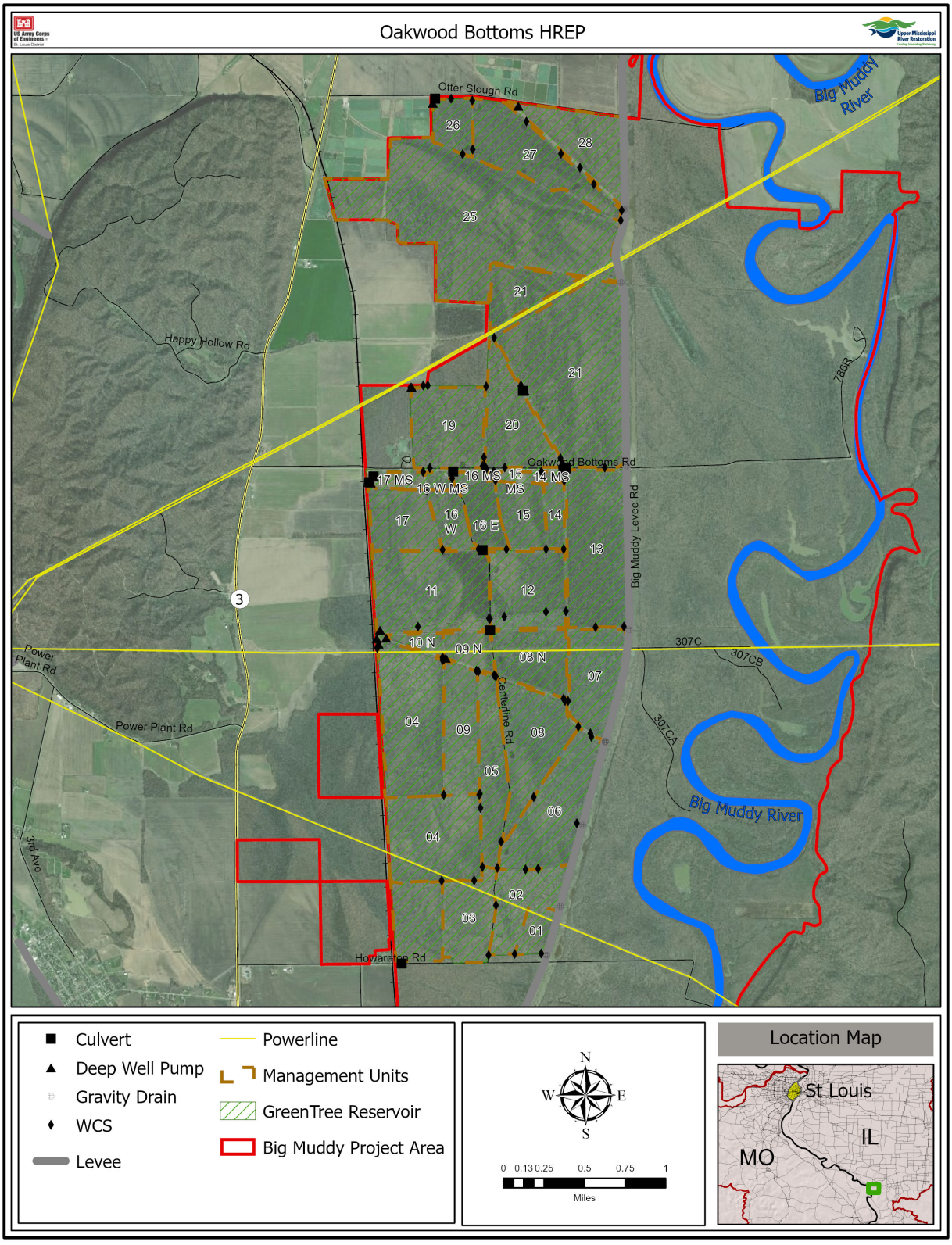


Figure 1. Oakwood Bottoms HREP Study Area with existing infrastructure.

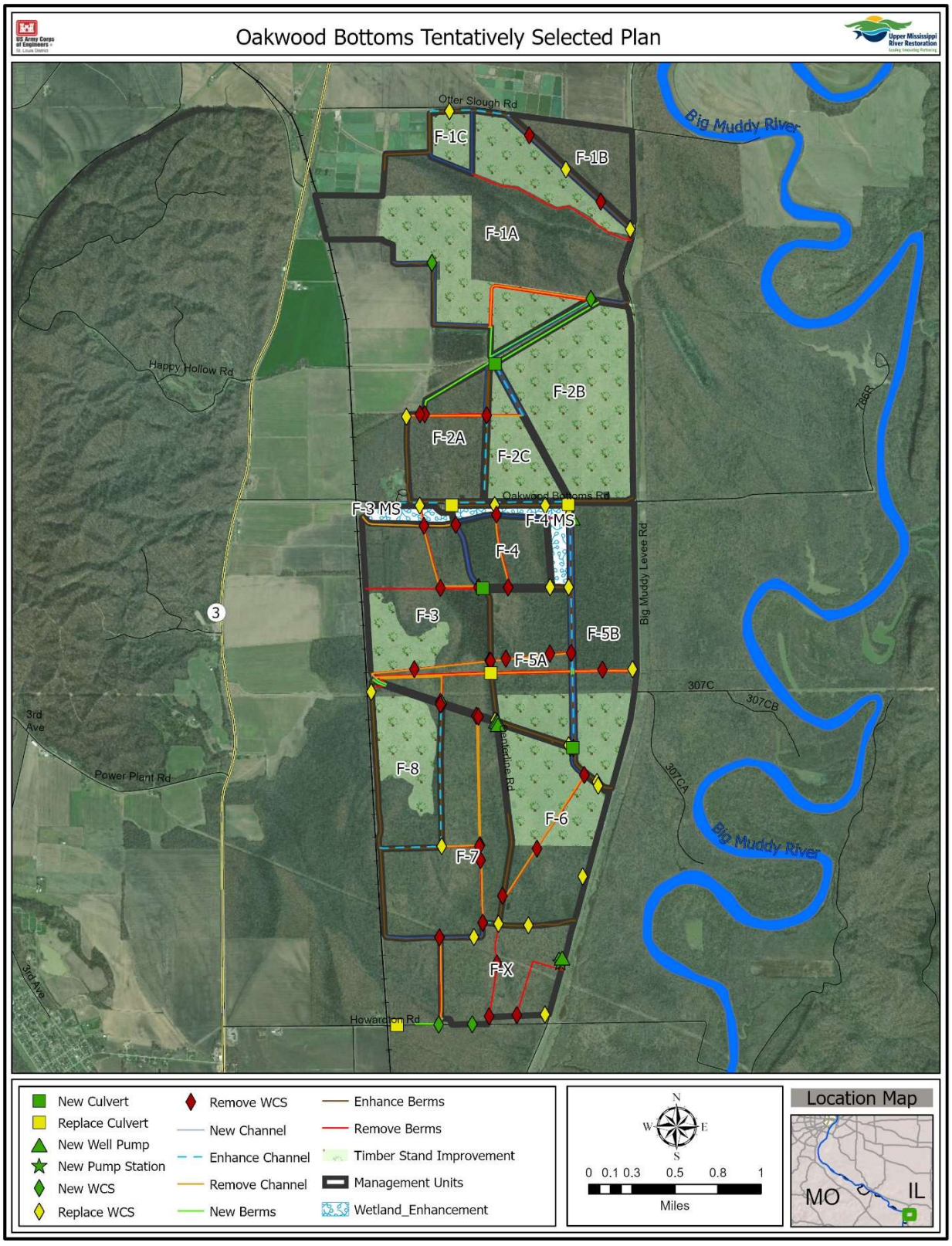


Figure 2. Proposed Plan at Oakwood Bottoms HREP

2 SPECIES/HABITAT CONSIDERED IN THIS CONSULTATION

The Corps requested the official species via the ECOS-IPaC website (http://ecos.fws.gov/ipac/) on 29 January 2019, and updated on 10 February 2020. U.S. Fish and Wildlife Service provided a list of (Jackson County, Illinois). The USFWS Ecological Services office in Marion, Illinois serves as the point of contact for this project and subsequent Biological Assessment. The five species, federal protection status, and habitat can be found in Table 1. No critical habitat is located in the study area.

Table 1. Federally Listed Threatened and Endangered Species Potentially Occurring in the study area

Species	Status	Habitat
Least tern (interior population) (*Sterna antillarum*)	Endangered	Large rivers - nest on bare alluvial and dredge spoil islands
Indiana bat (*Myotis sodalis)*	Endangered	Hibernates in caves and mines; maternity & foraging habitat: small stream corridors with well-developed riparian woods; upland & bottomland forests
Northern long-eared bat (*Myotis septentrionalis*)	Threatened	Hibernates in caves and mines; swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests during spring and summer.
Gray bat (*Myotis grisescens)*	Endangered	Caves year-round (winter hibernacula and summer roosting). In the summer gray bats forage along rivers lakes, and creeks, and may roost under bridges.
Pallid sturgeon (*Scaphirhynchus albus*)	Endangered	Mississippi and Missouri Rivers

3 MEASURES TAKEN TO AVOID IMPACT TO LISTED SPECIES

During the planning process for the Oakwood Bottoms HREP, the planning team considered how project measures could impact listed species. Efforts have been made to reduce direct, indirect, and cumulative impacts to listed species.

3.1 Conservation Measures

Conservation measures are actions to benefit or promote the recovery of a listed species that a Federal agency includes as an integral part of the proposed action and that are intended to avoid, minimize, or compensate for potential adverse effects of the action on the listed species. As such, mandatory measures below will be incorporated into every USACE action that fails within this consultation framework.

The following bat conservation measures are proposed for the proposed action alternative to help minimize effects to currently listed bat species within the Project.

1. All tree clearing resulting from the USACE action will occur during the inactive season from November 16 to March 31 unless negative presence/probable absence survey results were obtained for the action area through appropriate surveys approved by the U.S. Fish and Wildlife Service (USFWS).
2. If the project is located in a karst area and will involve construction methods that may cause deep ground disturbance, the USACE will require a cave search be conducted to determine if any caves are present in the action area that would be

considered suitable habitat for bats and/or are currently or formerly used by listed bats.

3. During clearing, dead trees, split trees, trees that have cavities, and trees with exfoliating bark would be favored for retention where possible.
4. Indiana bat habitat assessments and presence/absence surveys would be conducted as needed per USFWS requests.

4 IMPACT ASSESSMENT

The following section includes a status description of each species and how it will be affected by Project elements as well as the determination of effects for each species. The effects determination took into account implementation of the conservation measures listed above.

4.1 Least Tern (*Sterna antillarum)*

4.1.1 Status

The federally endangered least tern is a colonial, migratory waterbird which resides and breeds along the Mississippi River during the spring and summer. Least terns arrive on the Mississippi River from late April to mid-May. Reproduction takes place from May through August, and the birds migrate to the wintering grounds in late August or early September (USACE, 1999). Sparsely vegetated portions of sandbars and islands are typical breeding, nesting, rearing, loafing, and roosting sites for least terns along the MMR. Nests are often at higher elevations and well removed from the water's edge, a reflection of the fact that nesting starts when river stages are relatively high (USACE, 1999). In alluvial rivers, sandbars are dynamic channel bedforms. Individual sandbars typically wax and wane over time as fluvial processes and the construction of river engineering works adjust channel geometry according to varying sediment load and discharge. There is limited data on site fidelity for Mississippi River least terns. Given the highly dynamic bed and planform of the historic river, ability to return to previously used colony sites is not likely a critical life history requirement. The availability of sandbar habitat to least terns for breeding, nesting, and rearing of chicks from 15 May to 31 August is a key variable in the population ecology of this water bird. Only portions of sandbars that are not densely covered by woody vegetation and that are exposed during the 15 May to 31 August period are potentially available to least terns (USACE, 1999). The size of nesting areas and the number of nests within a colony depend on water levels and the extent of associated sandbars (Sidle & Harrison, 1990). Sandbars have a greater possibility of colonization by least terns if river levels remain low during the breeding season. Smith and Renken (1991) found that sites were more likely to be used by interior least terns in the Mississippi River Valley adjacent to Missouri if sites were continuously exposed for at least 100 days during the breeding season.

Least terns are almost exclusively piscivorous (Anderson, 1983), preying on small fish, primarily minnows (*Cyprinidae*). Prey size appears to be a more important factor determining dietary composition than preference for a particular species or group of fishes (Moseley, 1976; Whitman, 1988; USACE, 1999). Fishing occurs close to the nesting colonies and may occur in both shallow and deep water, in main stem river habitats or backwater lakes or overflow areas. Radiotelemetry studies have shown that

terns will travel up to 2.5 miles to fish (Sidle & Harrison, 1990; USACE, 1999). Along the Mississippi River, individuals are commonly observed hovering and diving for fish over current divergences (boils) in the main channel, in areas of turbulence and eddies along natural and revetted banks, and at "run outs" from floodplain lakes where forage fish may be concentrated (USACE, 1999).

Although no records of least tern occurrences exist within the study area, it is assumed that they could utilize the Big Muddy River area for foraging during migration through the MMR corridor.

4.1.2 Effects Determination

Impact of No Action Alternative – No sandbars exist within the study area. Therefore, it is anticipated that the No Action Alternative would have ***no effect on the least tern***.

Impacts of Proposed Federal Action – Direct adverse effects from implementing proposed project are not anticipated. No sandbars exist within the study area. No least tern nesting has been documented in this area. Therefore, the Project would have ***no effect on the least tern***.

4.2 Indiana Bat (*Myotis sodalis*)

4.2.1 Status

The Indiana bat is a federally listed, endangered mammal species. The range of the Indiana bat includes much of the eastern half of the United States, including Illinois. Indiana bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandoned mines. Females emerge from hibernation in late March or early April to migrate to summer roosts. During the summer, the Indiana bat frequents the corridors of small streams with well-developed riparian woods, as well as mature upland forests. It forages for insects along stream corridors, within the canopy of floodplain and upland forest, over clearings with early successional vegetation (old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures. Females form nursery colonies under the loose bark of trees (dead or alive) and/or cavities, where each female gives birth to a single young in June or July. A maternity colony may include from one to 200 individuals. A single colony may utilize a number of roost trees during the summer, typically a primary roost tree and several alternates. Some males remain in the area near the winter hibernacula during summer months, but others disperse throughout the range of the species and roost individually or in small numbers in the same types of trees as females.

Disturbance and vandalism of caves, improper cave gates and structures, natural hazards, such as flooding or freezing, microclimate changes, land use changes in maternity range, chemical contamination are the leading causes of population decline in the Indiana bat (USFWS, 2000; USFWS, 2004). To avoid impacting this species, tree clearing activities should not occur during the period of 1 April to 15 November.

Multiple survey efforts at Oakwood Bottoms have yielded positive Indiana bat presence through mist net captures and radio telemetry efforts to identify maternity roost trees (Figure 3). Suitable summer roosting and foraging habitat exist within the proposed

study area. Indiana bat habitat assessments were performed on areas with potential tree clearing. The areas assessed were ranked as low, medium, or high quality roosting habitat based on the number of suitable roost trees. Low quality habitat was considered to have five or fewer potential roost trees per acre, medium habitat was considered to have between five and ten suitable roost trees per acre, and high quality habitat was considered to have above ten trees per acre. See Section 7 below for the Indiana bat habitat assessment data sheets and associated maps.

No suitable hibernation habitat exists within the study area. However, a known cave, Toothless that is suitable for hibernacula is located approximately 3.5 miles away as well as a known hibernacula, magazine mine is located 25 miles away.

Location-specific sensitive information redacted from the document

Figure 3. Indiana bat (MYSO) and northern long eared bat (NLEB) roosts at Oakwood Bottoms with 0.25 mile buffer in red. Map also displays known bald eagle nest locations with a 660' buffer.

4.2.2 Effects Determination

Impact of No Action Alternative - Under the No Action Alternative, the forest community with little to no oak regeneration in the study area would persist into the near future. Given the proximity to adjacent upland forest habitat, Indiana bats that could be present in the study area would likely relocate to suitable habitat within the proximity. Therefore, this alternative ***may affect but is not likely to adversely affect the Indiana bat***.

Impacts of Proposed Federal Action – Consultation for the Indiana and northern long-eared bat has occurred for timber management activities at Oakwood Bottoms (USFWS 2006). Specifically, detailed proposed timber management activities have been planned and coordinated for the greentree reservoir. These activities include the timber stand improvement (TSI) that has been proposed with this project. These activities have an associated Biological Opinion for the USFWS (USFWS 2006) in which detailed proposed conservation measures were identified. Those conservation measures specific to the TSI are incorporated by reference into this document and will be utilized during the implementation.

The forest reforestation portion of the Project as discussed would improve habitat for the Indiana bat. Although approximately 69 total acres of forest would be cleared for the moist soil unit enhancement, berm enhancements, berm additions, and channel enhancement, which could serve as potential foraging habitat for the Indiana bat, approximately 94 acres would be reforested with hard mast species in the berm degrade locations. Additionally, the wildlife openings would improve foraging habitat for approximately 153 acres where mid-story and understory would be opened up and would facilitate better foraging for bat species. In addition, the berm degrades and pump station would hydrology for approximately 4,500 acres of forested area to allow for successful regeneration of oak and hickory species over time. Improving the overall forest community over a longer period with increased species, age, and structural

diversity would yield suitable roost habitat through time and into the future. Although known roost trees exist within the study area, none are known to exist within the footprint of the potential project features. Further, tree clearing associated with the project would occur during the non-roost season, November 15 through March 31. Areas that have known roosts would be delineated and avoided. An Indiana bat habitat assessment was completed on 13 February 2020 delineating and describing potential Indiana bat roosting habitat per the 2019 Indiana Bat Summer Survey Guidelines. These results are shows in Section 7 and have been coordinated with the USFWS. Trees would then be felled during the non-roost season of November 16 through March 31. During detailed engineering and design and prior to construction, a more detailed Indiana bat habitat assessment will be performed and coordinated with the USFWS to identify and mark each potential roost tree if trees are to be removed during the roost season. If necessary, presence/absence surveys and/or emergence surveys would be conducted as needed per USFWS guidelines. Further, as described in Section 5, Indiana Bat Habitat Assessment, tree clearing area accounts for only 0.03% of the total available foraging habitat within a 5.0 mile radius. Several components could have site-specific impacts on Indiana bats and Indiana bat habitat but are not anticipated to individually or cumulatively have an adverse impact on the population as a whole. Therefore, we conclude that the Project ***may affect but is not likely to adversely affect the Indiana bat.***

4.3 Northern Long-Eared Bat (*Myotis septentrionalis*)

4.3.1 Status

The northern long-eared bat (*Myotis septentrionalis*) is a federally threatened bat species. The northern long-eared bat is sparsely found across much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. Northern long-eared bats spend winter hibernating in large caves and mines. Summer habitat for the northern long-eared bat includes a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches diameter at breast height (DBH) that have exfoliating bark, cracks, crevices, and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 feet of other forested/wooded habitat. The northern long-eared bat has also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. Northern long-eared bats typically occupy their summer habitat from mid-May through mid-August each year and the species may arrive or leave some time before or after this period. Forest fragmentation, logging, and forest conversion are major threats to the species. One of the primary threats to the northern long-eared bat is the fungal disease, white-nose syndrome, which has killed an estimated 5.5 million cave-hibernating bats in the Northeast, Southeast, Midwest, and Canada.

The study area does not have suitable hibernation habitat, but many habitats suitable for foraging do exist. Northern long-eared bats have been captured in previous surveys and their roosts were identified. See Figure 3.

4.3.2 Effects Determination

Impact of No Action Alternative - Under the No Action Alternative, the forest community with little to no hardwood regeneration in the study area would persist into the near future. Given the proximity to adjacent upland forest habitat, northern long-eared bats are present in the study area would likely relocate to suitable habitat within the proximity. Therefore, this alternative ***may affect but is not likely to adversely affect the northern long-eared bat.***

Impacts of Proposed Federal Action – Implementation of this project as discussed in Section 4.2.2 would improve the foraging and roosting habitat of the northern long-eared bat. Although known roost trees exist within the study area, none are known to exist within the footprint of the potential project features. In accordance with the 2006 Biological Opinion for the timber management activities at Oakwood Bottoms, no tree clearing would occur between April 1 and November 15 within five miles of a known northern long-eared bat maternity tree. Therefore, the Proposed Federal Action ***may affect but is not likely to adversely affect the northern long-eared bat.***

4.4 Gray Bat (*Myotis grisescens*)

4.4.1 Status

The gray bat (*Myotis grisescens*) occupies a limited geographic range in limestone karst areas of the southeastern United States, including Missouri. With rare exception, the gray bat roost in caves year-round. In winter, most gray bats hibernate in vertical (pit) caves with cool, stable temperatures below 10 degrees Celsius. Summer caves, especially those used by maternity colonies, are nearly always located within a kilometer (0.6 mile) of rivers or reservoirs over which the bats feed. The summer caves are warm with dome ceilings that trap body heat. Most gray bats migrate seasonally between hibernating and maternity caves, and both types of caves are located in Missouri. Gray bats are active at night, foraging for insects over water or along shorelines, and they need a corridor of forest riparian cover between roosting caves and foraging areas. They can travel as much as 20 kilometers (12 miles) from their roost caves to forage.

Gray bats are endangered largely because of their habitat of living in large numbers in only a few caves, thus making the species vulnerable to human disturbance and habitat loss or modification. Disturbance of gray bats in their caves during their hibernation can cause them to use their energy reserves and could lead to starvation. Disturbances to their caves during their nursing season (June and July) can frighten females causing them to drop non-volant pups to their death in panic to flee from the intruder. Additionally, many important caves that have been historically used by gray bats have been inundated by reservoirs. The commercialization of caves, and alterations of the air flow, temperature, humidity, and amount of light can make the cave unsuitable habitat for gray bats and drive bats away.

The fatal bat disease, white-nose syndrome (WNS), has not yet been documented to

adversely affect the gray bat. However, because gray bats are cave obligates, and considering how WNS has decimated other cave-dwelling bat species, WNS could be another significant threat to the gray bat.

Several limestone mining operations exist within 20 miles of the study area.

4.4.2 Effects Determination

Impact of No Action Alternative – No caves would be impacted under the No Action Alternative. Given the forest community with limited regeneration, available foraging habitat may be impacted in the future. However, these impacts would be localized and foraging habitat would exist outside of the study area. Therefore, there would be ***no effect on the gray bat***.

Impacts of Proposed Federal Action – No caves would be impacted under any of the considered alternatives. Impacts to foraging habitat would be similar to that of the Indiana bat as discussed in 4.2.2. These impacts of the proposed federal action could have site-specific impacts on gray bat and gray bat habitat but are not anticipated to individually or cumulatively have an adverse impact on the population as a whole. Therefore, the Project ***may affect but is not likely to adversely affect the gray bat.***

4.5 Pallid Sturgeon (*Scaphirhynchus albus*)

4.5.1 Status

The Pallid Sturgeon is found in the Mississippi River downstream of its confluence with the Missouri River. Pallid Sturgeon forage for insects, crustaceans, snails, clams, and fish along the bottom of large rivers (USFWS 2016). These fish are most frequently caught over a sand bottom, which is the predominant bottom substrate within the species' range on the Mississippi River. Tag returns have shown that the species may be using a range of habitats in off-channel areas and tributaries of the Mississippi River. Loss of habitat has occurred due to anthropogenic changes which has ultimately decreased the availability of spawning habitat, reduced larval and juvenile rearing habitat, availability of seasonal refugia, and availability of foraging habitat. Due to the disconnectivity to the Big Muddy River due to the Grand Tower levee, suitable habitat for the pallid sturgeon does not exist within the study area.

4.5.2 Effects Determination

Impact of No Action Alternative – This species preferred habitat: off-channel areas and tributaries of the Mississippi River does not exist within the Study Area. Therefore, the No Action Alternative would have ***no effect on the pallid sturgeon***.

Impacts of Proposed Federal Action – Suitable habitat does not exist within the Study Area. Direct adverse effects from implementing proposed project are not anticipated. Therefore, it is anticipated that there would be ***no effect on the pallid sturgeon.***

5 REFERENCES

Moseley, L. J. (1976). *Behavior and communication in the Least Tern (Sterna albifrons).* Chapel Hill, TN: University of North Carolina.

Sidle, J. G., & Harrison, W. F. (1990). *Recovery Plan for the Interior Population of the Least Tern (Sterna antillarum).* Twin Cities, MN: U.S. Fish and Wildlife Service.

Smith, J. W., & Renken, R. B. (1991). Least tern nesting habitat in the Mississippi River valley adjacent to Missouri. *Journal of Field Ornithology, 62*, 497-504.

Theiling, C. H., Korschgen, C., DeHaan, H., Fox, T., Rohweder, J., & Robinson, L. (2000). *Habitat Needs Assessment for the Upper Mississippi River System Technical Report.* La Crosse, WI: U.S. Geological Survey, Upper Midwest Environmental Sciences Center.

USACE. (1999). *Biological Assessment, Interior Population of the Least Tern, Sterna Antillarum, Regulating Works Project, Upper Mississippi River (River Miles 0-195), and Mississippi River and Tributaries Project, Channel Improvement Feature, Lower Mississippi River.* Vicksburg, MS: U.S. Army Corps of Engineers, MIssissippi Valley Division/Mississippi River Commission.

USFWS. (2000). *Biological Opinion for the Operation and Maintenance of the 9-Foot Navigation Channel on the Upper Mississippi River System.* U.S. Fish and Wildlife Service.

USFWS. (2004). *Final Biological Opinion for the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study.* U.S. Fish and Wildlife Service.

Knox, J. C. (1984). Fluvial responses to small scale climate change. In J. Costa, & P. Fleisher, *Developments and Applications in Geomorphology* (pp. 318-342). New York: Springer-Verlag.

Melillo, J. M., Richmond, T. C., & Yohe, G. W. (2014). *Climate Change Impacts in the United States: the Third National Climate Assessment.* U.S. Global Change Research Program. doi:10.7930/J0Z31WJ2

Simons, D. B., Simons, R. K., Ghaboosi, M., & Chen, Y. H. (1988). *Physical impacts of navigation on the Upper Mississippi River System.* Ft. Collins, CO: Simons & Associates, Inc.

Theiling, C. H., Korschgen, C., DeHaan, H., Fox, T., Rohweder, J., & Robinson, L. (2000). *Habitat Needs Assessment for the Upper Mississippi River System Technical Report.* La Crosse, WI: U.S. Geological Survey, Upper Midwest Environmental Sciences Center.

USACE. (2012). *Upper Mississippi River Restoration Environmental Design Handbook.* Rock Island, Illinois: U.S. Army Corps of Engineers, Rock Island District.

USACE. (2015). *Recent US Climate Change and Hydrology Literature Applicable to US Army Corps of Engineers Missions - Water Resources Region 07, Upper Mississippi.* Washington, D.C.: U.S. Army Corps of Engineers.

USACE. (2016). *HEC-RAS, River Analysis System Hydraulic Reference Manual.* Davis, CA.

USDA. (2007). *Stream Restoration Design (National Engineering Handbook 654).* Washington, DC.

USFS (2018) *Big Muddy River Bottoms Habitat Improvement II Project Project. https://www.fs.usda.gov/nfs/11558/www/nepa/101663_FSPLT3_4183248.pdf*

USFS (2014) *Phase Two and Three-Oakwood Bottoms Moist Soil Openings and Shallow-Watered Areas Project. https://www.fs.usda.gov/nfs/11558/www/nepa/99691_FSPLT3_2352341.pdf*

USFWS. (1980). *Habitat Evaluation Procedures.* Washington, D.C.: USFWS. Retrieved November 9, 2016, from http://www.fws.gov/policy/ESM102.pdf

USFWS. (2016, July 19). *Species Profile: Indiana bat (Myotis sodalis)*. Retrieved from USWFW Endangered Species: https://www.fws.gov/midwest/Endangered/mammals/inba/index.html

USFWS. (2016a, September 2). *Northern long-eared bat fact sheet*. Retrieved March 26, 2015, from USFWS Endangered Species: https://www.fws.gov/Midwest/Endangered/mammals/nleb/nlebFactSheet.html

Whitman, P. L. (1988). *Biology and Conservation of the Endangered Interior Least Tern: A Literature Review.* Twin Cities, MN: U.S. Fish and Wildlife Service, Division of Endangered Species.

Smith, J. W., & Renken, R. B. (1991). Least tern nesting habitat in the Mississippi River valley adjacent to Missouri. *Journal of Field Ornithology, 62*, 497-504.

6 LIST OF PREPARERS

Mr. Ben McGuire

Wildlife Biologist

U.S. Army Corps of Engineers

Regional Planning and Environmental Division North

St. Louis, MO 63101

7 INDIANA BAT HABITAT ASSESSMENT

Sensitive species locations will be removed prior to public review.

APPENDIX A: PHASE I HABITAT ASSESSMENTS

INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name: Oakwood Bottoms HREP Date: 2-19-2020

Township/Range/Section:

Lat Long/UTM/ Zone: 37.6730279/-89.4509619 Surveyor: Benjamin McGuire

Brief Project Description

Berm degrades, upgrade water control structures, ditch enhancement, berm raises, pump station, reforestation, moist soil unit improvement

Project Area

	Total Acres	Forest Acres	Open Acres
Project	Total ≈ 4,500	≈ 4,410	≈ 90

Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing
	X		

Vegetation Cover Types

Pre-Project	Post-Project
Varies by specific location. See assessment form for each area.	Cleared for project features

Landscape within 5 mile radius

Flight corridors to other forested areas?

Yes.

Describe Adjacent Properties (e.g. forested, grassland, commercial or residencial development, water sources)

Bottomland forest, agricultural, upland forest approx 1.5 miles away

Proximity to Public Land

What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

Project Area completely w/in Forest Service property

19

APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): MSU Expansion areas

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
	*			
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		
		X		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	< 5%	10%	10%	
Dominant Species of Mature Trees	Black willow, Maple, Ash, buttonbush			
% Trees w/ Exfoliating Bark	< 1%	0	0	
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	10%	65%	25%	
No. of Suitable Snags		< 10		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

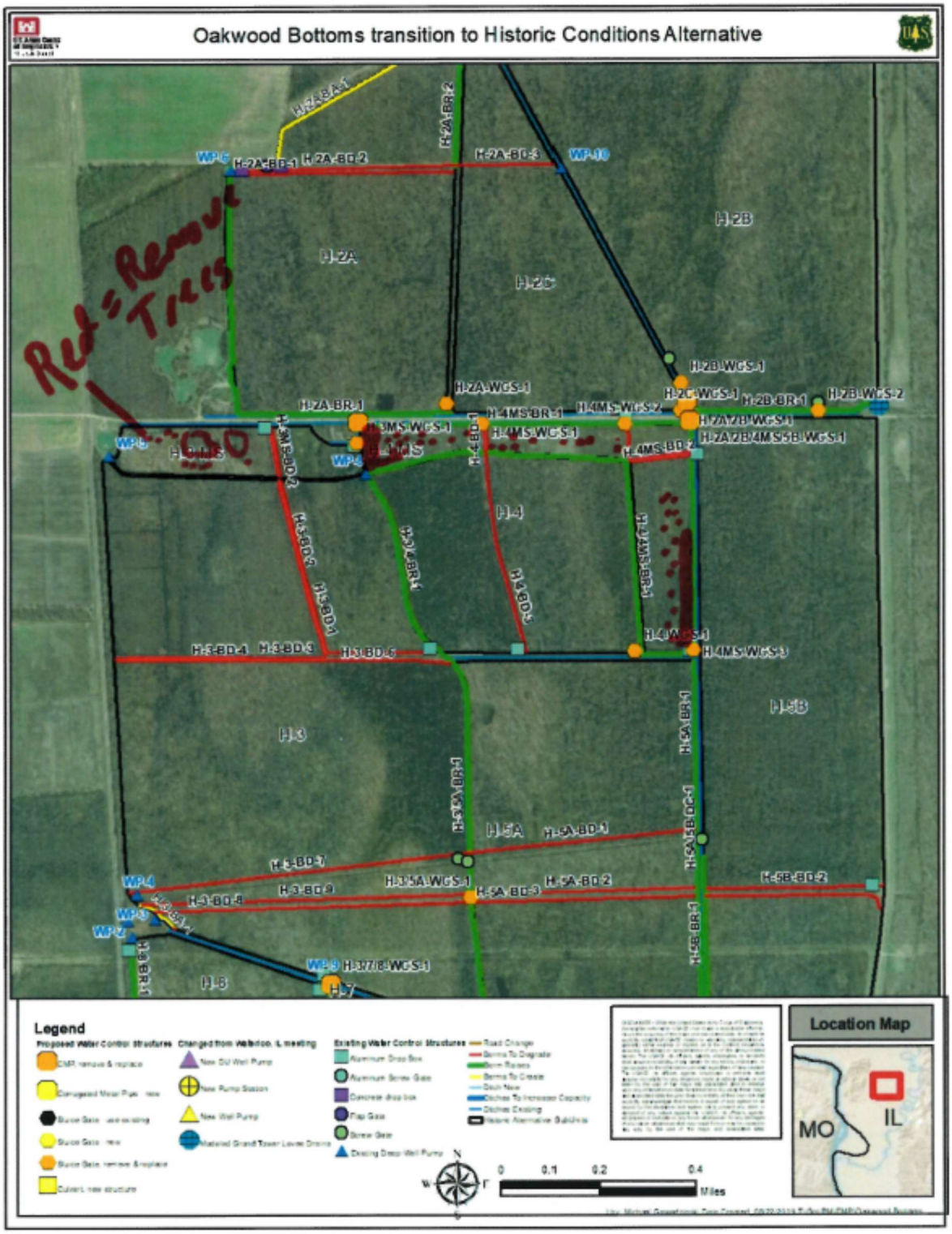
IS THE HABITAT SUITABLE FOR INDIANA BATS? Yes → low

Additional Comments:
- Scattered Black willow throughout MSUs
- One ≈ 2.5 acre area where trees are more dense
  - still Black willow dominant

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

20


Oakwood Bottoms transition to Historic Conditions Alternative
Red = Remove Trees
H-2A
H-2B
H-2C
H-3
H-4
H-5A
H-5B
H-6
H-7
WP-1
WP-2
WP-3
WP-4
WP-5
WP-6
WP-10
Legend
Location Map
MO
IL
0
0.1
0.2
0.4
Miles

APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): Main North to South drainage ditch

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		
		X		

Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
	50%	15%	5%	
Dominant Species of Mature Trees	Pin Oak, Ash			
% Trees w/ Exfoliating Bark	<5%	0%	0%	
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	10%	10%	80%	
No. of Suitable Snags		99		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

calculated from 1 every 100 ft only for narrow portion → 4,850' x 60' = 6.7 acres

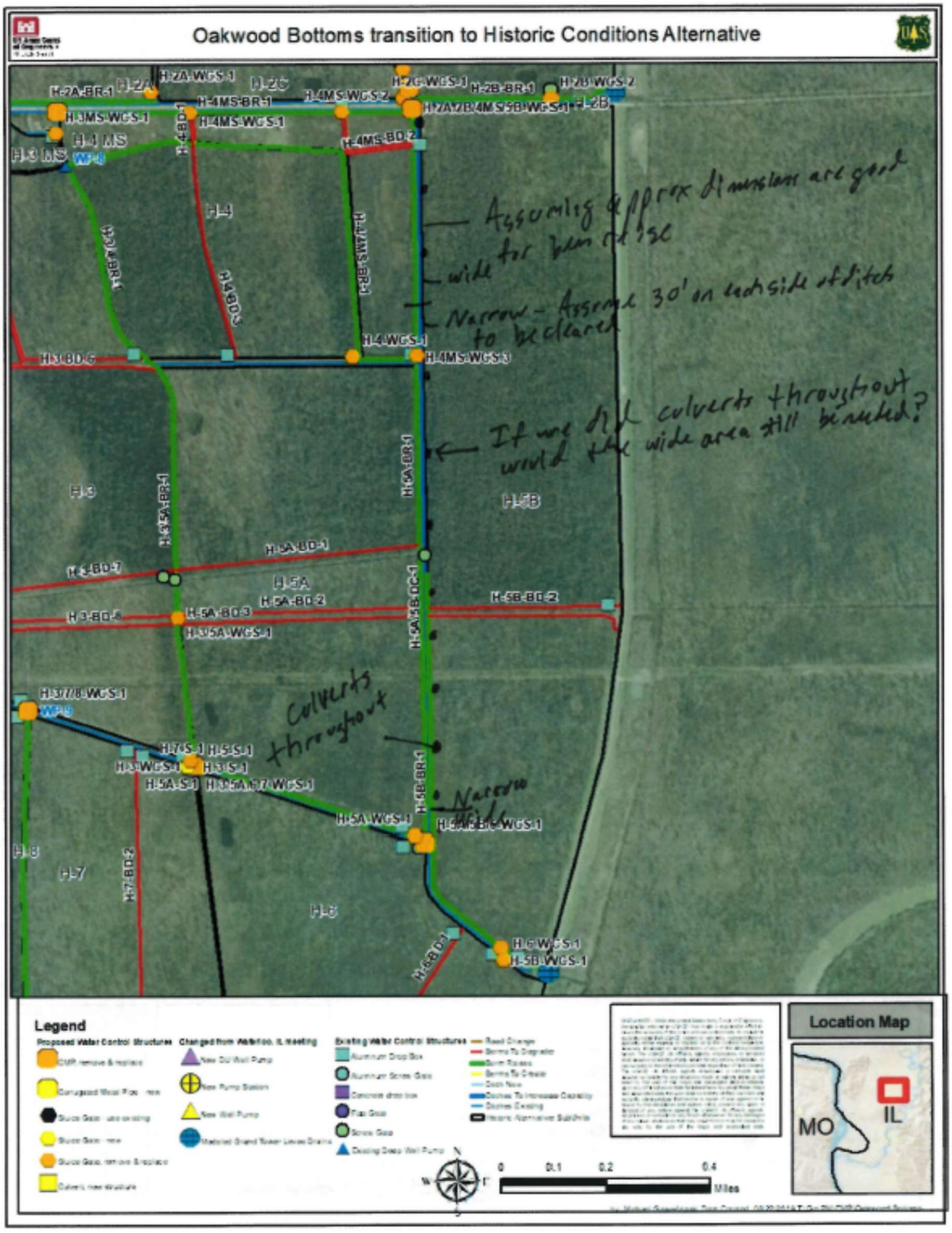
IS THE HABITAT SUITABLE FOR INDIANA BATS? Yes

Additional Comments: The clearing area would be ± 30' total on each side of ditch. Potential Roost Trees exist (on average) every 100'.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

20


Oakwood Bottoms transition to Historic Conditions Alternative
Assuming approx dimensions are good for bench use
Narrow - Assume 30' on each side of ditch to be cleared
If we did culverts throughout would the wide area still be needed?
Culverts throughout
Narrow
H-1
H-2
H-3
H-4
H-5A
H-5B
H-7
H-8
Legend
Location Map
MO
IL
0
0.1
0.2
0.4
Miles

APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): Southwest Powerline Easement

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: None
Pools/Ponds (# and size)	None	Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	80%	0%	5%	
Dominant Species of Mature Trees	Ash, Pin Oak			
% Trees w/ Exfoliating Bark	2.5%	0	0	
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	20	30	50%	
No. of Suitable Snags				← Calculate ± 1 every 200'

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Yes → Medium

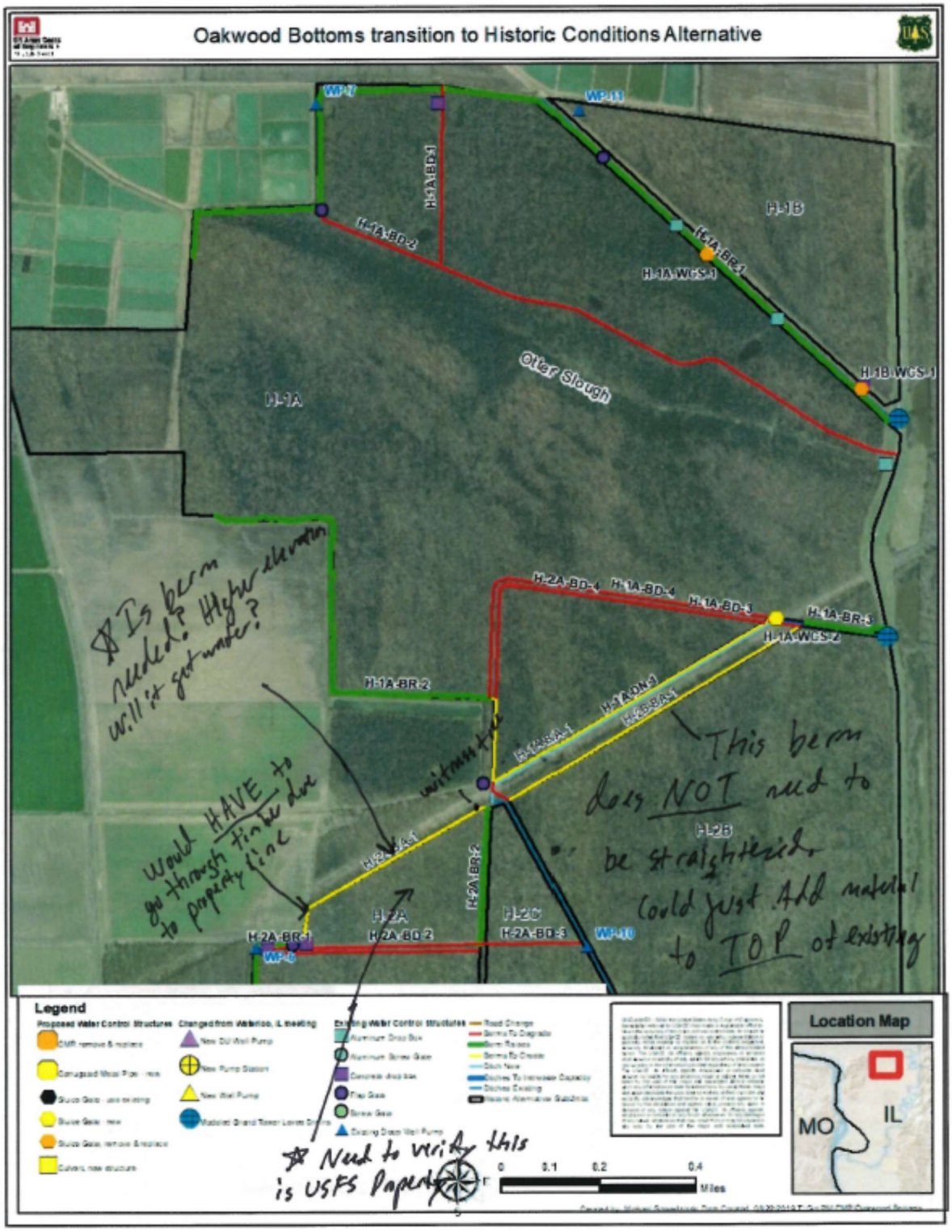
Additional Comments:
- FS has dense understory thinning
- Few snags present

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

☆ Is this FS property? ☆

20


Oakwood Bottoms transition to Historic Conditions Alternative
WP-7
WP-11
H-1A-BD-1
H-1A-BD-2
H-1B
H-1A-BR-4
H-1A-WCS-1
H-1B-WCS-1
Otter Slough
H-1A
H-2A-BD-4
H-1A-BD-4
H-1A-BD-3
H-1A-BR-3
H-1A-WCS-2
H-1A-BR-2
H-1A-DN-1
H-2B-BA-1
H-1A-BA-1
H-2B
H-2A-BR-1
H-2A
H-2A-BD-2
H-2A-BR-2
H-2C
H-2A-BD-3
WP-10
WP-8
Legend
Location Map
MO
IL
0
0.1
0.2
0.4
Miles
Is berm needed? Higher elevation will it get water?
This berm does NOT need to be straightened. Could just Add material to TOP of existing
Would HAVE to go through timber due to property line
Need to verify this is USFS Property

APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): Pump station

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent X	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal X		

Forest Resources at Sample Site

Closure/Density	Canopy (> 50') 60	Midstory (20-50') 10	Understory (<20') 10	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Dominant Species of Mature Trees	Ash, sweet gum, pin oak			
% Trees w/ Exfoliating Bark	0	1	0	
Size Composition of Live Trees (%)	Small (3-8 in) 30%.	Med (9-15 in) 30%.	Large (>15 in) 40%.	
No. of Suitable Snags		1		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Low suitability - only 1 snag, ~20' tall → no sun exposure

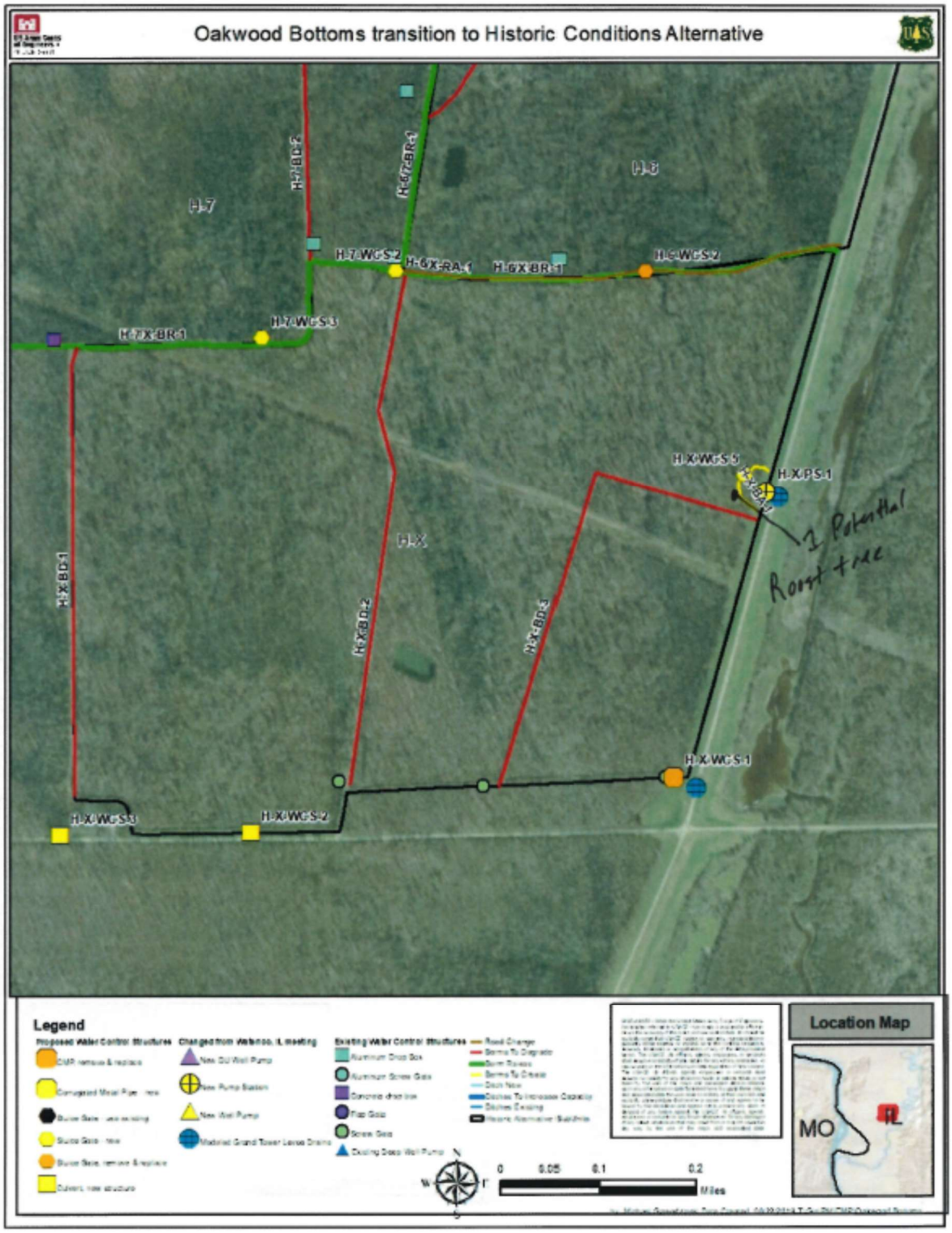
Additional Comments: Low suitability

- see photos 0910-0930

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

20


Oakwood Bottoms transition to Historic Conditions Alternative
H-7
H-8
H-X
H-7-BD-2
H-7-BR-1
H-7-WCS-2
H-6X-RA-1
H-6X-BR-1
H-6-WCS-2
H-7-WCS-3
H-7X-BR-1
H-X-WCS-5
H-X-PS-1
1 Potential Roost tree
H-X-BD-1
H-X-BD-2
H-X-BD-3
H-X-WCS-1
H-X-WCS-3
H-X-WCS-2
Legend
Location Map
MO
IL
0
0.05
0.1
0.2
Miles

APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): Pump Bowl Area

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		
		X		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	20%	10%	5%	
Dominant Species of Mature Trees	Pin Oak			
% Trees w/ Exfoliating Bark	0	0	0	
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	10%	30%	60%	
No. of Suitable Snags		0		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Low suitability

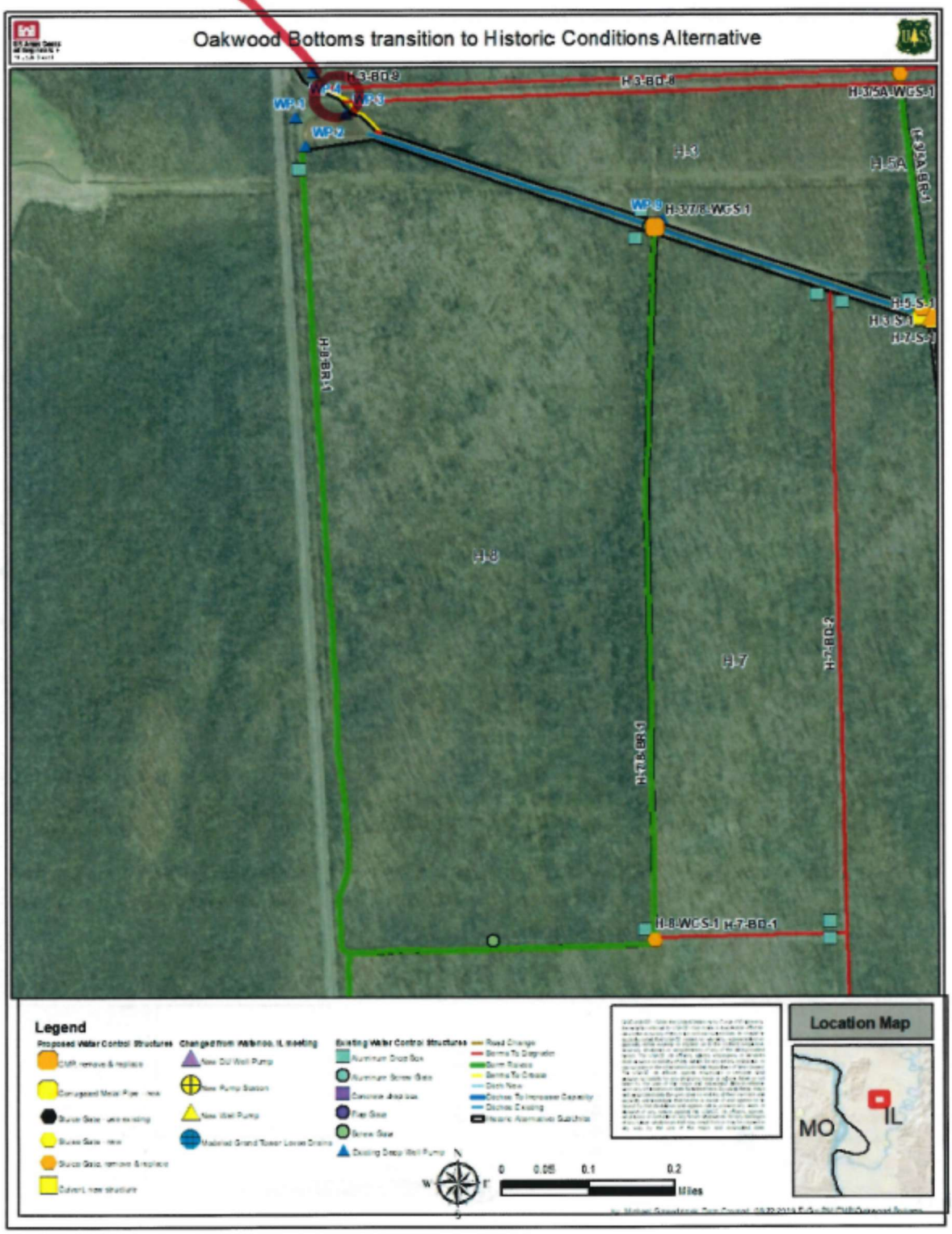
Additional Comments:
Pin oaks present but no sloughing bark or cavities

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

20

NO suitable roosttrees



8 USFWS IPAC REPORT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Southern Illinois Sub-Office
Marion Illinois Sub-office
8588 Route 148
Marion, IL 62959-5822
Phone: (618) 997-3344 Fax: (618) 997-8961
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To:
Consultation Code: 03E18100-2019-SLI-0129
Event Code: 03E18100-2019-E-00364
Project Name: Oakwood Bottoms HREP

January 29, 2019

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service if they determine their project "may affect" listed species or critical habitat. Under the ESA, it is the responsibility of the Federal action agency or its designated respresentative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website

http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website http://www.fws.gov/midwest/endangered/section7/s7process/index.html. This website contains step-by-step instructions which will help you determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all wind energy projects and projects that include installing towers that use guy wires or are over 200 feet in height, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within your proposed project or may be affected by your proposed project.

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and Migratory Bird Treaty Act (16 U.S.C. 703 *et seq*), as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html to help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Southern Illinois Sub-Office
Marion Illinois Sub-office
8588 Route 148
Marion, IL 62959-5822
(618) 997-3344

Project Summary

Consultation Code: 03E18100-2019-SLI-0129

Event Code: 03E18100-2019-E-00364

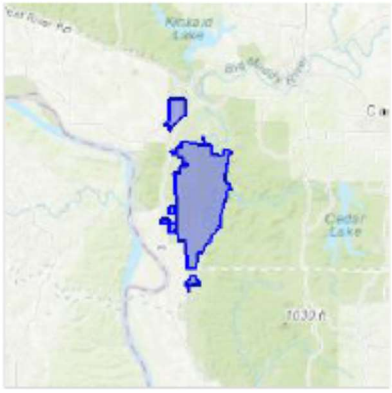
Project Name: Oakwood Bottoms HREP

Project Type: LAND - RESTORATION / ENHANCEMENT

Project Description: Feasibility level design and planning for Oakwood Bottoms HREP UMRR project. Potential project features include: berm degrades/ relocations, installation of pumps/wells, installation of pump station, reforestation, timber stand improvement, installation of new water control structures, and moist-soil unit enhancement.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.65639218552833N89.43830040468762W



Counties: Jackson, IL | Union, IL

Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Least Tern *Sterna antillarum* Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered

Fishes

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Price's Potato-bean *Apios priceana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7422	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.