APPENDIX S

REVISED TIER 1 CONCEPTUAL FOREST AND WETLAND MITIGATION PLAN & COMPARISON OF TIER 1 PLANS

Part A: Revised Tier 1 Conceptual Forest and Wetland Mitigation and Enhancement Plan
Part B: Comparison of Conceptual Mitigation Plan in Original BA and the Revised Conceptual Mitigation Plan in the BA Addendum

Part A: Revised Tier 1 Conceptual Forest and Wetland Mitigation and Enhancement Plan

REVISED TIER 1 CONCEPTUAL FOREST AND WETLAND MITIGATION AND ENHANCEMENT PLAN

Construction of I-69 From Evansville to Indianapolis, Indiana

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U.S. Department of Transportation
Federal Highway Administration

TIER 1 Revaluation

INDIANA DEPARTMENT OF TRANSPORTATION
INDOT

CONCEPTUAL MITIGATION AND ENHANCEMENT PLAN

The following conceptual mitigation plan is offered for preliminary review on potential impacts to "Waters of the United States" and forests by the construction of I-69 from Evansville to Indianapolis, Indiana. This mitigation and enhancement plan is conceptual and compensatory for probable forest and wetland losses based on a representative alignment within the Alternative 3C corridor. This plan is conceptual in nature and is intended to give a direction regarding possible mitigation activities. The mitigation may include the information within this document or additional mitigation as agreed upon by the U.S. Fish & Wildlife Service and the Federal Highway Administration.

The Memorandum Of Agreement Between The Department of the Army and The Environmental Protection Agency pertaining to The Determination of Mitigation Under The Clean Water Act Section 404 Guidelines updated on December 31, 2002 states that appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions (e.g., restoration of existing degraded wetlands or creation of man-made wetlands) should be undertaken when practicable, in areas adjacent or continuous to the discharge site (on-site compensatory mitigation). If onsite compensatory mitigation is not practicable, off-site compensatory mitigation should be undertaken in the same geographic area if practicable (i.e., in close proximity and, to the extent possible, the same watershed). In determining compensatory mitigation, the functional values lost by the resource to be impacted must be considered. Generally, in-kind compensatory mitigation is preferable to out-of-kind. There is continued uncertainty regarding the success of wetland creation or other habitat development. Therefore, in determining the nature and extent of habitat development of this type, careful consideration should be given to its likelihood of success. Because the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, restoration should be the first option considered.

The resources identified in this study are based on the statewide databases, aerial photographs, and some field review. Wetland inventories are based upon NWI (National Wetland Inventory) mapping from the U.S. Fish & Wildlife Service. While these databases are not 100% accurate, they usually identify larger areas, and thus are expected to result in higher wetland acres than those that will be determined during final Tier 2 analysis when a preferred alternative has been identified. The Tier 2 analysis for wetlands will require a traditional site-specific wetland determination and delineation conducted from site surveys. Similarly, other resource impacts will be developed to the traditional level of investigation in the Tier 2 studies for the preferred alternative.

For the analysis in this document, “representative” alignments will be used. For the purposes of this study, a representative alignment is the footprint for the alternative of those alternatives that are still under study as of November 14, 2005 with the largest Tier 2 forest impacts for each 2 section. Forest impacts were determined using Geographic Information System (GIS) data developed by each Section consultant. Forest data was developed using aerial photographs and field reviews. The representative alignment may or may not end up being the preferred alternative. The representative alignment is expected to have higher forest loss than the preferred alternative. In some instances, particularly for interchanges or connector roads, the alignment may extend outside the Tier 1 corridor.

The revised analysis using NWI maps show that this project may impact approximately 100 acres of wetland forests, 5 acres of wetland scrub / shrub, 15 acres of wetland emergent, and 2,050 acres of upland forests within the representative alignment. All impact acreages were rounded up to the nearest increment of 5. Replacement ratios for wetland forests, wetland scrub/ shrub and upland forests are 3:1, and emergent wetlands are 2:1. Worst case impact numbers should be lower for the preferred alternative.

In this Revised Tier 1 Conceptual Forest and Wetland Mitigation and Enhancement Plan, the total estimated area needed for wetland replacement is approximately 345 acres, and upland forest replacement is 6,150 acres. In addition, a total of 90 acres will be needed for buffers around all wetland mitigation sites. In summary, total estimated mitigation that may be needed for the 142 mile long I-69 from Indianapolis to Evansville is approximately 6,585 acres with the majority (90-95%) in upland and bottomland forest losses. Additional acres would be required for access easements (ingress and egress) to mitigation sites for construction and monitoring.

These estimated figures are based on the forest data created by the Environmental and Engineering Assessment Consultants (EEACs) from each of the six sections. This data includes groups of trees larger than 1 acre and wider than 120 feet. In this Revised Tier 1 Conceptual Forest and Wetland Mitigation Plan, "representative alignments," which included the greatest amount of forest loss for each section, were used in the impact analysis. It is the expectation and intention of the project to avoid or minimize many of these losses with the location and approval of a preferred alternative.

Conceptual Mitigation Themes for I-69 Evansville to Indianapolis include the Restoration / Replacement Theme, Conservation / Preservation Theme, and Educational / Research Theme.

- The Restoration / Replacement Theme include replacement of wetlands in the same watershed at ratios described in the Wetland MOU dated January 28, 1991. Forest mitigation will include preservation and replacement of forest losses at a 3:1 ratio within the Alternative 3C study area. Mitigation sites will be connected to existing wetlands and forests and provided habitat for both federal and state listed species. Priority areas for restoration / replacement will be focused near Indiana bat maternity colonies as much as possible. If not available, other lands outside the colony within the Indiana bat Summer Action Area will be sought. If other areas are sought outside the Summer Action Area, INDOT and FHWA will consult with USFWS for their recommendations.

- The Conservation / Preservation Theme would include purchasing property and placing such properties into a land management classification in perpetuity (e.g., forest legacy) and provides opportunities for protection of a natural resource (e.g., Indiana bat and unique habitats – caves, springs, barrens / glades, prairie remnants, old growth forests). Such mitigation sites will be purchased at fair market value or easement granted from a "free willing" seller(s). Thereafter, properties will be donated to an appropriate governmental environmental agency and registered as needed in a program, nature preserve, and others. The installment of cave gates, as appropriate, may be considered under this theme. Priority areas for conservation / preservation will be focused near Indiana bat maternity colonies as much as possible. If not available, other lands outside the colony within the Indiana bat Summer Action Area will be sought. If other areas are sought outside the Summer Action Area, INDOT and FHWA will consult with USFWS for their recommendations.

- The Educational / Research Theme include a number of resources used to educate governmental leaders and the public on environmental stewardship and our historical heritage in Indiana. Some potential possible actions are:

  Context Sensitive Solutions. Some context sensitive solutions may be a variable width median for the roadway keeping with a natural vegetation theme; wildflower plantings for roadsides, rest areas, and overlooks; the construction of borrow pits that have shallow shores; rest areas with various amenities such as short hiking trails, bird and bat boxes, and trail signs; the location of rest areas and overlooks in scenic areas as provided by educational venues; bridging of major rivers (e.g., Patoka River bottoms and East Fork of the White River) as appropriate so as to provide wildlife corridors and minimize impacts to the varying habitats and species; and in areas with oxbows that dry up, consideration for the excavation of such areas and connecting them to the main river. Coordination with review agencies on these and other context sensitive solutions is recommended.

  Possible Funding. Possible funding may be available for threatened and endangered species studies, environmental monitoring and research, natural history and cultural resources studies, and cost for publishing and distribution of information. Publications may be made available on a county, regional and state basis, and public notice of research grants, as appropriate, will be advertised and competitive.

  GIS Information. Promote the use of the GIS as a planning tool. GIS maps and databases would be made available to the public for varying uses on a local, county and regional basis. Such information could benefit land use policy decisions.

I. PROPOSED MITIGATION SITES

The Action Area is defined by regulation as all areas to be affected directly or indirectly by the Federal Action and not merely the immediate area involved in the action (50 CFR – 402.02). This analysis is not limited to the "footprint" of the action nor is it limited by the Federal agency's authority. Rather, it is a biological determination of the reach of the proposed action on listed species. For the endangered Indiana bat, two seasonal Action Areas are defined, i.e., a Summer Action Area and a Winter Action Area. The Summer Action Area is a 5-mile band, 2.5 miles either side of the proposed corridor centerline, along the entire length of the proposed project. The Winter Action Area is a 5-mile radius circle around each of the 14 known Indiana bat hibernacula within 5 miles of the proposed project corridor.

This document was originally developed as part of the Biological Assessment, but it also serves as a broader function in providing for wetland and forest enhancement and mitigation as a whole. Mitigation sites in this document should be viewed as an INDOT "menu" of possible mitigation sites.

Mitigation sites within the thirteen Indiana bat maternity colony circle areas, which have a radius of

2.5 miles from their center point. The center point of each colony circle was derived from capture of a reproductive Indiana bat or roost site or sites. The potential possible mitigation sites within these thirteen colony circles include Pigeon Creek for Section 1; Patoka River, Flat Creek, East Fork White River, and Veale Creek for Section 2: White River (Elnora) for Section 3; Doans Creek, Plummer Creek, and Indian Creek for Section 4; West Fork White River (Bryant Creek) for Section 5; and West Fork White River (Clear Creek), West Fork White River (Crooked Creek), and West Fork White River (Pleasant Run) for Section 6. The secondary mitigation site areas that reside outside of the maternity colony circles are the Lost Hill Area (Warrick County), Patoka River National Wildlife Refuge (Gibson County and Pike County), Plainville Sand Dune Region / Thousand Acre Woods (Daviess County), adjacent to NAVSEA Crane Naval Surface Warfare Center (Greene County and Martin County), Beanblossom Bottoms (Monroe County), and Morgan and Monroe State Forest (Morgan County). These secondary areas where adopted to mitigate for wetland impacts that were located within the eight digit HUC areas outside of the colony circles. These areas where also chosen because of their unique habitat opportunities they could potentially provide. The Indiana Department of Transportation may purchase such mitigation sites or others at a fair market value or purchase easements from willing sellers. Once INDOT has purchased, improved, and/or enhanced a site, they may donate it to an appropriate governmental agency. These locations were chosen based on a wide variety of existing wetlands, karst features, and unique habitat for TES species, along with connection of these sites with federal, state, and local environmental agencies. The proposed possible mitigation site details are contained in Attachments at the end of this document.

The Pigeon Creek bottoms mitigation site is located west of the alignment where Snake Run and Pigeon Creek converge (Attachment A). This area is attractive for it has the potential to harbor many plants and animals, including the swamp rabbit and copperbelly watersnake that are currently reported historically in adjacent areas. It also includes a mosaic of wet-to-dry habitats. In the summer of 2004, a pregnant female Indiana bat was captured within this mitigation site. The proposed design of this mitigation site would be a wetland woods comprised of bald cypress and swamp cottonwood with wet holes of broad-leaved emergents bordered by buttonbush. On slightly higher elevations, southern cane, and bottomland woods of oak and hickory could be planted. Such plantings are to extend existing wetlands and woods for greater core forest and provide wildlife corridors through landscape connectivity, which will create TES habitat. This mitigation site would provide an increase in summer roosting habitat for the Indiana bat as well as reestablish a riparian area to portions of Snake Run and Pigeon Creek. This addition of riparian areas will help reduce the amount of agricultural runoff in this area and will reestablish a corridor for wildlife to utilize in the future.

The secondary site is the Lost Hill Area is located between SR 68 and I-64 east of SR 57 in Warrick County. This wetland area is along Pigeon Creek and the old Wabash Erie Canal and could be a secondary mitigation site. Approximately 357 acres in this area are currently owned by IDNR. This site has a high potential for Indiana bat habitat along with several waterfowl species and the copperbelly watersnake. The strategy for this area would be preservation of wetlands and bottomland forest. The wetlands within the Lost Hill area are of high quality and would be a major benefit to add to the existing IDNR land already owned.

The Patoka River mitigation site is located along or near the Patoka River National Wildlife Refuge, west of the area crossed by Alternative 3C (Attachment A). These bottoms have shown the highest

biodiversity crossed by Alternate 3C. Historically, much of the Patoka River bottoms were altered by agriculture and mining; however, many opportunities exist today for mitigation. The proposed design is a shallow water, slough-like habitat open possibly to view from a proposed visitor's center. Such a habitat would attract ducks and geese along with various-sized wading birds. Of special interest would be whooping and sandhill cranes. A cane marsh would be located at a slightly higher elevation with prairie vegetation at even higher elevations. Bottomland woods of oak and hickory would be provided, as appropriate, for a visual barrier where needed. This mitigation site would provide an increase in summer roosting habitat for the Indiana bat. Currently, there is one primary (dead unknown) and one secondary roost tree (silver maple) within this proposed mitigation area. Interchanges for the refuge are proposed at about 5 miles away at SR 64 to the south and about 3 miles at Division Road as connected to SR 57 to the north.

The Flat Creek mitigation area is located west of SR 57 within the acquisition boundary for the Patoka River National Wildlife Refuge (Attachment A). This area serves as great habitat for the copperbelly watersnake which has been confirmed by many of the local residents and USFW personal. In fact, this mitigation site is within the core habitat for the copperbelly watersnake. A post lactating Indiana bat was captured in this area in the summer of 2004. This area will be a prime area for the addition of core forest area for the benefit of interior forest dependent bird species. There are currently several hundred acres for sale within this area that may be sold for coal rights, logging or other reasons. Opportunities exist in mitigation area to improve water quality at site locations and for hundreds of acres. It could also develop and preserve habitat for many species such as the Indiana bat, copperbelly watersnake, evening bat, bald eagle and blue heron.

The mitigation site near the East Fork of the White River is located north east of Petersburg where the East and West Fork of the White River converge (Attachment A). This mitigation site would be planted as a flatwoods of oak and hickory with numerous openings planted in prairie plants and cedars with hawthorns. It could also include small pockets (springs) of water with wetland plants. This site would be connected to the banks of the East and West Fork and provides an excellent opportunity for developing habitat for the Indiana bat, bald eagle perches for nesting and feeding, and water quality improvements. A reproductive female Indiana bat and an evening bat were caught within this proposed mitigation site. The proposed design for this mitigation site would be a savannah-type habitat, i.e., an open upland to bottomland woods with many clearings planted with prairie grasses and plants of sandy soils. The edge of these woods and open clearings should be planted with cedars and hawthorns for use by loggerhead shrike. Near the East Fork, raptor nesting platforms should be erected for use by various birds of prey. Dead snags should be protected for use by the Indiana bat, evening bat, and other species. This mitigation site would provide an increase in feeding and nesting perches for the bald eagle and increase summer roosting habitat for the Indiana bat. Improving water quality in this area could increase the potential for mussels in the East Fork of the White River.

The location of the Veale Creek proposed mitigation site is immediately east of the confluence of Veale Creek and Hurricane Branch (Attachment A). There are a total of 5 roost trees found within this mitigation site. Of the 5 roost trees 2 of them were primary roosts. The roost tree species consisted of 2 shagbark hickories, 2 American elms, and one dead unknown. This area around Veale Creek could be purchased and enhanced to further its potential for optimal Indiana bat habitat. The mitigation site would be planted as a flatwoods of oak and hickory with numerous open areas planted with prairie grass species. Existing wetland woods along Veale Creek will be extended to mitigate for wetland losses and to provide additional core forest areas. In addition, this site could be

used to revegetate the barren riparian areas of Veale Creek, which lack woody vegetation that lower water temperatures and stabilize its banks. This will also provide an excellent opportunity for developing habitat for the Indiana bat and water quality improvements. This area could also serve as an excellent haven for prairie dependent animal species by providing buffers surrounding the wetland woods areas that would provide prairie, fence row and some oak savanna type habitats for grassland bird species.

The White River (Elnora) mitigation area is located along the White River near Elnora (Attachment A). This environmentally sensitive area is unique because of its backwater sloughs, oxbow wetlands, and floodplain forest remnants. Oxbows like those in this area are important for the unique plants and animals that utilize them. They also offer an ecosystem connected with the White River. Mussels, fishes, amphibians, reptiles, birds, and mammals depend upon these areas for survival. Many opportunities exist for mitigation in this area. There were a total of 3 Indiana bat secondary roost trees, which were all silver maples and 3 reproductive females found within this mitigation area. The proposed mitigation design is to restore wetlands and bottomland woods and provide habitat for aquatic and terrestrial TES species. Similarly, some oxbows that dry up in the mitigation site could be dug and connected to the West Fork of the White River. Other oxbows would be left in existing conditions. This mitigation site would provide summer roosting habitat for the Indiana bat and increase bald eagle nesting and feeding habitats. This site could also serve as an educational tool as well since there is an IDNR public access site within the area. Plaques and signs describing the habitat and restoration activities could be displayed. Many opportunities exist today for mitigation in this area. If land in this area is not available, the Thousand Acre Woods area and the Capehart Sand Flats area that are located within the Plainville Sand Dune Region are alternative choices for mitigation in Section 3.

The Plainville Sand Dune Region mitigation site may be near Thousand Acre Woods, Badger Badlands, Sand Woods, or Capehart Sandflats (Attachment A). These areas are associated with the Plainville Sand Dune Region, a small but unique area of wind blown sand dunes east of the Wabash and White Rivers. The barrens natural community type, now virtually gone from the landscape, was predominant on ridges and well drained sites, and swamp, marsh, and wet prairie occupied swales. Many opportunities exist today for mitigation in these areas. In 1999, IDNR purchased 86.12 acres in this area for a nature preserve, which could be added to through I-69 mitigation. The proposed design for this mitigation site would be a mosaic of prairies and bottomland woods habitat that would increase core forest habitat and habitat for the loggerhead shrike and Henslow's sparrow. Such ecosystems would attract numerous species. Of special interest would be yellow-billed cuckoo, Kentucky warbler, crested flycatcher, and the yellow-breasted chat. Bottomland woods will be planted with oak and hickory, while prairies will have bluestem interspersed with red cedars blackjack and post oak. Hawthorns along with some dispersed sand hickory, which is an Indiana state listed species, may also be planted in these areas. This mitigation site would increase the amount of summer roosting habitat for the Indiana bat by adding more forest area to Thousand Acre Woods along the South Fork of Prairie Creek. In addition, establishment of forested areas along this creek would also help with stream quality.

The Doans Creek mitigation area is located along Doans Creek just north of the Crane Naval Surface Warfare Center and south of SR 58 (Attachment A). Within the proposed mitigation area there were two Indiana bat secondary roost trees found south of Doans Creek. The roost trees where both shagbark hickories. The area is a mix of bottomland and upland hardwood forest with interspersed grazing. Opportunities for mitigation in this area are excellent due to the vast amount of forest in the

adjacent NAVSEA Crane Naval Surface Warfare Center. This area has the potential to add to the existing core forest areas, which would serve as habitat for many interior forest bird species and the Indiana bat. A secondary area for mitigation could be within the NAVSEA Crane Naval Surface Warfare Center. Approval from the Crane Naval Surface Warfare Center would need to be obtained for any mitigation.

The Plummer Creek mitigation site in Greene County includes very unique geological features such as Rock Springs and Ashcraft Cave (Attachment A). In addition, Rankin Springs is located immediately to the south. This area would be an excellent opportunity for increasing summer and winter habitat for the Indiana bat and increasing wetlands along Black Ankle Creek that are fed by Rankin Springs. There are a number of springs in this area that can offer unique cool water habitat. Prior converted wetlands are common in the Plummer Creek bottoms and flooding is not unusual in this floodplain. All opportunities will be explored to add to existing habitats in this mitigation area, including the possibility of adding onto the existing Martin County State Forest lands located west of Rankin Springs. A reproductive female Indiana bat was tracked to 2 secondary roost trees within this proposed mitigation site. One of these trees was a live shagbark hickory and the other was dead and unidentifiable.

The Indian Creek mitigation area is located east of SR 45 around the Breeden Road area (Attachment A). Forest mitigation may come in the form of protecting existing woods and the planting of additional upland and bottomland woods. An Indiana bat secondary roost site was found within this area. It was a small wooden utility pole located in a yard between the house and a garage. The bats were found within a plastic sleeve that runs up and down the side of the pole. Trees may be planted to create additional core forest habitat for this area. There are also many karst features, which include 3 caves within this mitigation area.

The proposed West Fork White River (Bryant Creek) mitigation site is just east of the confluence of Bryant Creek with the West Fork White River, directly south of Paragon (Attachment A). The purchasing of / or obtaining of conservation easements in this area would be an excellent opportunity for creating riparian buffers along the West Fork White River and/or Bryant Creek. It would also improve habitat for the Indiana bat and bald eagle. There were six Indiana bat roost trees found in this area. One of them was a primary roost with bat numbers reaching up to 128 per night. The other 5 showed maximum numbers of 0, 3, 4, and 13. The goal for this area is to reestablish a bottomland woods with riparian buffers along the White River and/or Bryant Creek. Such habitat could be used by the Indiana bat and bald eagle, and improve the water quality of the White River. Improving the water quality may reduce siltation and improve water conditions for mussels in this area of the White River. In addition, this replacement of riparian habitat could enhance the White River flyway for the Indiana bat.

A secondary mitigation site could be the Beanblossom Bottoms mitigation area near the Beanblossom Bottoms wetland complex (Attachment A). The Beanblossom Bottoms area includes a complex of high quality hardwood wetlands that harbor many unique plants and animals. Mitigation in this area would provide habitat for the bald eagle, Indiana bat, bobcat, and many species of amphibians and reptiles. The proposed design of this mitigation site could be shallow water, slough-like habitat. Such a habitat would attract ducks, geese, and wading birds. Of special interest would be whooping and sandhill cranes. Bottomland woods of oak and hickory will provide, as appropriate, for isolation and protection for some species. This mitigation site would increase summer roosting habitat for the Indiana bat and increase bald eagle nesting and feeding habitats. It would be similar to the existing Muscatatuck Refuge in the Beanblossum bottoms.

The White River (Clear Creek) mitigation area is located along the West Fork of the White River north of Martinsville near Blue Bluff Nature Preserve. This area extends eastward toward Henderson Ford Road (Attachment A), and encompasses a wide stretch of floodplain for the West Fork of the White River. Within this proposed mitigation site, there are 3 identified Indiana bat secondary roost trees and 1 primary roost tree. In addition, 2 reproductive females and 1 juvenile female Indiana bat were captured within this proposed site. The Blue Bluff Nature Preserve has an abundance of the rare shrub, i.e., a flowering raspberry. The preserve also has a richly varied early spring flora, and a profusion of ferns. There are a few large trees within the Blue Bluff Nature Preserve. Mitigation near this area would provide an excellent opportunity for habitat for the Indiana bat and bald eagle. The proposed design concept is to restore wetlands and bottomland woods and provide habitat for aquatic and terrestrial TES species with a special emphasis on habitat for the Indiana bat and bald eagle. A secondary mitigation site could be on or next to Morgan and Monroe State Forest lands.

The West Fork White River (Crooked Creek) Mitigation site is located north of Martinsville where Crooked Creek merges with the White River (Attachment A). There are two Indiana bat primary roost trees located within this area. There is also an upland woodland area where one of the primary roosts is located that is almost completely dominated by shagbark hickories and the other was a transmission pole. Mitigation in this area would provide and excellent opportunity for providing habitat for the Indiana bat and bald eagle. The concept is to restore wetlands and bottomland woods that no longer exist, preserve the upland hickory dominated woodland site and provide habitat for both aquatic and terrestrial TES species. Similarly, oxbows that dry up in the mitigation site may be connected once again through woodland corridors to the West Fork of the White River. This mitigation would develop habitat for the Indiana bat and bald eagle, and provide for more permanent aquatic ecosystems.

The West Fork White River (Pleasant Run) mitigation site is located directly South of Southwestway Park (Attachment A). There are two Indiana bat secondary roost trees located within this area. In addition, there were 2 juvenile males, 1 juvenile female, and 1 reproductive female bat captured within this proposed mitigation site. This area provides many opportunities to restore vast floodplain fields into bottomland forest and help control further development from the south side of Indianapolis into this area. Mitigation near this area would provide an excellent opportunity for providing habitat for the Indiana bat and bald eagle. The concept is to restore wetlands, bottomland woods, and riparian areas that no longer exist to provide habitat for both aquatic and terrestrial TES species. This reestablishment of forest in this area would also greatly benefit the water quality. In addition, oxbows that dry up in the mitigation site, may be connected once again through woodland corridors to the West Fork of the White River. This mitigation would develop habitat for the Indiana bat and bald eagle, and provide for more permanent aquatic ecosystems.

III. GOALS

The goal of forest and wetland mitigation is to restore wetlands and forests which not only mitigate the environmental impacts caused by the project, but enhance the environment. These mitigation sites should accomplish this goal and emphasize natural forest and wetland communities that use native trees and herbaceous vegetation. It is anticipated that target functions and values for the

mitigation sites may be achieved within a 3 to 5 year time frame, including flood storage and wildlife use; however, woody species will require a longer time frame to achieve their functions. Complete habitat replacement may take 20-30 or more years for woody species to mature. Education and research opportunities may be available through the life of the project.

The mitigation sites will replace, with a net gain, flood retention, ecological functions, and wildlife habitat values in the impact forest and wetland sites. Converting farm fields connected to existing forest and wetland complexes to forested, scrub/shrub, emergent, open water wetlands, and upland forests, will provide an opportunity for: (1) a higher "carrying capacity" for wildlife; (2) colonization by TES plant species; (3) potential habitat for State and Federal listed animal species such as the Indiana bat, bald eagle, loggerhead shrike, and possibly others; (4) habitat for gamebirds and passerines; and (5) habitat for many reptiles, amphibians, and mammals. When mitigation sites mature, which may take more than 5 years, environmental benefits will be significant.

A. TYPES, FUNCTIONS AND VALUES OF IMPACTED EXISTING WETLANDS

Wetlands and forests impacted are within the “a representative alternative” or an alternative that has the greatest forest impacts of those alternatives carried forward as of November 14, 2005 since a preferred alternative is not presently available for Alternative 3C for the I-69 Evansville to Indianapolis highway. The estimated wetland impacts were calculated from National Wetland Inventory maps. The wetland impacts fall within five 8-digit watersheds.

B. TYPES, FUNCTIONS AND VALUES OF THE WETLANDS

Wetland mitigation sites are primarily farm fields, connected with existing wetlands and bottomland woods. The forest mitigation sites are a combination of existing forests and agricultural fields connected to existing upland and bottomland woods. Indiana Department of Transportation may purchase land at fair market value or purchase land as easements from “willing sellers” for impacts to wetlands and forests from the construction of I-69. The farm fields purchased for wetland and forest mitigation may be converted, for the most part, to wetland, bottomland, and upland forests, and to a lesser extent scrub/shrub, and emergent wetlands. Upland buffer strips will be located around all wetland mitigation sites to act as “filter traps”. Hydrology for wetland mitigation sites will be defined on a case-by-case basis for each site, but earth moving and maintenance requirements will be minimized to the greatest degree possible. The remaining forest impacts may be mitigated by purchasing existing forests, which are within unique habitat areas or have maternity roosts for the Indiana bat, and protect them in perpetuity.

We anticipate that these sites will be attractive to the Indiana bat, bald eagle, and many state listed TES species. Addition of these mitigation sites to existing wetlands, bottomland, and upland woods will accentuate the diversity of habitats within southwestern Indiana, and provide optional food, cover and nesting sites.

IV. MITIGATION SUCCESS CRITERIA

A. MITIGATION RATIO

It estimated that a total of approximately 345 acres of NWI wetlands are identified in this Revised Tier 1 Conceptual Forest and Wetland Mitigation and Enhancement Plan for

replacement for the potential estimated loss of 100 acres of forested wetlands, 5 acres of impacted scrub/shrub wetlands, and 15 acres emergent wetlands. This Revised Tier 1 Conceptual Forest and Wetland Mitigation and Enhancement Plan has a ratio of 3:1 replacement for the forested and scrub/shrub wetlands, and 2:1 replacement for emergent wetlands. In addition to wetland mitigation, an estimated total of approximately 2,050 acres of potential upland forest impacts were identified, and at a ratio of 3:1 would require 6,150 acres of forest mitigation. A buffer for each wetland mitigation site has also been included within this plan. An estimated total of 90 acres of land is included for such buffers. This is an estimate of acres needed for mitigation for upland and wetlands based on the representative alternative. If the impacts are reduced then the mitigation will be reduced. Final mitigation acreages will be determined based on the final Tier 2 impact estimates by applying the appropriate mitigation ratio as defined in this document, or other ratios as approved by the appropriate permitting agency. Further enhancements may be determined with the appropriate regulatory agencies on a case-by-case basis. Wetland impacts will be mitigated within their same 8-digit watersheds. Table 1 shows the types, impacts, mitigation ratios, and an estimated amount of mitigation acres as located within the Action Area for the I-69 Alternative 3C. This estimate comes from NWI maps and the representative alternative.

Habitat Type	Estimated Impact (acres)	Mitigation Ratio	Estimated Mitigation (acres)
Forested Wetlands	100	3:1	300
Scrub / Shrub Wetlands	5	3:1	15
Emergent Wetlands	15	2:1	30
Wetland Buffer/Prairies	----	----	90
Upland/Bottomland Forests	2,050	3:1	6,150
Total	**2,170**	**-----**	**6,585**

B. PERFORMANCE STANDARDS FOR WETLAND MITIGATION

The Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency pertaining to The Determination of Mitigation Under The Clean Water Act Section 404 Guidelines updated on December 31, 2002 states that monitoring is an important aspect of mitigation, especially in areas of scientific uncertainty. Monitoring should be directed toward determining whether permit conditions are complied with and whether the purpose intended to be served by the conditions are actually achieved. Any time it is determined that a permittee is in non-compliance with the mitigation requirements of the permit, the Corps will take action in accordance with 33 CFR Part 326. Monitoring should not be required for purposes other than these, although information for other uses may accrue from the monitoring requirements. For projects to be permitted involving mitigation with higher levels of scientific uncertainty, such as some forms of compensatory mitigation, long term monitoring, reporting, and potential remedial action should be required.

C. CONTINGENCY PLAN FOR MITIGATION

Should performance standards stated above not be met, Indiana Department of Transportation will submit an analysis of factors contributing to the discrepancy. This analysis will be included in the monitoring reports, and corrective measures will be proposed for approval by the U.S. Army Corps of Engineers, Indiana Department of Natural Resources, U.S. Fish and Wildlife Service, and Indiana Department of Environmental Management. For instance, if hydrologic conditions necessary for wetland formation are not present, this situation will be corrected by the most practical method to obtain proper wetland hydrology. If other factors result in demise of wetland plants, corrective steps will be taken to remedy the situation. This may include selective herbicide use, sediment removal, erosion control measures, animal depredation deterrents, or others. If necessary, the plant list may be changed for replantings to better match plants to site conditions. Replanting shall be performed to meet above stated performance standards. Any portions of the mitigation sites replanted shall be monitored to assure compliance with performance standards.

V. IMPLEMENTATION PLAN

A. RATIONALE FOR EXPECTED SUCCESS OF MITIGATION AREAS

Reasons for expected success of the wetland and upland forest mitigation sites include the occurrence of unique and high quality habitats in the areas near these mitigation sites. Mitigation sites are to extend outward from such environmentally productive sites.

B. RESPONSIBLE PARTIES

INDOT may purchase mitigation sites or purchase conservation easements from “willing sellers” with a restriction clause on its special use as a wetland or upland forest mitigation site. Properties may have signs indicating "No Spraying or Mowing" and wetland mitigation sites and forest mitigation site that receive planting will be monitored for 5 years. Monitoring may be completed by INDOT or a contracted environmental consultant.

C. HABITAT IMPROVEMENT STRUCTURES

Habitat improvement structures may be constructed within mitigation sites on a case-by-case basis. Examples could be bluebird boxes, wood duck boxes, bat roosting structures, raptor nesting platforms and others.

D. CONSTRUCTION SCHEDULE

Site preparation of wetland and upland forest mitigation sites will occur in a timely manner to allow planting to immediately follow in the spring of the year.

VI. MONITORING

Construction and post-construction monitoring is proposed for all sites that receive planting to ensure that the mitigation sites are constructed and develop as designed. All current monitoring requirements will be followed for the mitigation sites.

VII. SUMMARY

This "Revised Tier 1 Conceptual Forest and Wetland Mitigation and Enhancement Plan" proposes to create an estimated 300 acres of forested wetlands (3 to 1 replacement ratio), 15 acres of scrub/shrub wetlands (3 to 1 replacement ratio), 30 acres of emergent wetlands (2 to 1 replacement ratio), 6,150 acres of upland forest (3 to 1 replacement ratio) and 90 acres of buffer (usually in prairie vegetation) for wetland impact sites. This Mitigation and Enhancement Plan is offering more than minimum amount of mitigation. These estimated figures are based on Tier 2 data prior to selection of a preferred alternative. After a preferred alternative is selected and approved by the agencies and public, these numbers will be refined as appropriate. Worst case impact numbers for the preferred alternative are expected to be lower than the estimated numbers resulting from the representative alternative.

Attachment A

Proposed Pooled Mitigation Site Data Forms

Highland-Pigeon Watershed – Section 1
Proposed Pooled Mitigation – Pigeon Creek

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☐
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☒
Contains hydric soils	☒
Located adjacent or near managed lands	☐
Contains caves or karst features	☐
Contains other recorded TES species	☐

WETLAND IMPACT TYPES (NWI Data*)

Forested	9.5 acres	Scrub / Shrub	0 acres
Emergent	0.1 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 45 acres

MITIGATION ACREAGES

NWI Wetlands Plus 25% Buffer	40	acres
Upland/Bottomland Forest	135	acres
Size of Mitigation Site (Proposed)	175	acres

DESCRIPTION The location of the proposed pooled mitigation site (see map on back) is in the Pigeon Creek bottoms. The adjacent bottoms to the east of this site are extremely attractive for many plants and animals, including the swamp rabbit, ferns, copperbelly watersnake, great blue heron rookeries, and a mosaic of various wet to dry habitats. If purchase of land in this area is not possible, a secondary choice will be located in the vicinity of the Lost Hill (IDNR property) or Marchand Wildlife Area (reclaimed Vigo Coal Co. strip mined wetland) within the Pigeon Creek bottoms.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat		
State Listed	Swamp Rabbit	Evening Bat	Eastern Spadefoot
	Copperbelly Watersnake	Northern Harrier	Red Shouldered Hawk
	Bald Cypress	Sedge Wren	Crawfish Frog
Other Species	Southern Cane	Ferns	Great Blue Heron
	Carexes		

POTENTIAL PARTNERSHIPS

Four Rivers Resource Conservation and Development	Indiana Department of Natural Resources
United State Fish and Wildlife Service	Educational Centers / Research

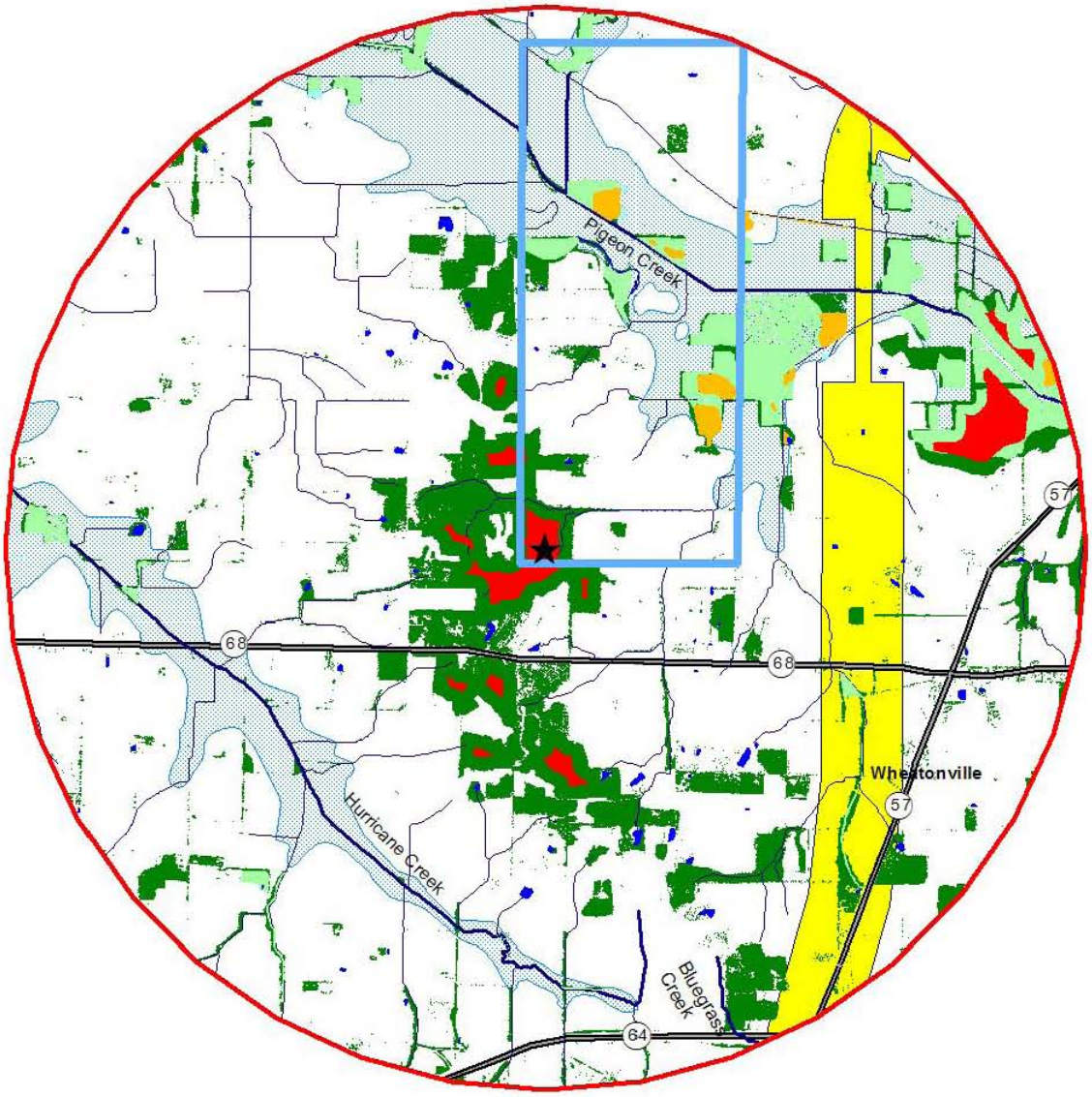
CONCEPTUAL PLAN

Design a mitigation site consisting of woods of bald cypress and swamp cottonwood with wet holes of broad-leaved emergents as bordered by buttonbush, and at a slightly higher elevation, southern cane and then a bottomland woods of oak and hickory. Such plantings are to extend existing wetlands and woods for greater core forest and landscape connectivity for TES habitat.

MITIGATION TYPE AND THEME

Mitigation in this area would benefit both federal (e.g., Indiana Bat) and a number of state listed TES species. The theme of this mitigation site would be restoration/replacement of lost habitat in an agriculturally dominated area.

*NWI Impact Areas-Pigeon Creek Tributary and Smith Fork Tributary
*Open water Impacts Total - 0.72 acres
**Forest Impacts(Wetland and Upland Woods) within Colony Circle – 28 acres



Pigeon Creek
Maternity Colony

Proposed Mitigation Area

0 0.25 0.5 0.75 1 Miles

N

Open Water (PUB/PAB) (63 ac)
Emergent Wetlands (PEM) (20 ac)
Wet Forests (PFO) (397 ac)
Wet Scrub/Shrub (PSS) (2.5 ac)
Tree Cover (1944 ac)
Floodplain
Core Areas (136 ac)
Proposed Mtigation Areas
2000-ft Corridor
Streams
Highways
Mist Netting Capture - Indiana Bat

Patoka River Watershed – Section 2
Proposed Pooled Mitigation – Patoka River Bottoms

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☐
Contains degraded stream(s)	☒
Contains hydric soils	☒
Located adjacent or near managed lands	☒
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	6.4 acres	Scrub / Shrub	0 acres
Emergent	0.3 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 59 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	25 acres
Upland Forests	180 acres
Size of Mitigation Site (Proposed)	205 acres

DESCRIPTION The location of the mitigation site (see map on back) is within the Patoka River Bottoms. These bottoms showed a high biodiversity and this area has consistently showed evidence of Indiana bats in 1993, 2004 and 2005. This mitigation area is home to a primary roost site, which is located in the center of the proposed pooled mitigation site. Historically, much of the Patoka River bottoms have been altered by agriculture and mining; however, many opportunities exist today for mitigation through preservation with possibly some restoration. No second choice is being offered for this mitigation site.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat	Bald Eagle	
State Listed	Swamp Rabbit	River Otter	Barn Owl
	Crawfish Frog	Short-eared Owl	Red-Shouldered Hawk
	Copperbelly Watersnake	Northern Harrier	Loggerhead Shrike
	Night Herons (both)	Whooping Crane	Sandhill Crane
Other Species	Southern Cane	Deciduous Holly	Paddlefish

POTENTIAL PARTNERSHIPS

United State Fish and Wildlife Service	Indiana Department of Natural Resources
Four River Resource and Conservation District	Educational Centers / Research

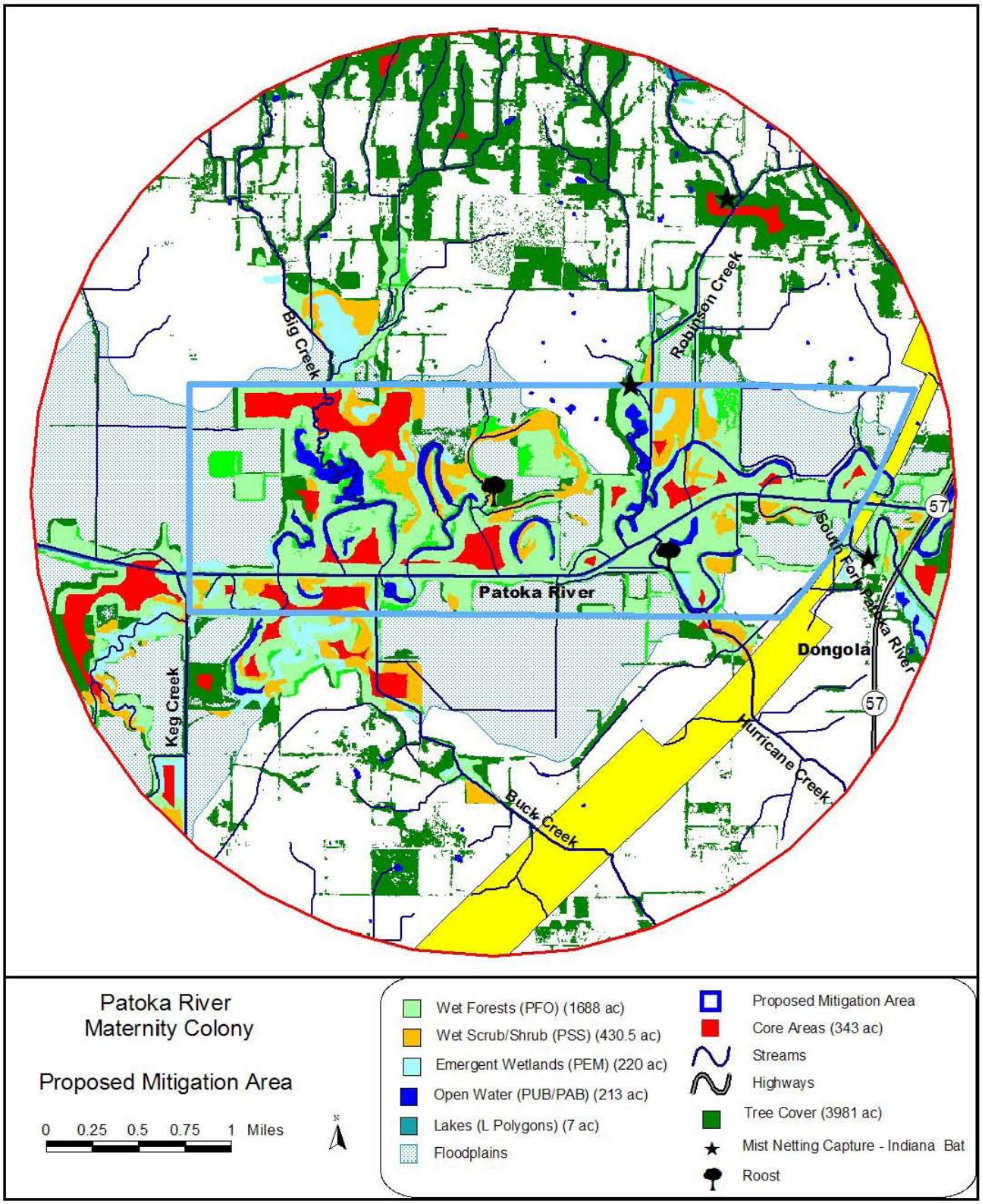
CONCEPTUAL PLAN

Design for a shallow water, slough-like habitat, which would attract ducks and geese along with various-sized wading birds. Of special interest would be whooping and sandhill cranes. A cane marsh would be located at a slightly higher elevation. Bottomland woods of oak and hickory will be provided, as appropriate, for a visual barrier where needed.

MITIGATION TYPE AND THEME

INDOT and FHWA are on record as partners with the USFWS in developing a stewardship role that will develop habitat along the Patoka River for the Indiana bat, bald eagle, and state listed species as appropriate. Restoration/Replacement, Conservation/Preservation, and Educational would be the mitigation themes for this site.

* NWI Impact Areas – South Fork Patoka River, Hurricane Creek, Patoka River, Patoka River Tributary, and Flat Creek
* Open Water Impacts Total - 0.79 acres
**Forest Impacts (Upland and Wetland) within Colony Circle -17 acres



Patoka River
Maternity Colony

Proposed Mitigation Area

Flat Creek Patoka Watershed– Section 2
Proposed Pooled Mitigation –Flat Creek

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☐
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☒
Contains hydric soils	☒
Located adjacent or near managed lands	☒
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	3.1	acres
Scrub/Shrub	0.9	acres
Emergent	0	acres

UPLAND/BOTTOMLAND FOREST IMPACTS** 59 acres

MITIGATION ACREAGES

NWI Wetlands Plus 25% Buffer	15 acres
Upland/Bottomland Forest	180 acres
Size of Mitigation Site (Proposed)	195 acres

DESCRIPTION The location of the proposed pooled mitigation site (see map on back) is in the Flat Creek & Patoka River bottoms. This area is an extremely attractive area for many plants and animals, including the swamp rabbit, ferns, copperbelly watersnake, great blue heron rookeries, and a mosaic of various wet to dry habitats. No second choice is being offered for this mitigation site.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat	Bald Eagle	
State Listed	Swamp Rabbit	Sedge Wren	Night Herons (both)
	Copperbelly Watersnake	Worm-eating Warbler	River Otter
	Red Shouldered Hawk	Bald Cypress	Cerulean Warbler
Other Species	Southern Cane	Ferns	Great Blue Heron
	Carexes		

POTENTIAL PARTNERSHIPS

Four Rivers Resource Conservation and Development	Indiana Department of Natural Resources
United State Fish and Wildlife Service	Educational Centers / Research

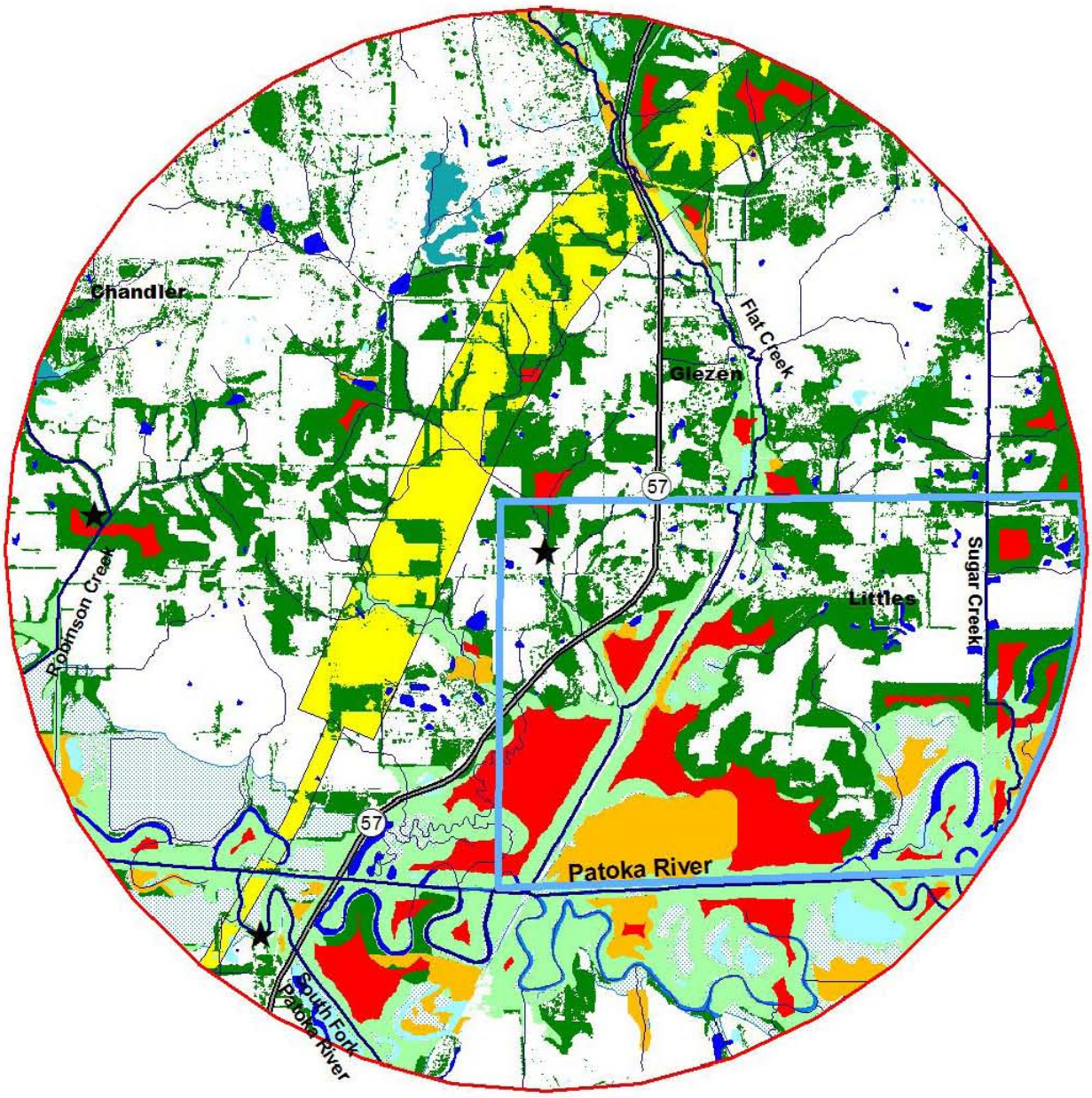
CONCEPTUAL PLAN

Design a mitigation site consisting of woods of bald cypress and swamp cottonwood with wet holes of broad-leaved emergents as bordered by buttonbush, and at a slightly higher elevation, southern cane and then a bottomland woods of oak and hickory. Such plantings are to extend existing wetlands and woods for greater core forest and TES habitat.

MITIGATION TYPE AND THEME

Mitigation in this area would benefit both federal (e.g., Indiana Bat) and a number of state listed TES species. Conservation/Preservation and Restoration/Replacement are the two themes for this mitigation site.

*NWI Impact Areas -Patoka River Tributary and Flat Creek
*Open Water Impacts Total – 0.17 acres
**Forest Impacts (Upland and Wetland) within Colony Circle -85 acres



Flat Creek
Maternity Colony

Proposed Mitigation Areas

0 0.25 0.5 0.75 1 Miles

N

- Wet Forests (PFO) (1948 ac)
- Wet Scrub/Shrub (PSS) (466 ac)
- Emergent Wetlands (PEM) (154 ac)
- Open Water (PUB/PAB) (181 ac)
- Lakes (L Polygons) (50.5 ac)
- Floodplain
- Proposed Mitigation Areas
- Core Areas (661 ac)
- Streams
- Highways
- Tree Cover (5425.5 ac)
- Mist Netting Capture - Indiana Bat

Lower East Fork of the White River Watershed – Section 2
Proposed Pooled Mitigation – East Fork Site

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☐
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☒
Located adjacent or near managed lands	☐
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data)

Forested	26.9 acres	Scrub / Shrub	0.3 acres
Emergent	0.2 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS* 59 acres

MITIGATION ACREAGES

NWI Wetlands Plus 25% Buffer	105 acres
Upland Forests	180 acres
Size of Mitigation Site (Proposed)	285 acres

DESCRIPTION The location of the proposed mitigation site (see map on back) is expected to be near the crossing of the East Fork of the White River. The mitigation site would be planted as a flatwoods of oak and hickory with numerous openings planted in prairies and cedars with hawthorns, and small pockets of water with wetland plants. This site would be connected to the banks of the West and East Fork and could provide an excellent opportunity for developing habitat for the Indiana bat, bald eagle perches for nesting and feeding, and water quality improvements. No second choice is being offered for this mitigation site.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat	Bald Eagle	
State Listed	Evening Bat	American Badger	Barn Owl
	Loggerhead Shrike	Ornate Box Turtle	East Coast Plants
Other Species	Prairie Plants	Cedars	Flatwoods

POTENTIAL PARTNERSHIPS

Four Rivers Resource Conservation and Development	Indiana Department of Natural Resources
United States Fish and Wildlife Service	Educational Centers / Research

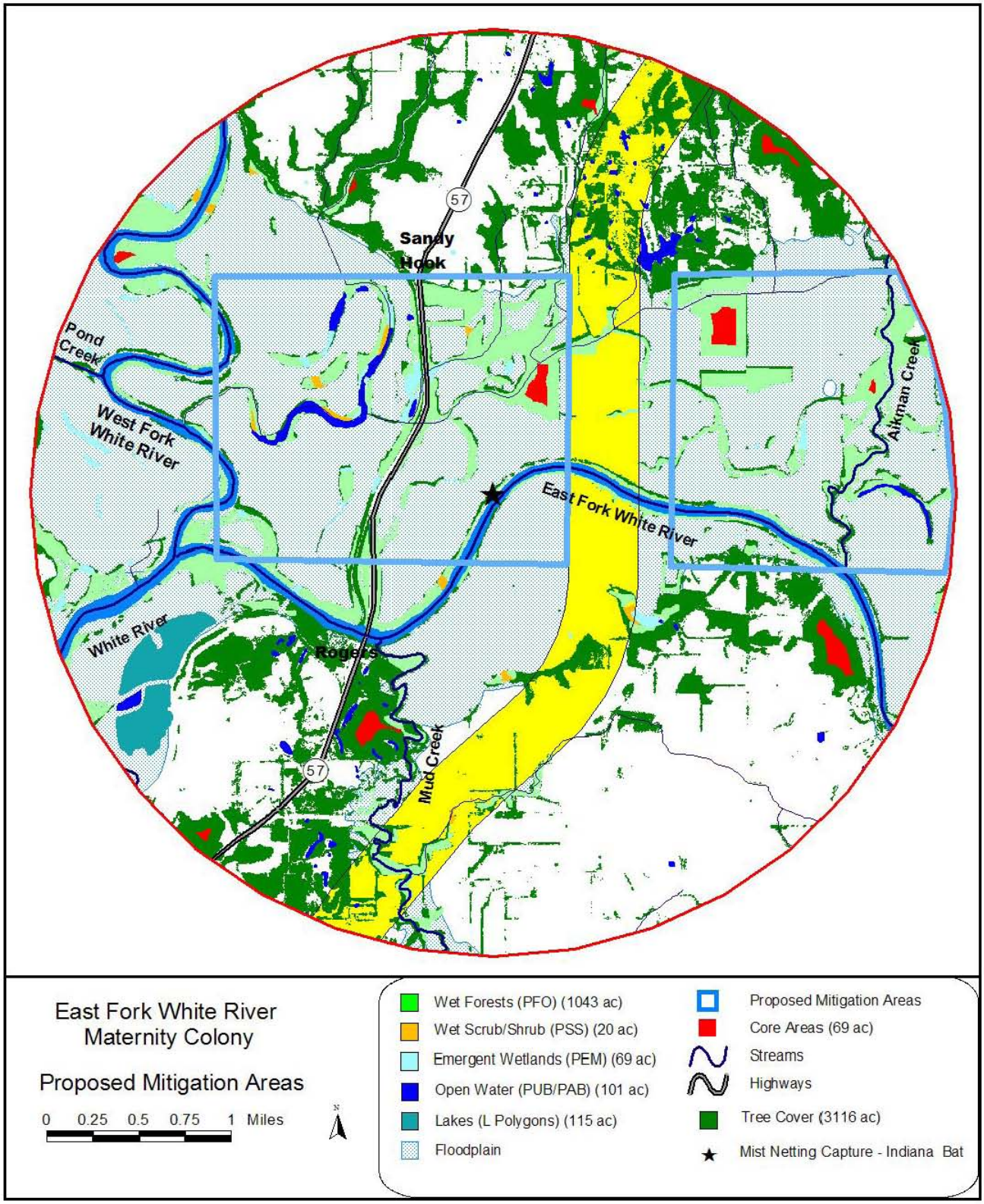
CONCEPTUAL PLAN

Design an open upland to bottomland woods with many clearings planted with prairie grasses and plants of sandy soils. The edge of these woods and open clearings should be planted with cedars and hawthorns for use by loggerhead shrike. Near the East Fork, raptor nesting platforms should be erected for use by various birds of prey. Dead snags should be protected for use by the Indiana bat, evening bat, and other species. Restoration of prior oxbow areas is a consideration as a mitigation activity at this site.

MITIGATION TYPE AND THEME

The East Fork Mitigation Site is offered as a patchy forested site with an emphasis placed upon developing habitat for the Indiana bat, bald eagle, loggerhead shrike and other species with an affinity for sandy soils. The soils in this area are very sandy and thus, offer a protected oasis for many plants and animals that are restricted to such dunes. Restoration/Replacement with Conservation/Preservation would be the major mitigation themes for this site.

*NWI Impact Areas-Prides Creek, Mud Creek, E.F. White River, E.F. White River Tributary
*Open Water Impacts Total-4.7 acres
*Forest Impacts within Colony Circle-37 acres


Sandy Hook
57
Pond Creek
West Fork White River
East Fork White River
Aikman Creek
White River
Rogers
Mud Creek
57
East Fork White River Maternity Colony
Proposed Mitigation Areas
0 0.25 0.5 0.75 1 Miles
N
Wet Forests (PFO) (1043 ac)
Wet Scrub/Shrub (PSS) (20 ac)
Emergent Wetlands (PEM) (69 ac)
Open Water (PUB/PAB) (101 ac)
Lakes (L Polygons) (115 ac)
Floodplain
Proposed Mitigation Areas
Core Areas (69 ac)
Streams
Highways
Tree Cover (3116 ac)
Mist Netting Capture - Indiana Bat

Lower East Fork of the White River Watershed – Section 2
Proposed Pooled Mitigation –Veale Creek Site

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☒
Located adjacent or near managed lands	☐
Contains caves or karst features	☐
Contains other recorded TES species	☐

WETLAND IMPACT TYPES (NWI Data*)

Forested	9.2 acres	Scrub / Shrub	0 acres
Emergent	0.4 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 59 acres

MITIGATION ACREAGES

NWI Wetlands Plus 25% Buffer	35 acres
Upland Forests	180 acres
Size of Mitigation Site (Proposed)	210 acres

DESCRIPTION The location of the proposed mitigation site (see map on back) is immediately east of the confluence of Veale Creek and Hurricane Branch. The mitigation site would be planted as a flatwoods of oak and hickory with numerous open areas planted with prairie grass species. Existing wetland woods along Veale Creek will be extended to mitigate for wetland losses and to provide additional core forest areas. In addition this site could be used to revegetate the bare riparian areas of Veale Creek and provides an excellent opportunity for developing habitat for the Indiana bat and water quality improvements.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat		
State Listed	Evening Bat	American Badger	Barn Owl
	Red-shouldered Hawk	Loggerhead Shrike	Ornate Box Turtle
	Henslow's Sparrow	Least weasel	Crawfish Frog
Other Species	Flatwoods	Pileated Woodpecker	Shagbark Hickory

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	United States Fish and Wildlife Service
Educational Centers / Research	Four Rivers Resources Conservation & Development

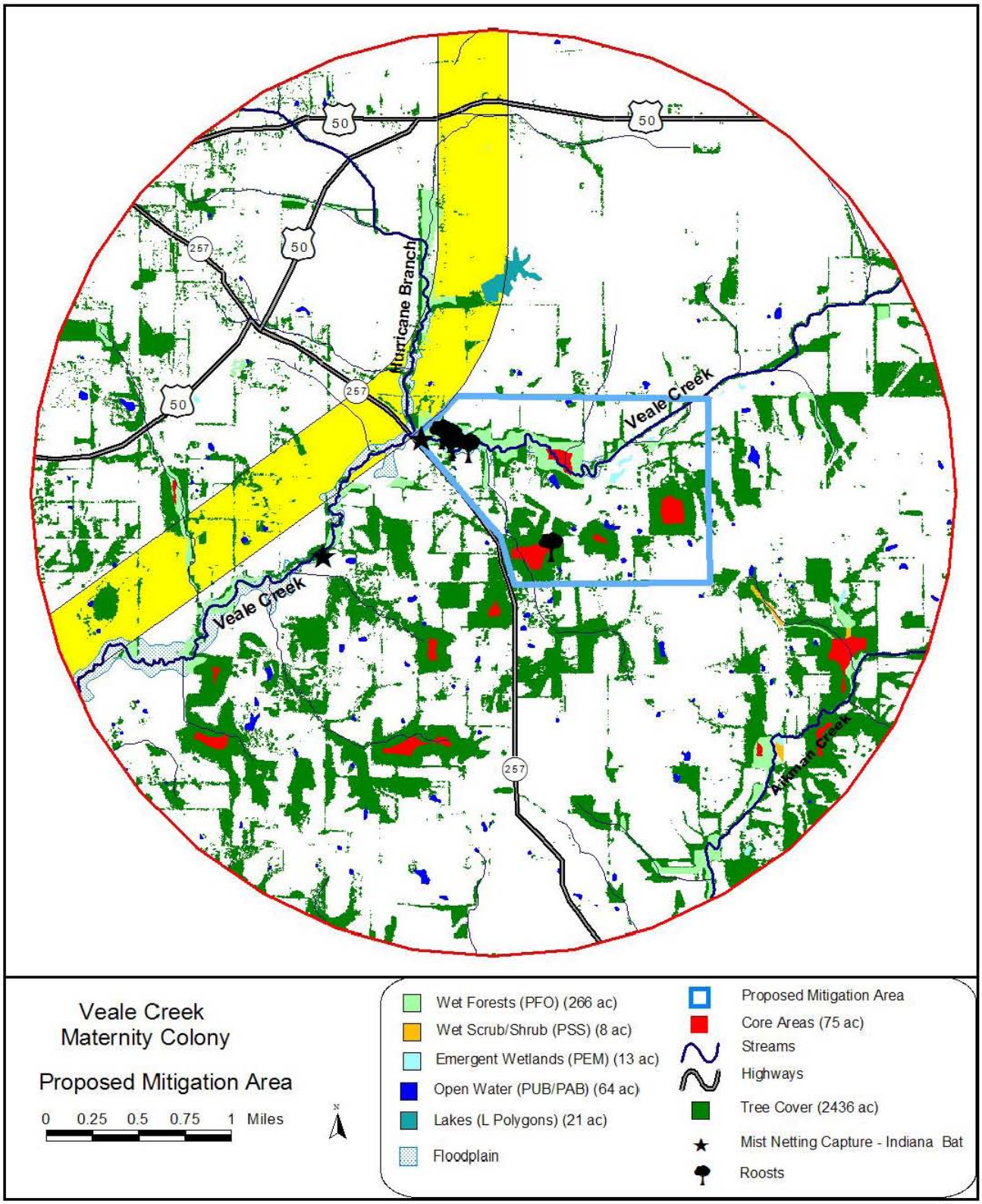
CONCEPTUAL PLAN

Design an open upland to bottomland woods that would add connectivity to the Veale Creek Riparian corridors with surrounding wood lots. In addition provide buffers that would provide prairie, fence row and some oak savanna type habitats for grassland bird species.

MITIGATION TYPE AND THEME

The Veale Creek Mitigation Site is offered as a patchy forested site with an emphasis placed upon developing habitat for the Indiana bat and other species. Restoration/Replacement and Conservation/Preservation are the main mitigation themes for this site. All efforts will be made to purchase or receive a conservation easement for properties containing roost trees.

*NWI Impact Areas- Veale Creek and Hurricane Branch
**Forest Impacts (Wetland and Upland) within Colony Circle - 10 acres


50
50
257
50
257
50
Hurricane Branch
Veale Creek
Veale Creek
257
Ashman Creek
Veale Creek
Maternity Colony
Proposed Mitigation Area
0 0.25 0.5 0.75 1 Miles
N
Wet Forests (PFO) (266 ac)
Wet Scrub/Shrub (PSS) (8 ac)
Emergent Wetlands (PEM) (13 ac)
Open Water (PUB/PAB) (64 ac)
Lakes (L Polygons) (21 ac)
Floodplain
Proposed Mitigation Area
Core Areas (75 ac)
Streams
Highways
Tree Cover (2436 ac)
Mist Netting Capture - Indiana Bat
Roosts

Lower White River Watershed – Section 3
Potential Pooled Mitigation – White River (Elnora)

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☒
Contains hydric soils	☒
Located adjacent or near managed lands	☒
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	11.4 acres	Scrub / Shrub	0 acres
Emergent	2.9 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 101 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	50 acres
Upland Forests	305 acres
Size of Mitigation Site (Proposed)	355 acres

DESCRIPTION The location of this mitigation site (see map on back) is along the White River near Elnora. This environmentally sensitive area is unique because of its backwater sloughs, oxbow wetlands, and floodplain forest remnants. Oxbows such as the ones located in this area are important for the unique plants and animals that frequent these areas. They also offer an ecosystem that is very much connected with the White River. Mussels, fish, amphibians, reptiles, birds, and mammals depend upon these areas for survival. Many opportunities exist today for mitigation in this area If land in this area is not available the Thousand Acre Woods area and the Capehart Sand Flats area are alternative choices for mitigation in Section 3.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat	Bald Eagle	
State Listed	Evening Bat	American Badger	Barn Owl
	Loggerhead Shrike	Ornate Box Turtle	Alligator Snapping Turtle
Other Species	Prairie Plants	Cedars	Flatwoods

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	Four Rivers Resource Conservation and Development
Educational Centers / Research	United State Fish and Wildlife Service

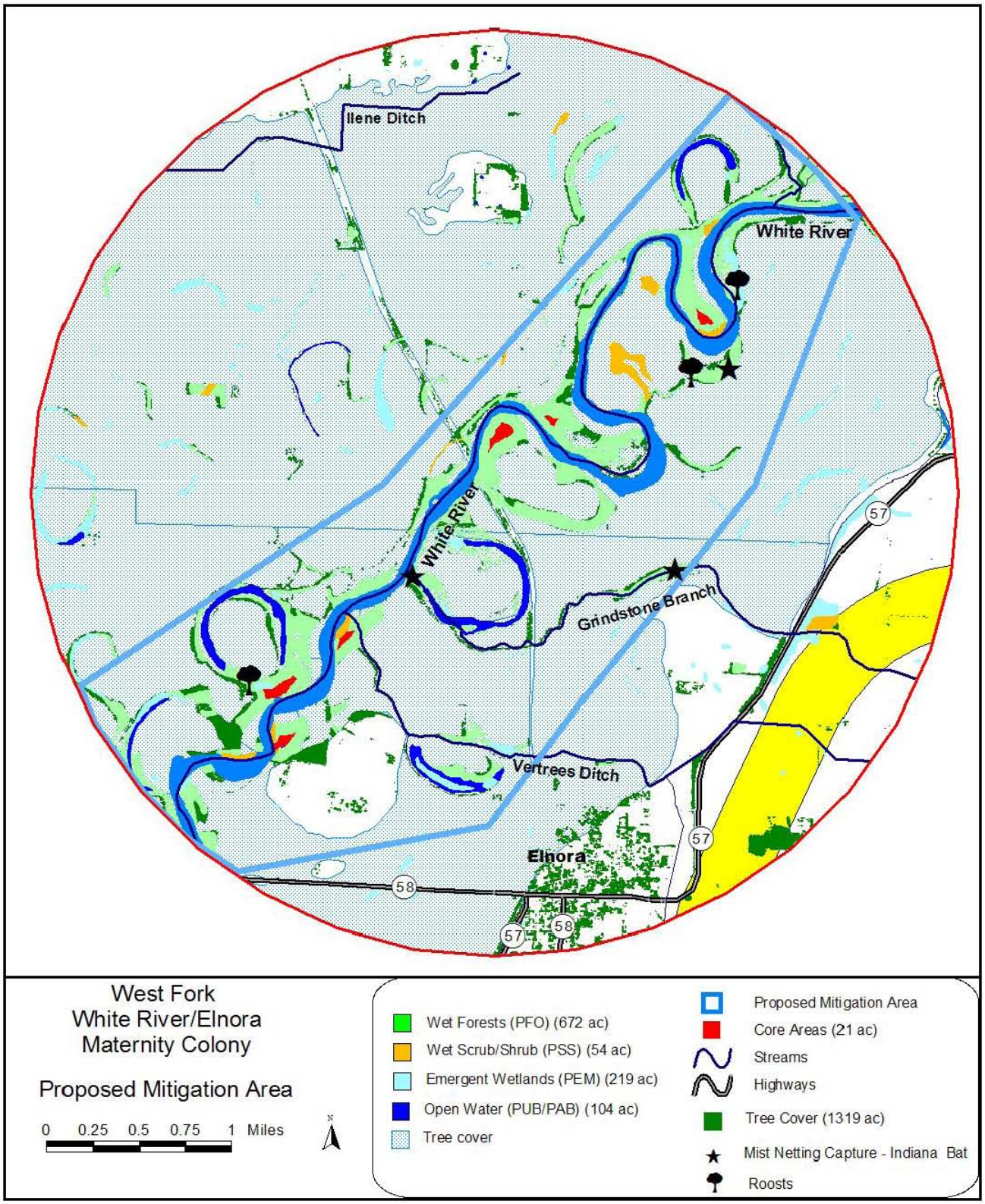
CONCEPTUAL PLAN

The concept is to restore wetlands and bottomland woods and provide habitat for both aquatic and terrestrial TES species. Similarly, oxbows that dry up in the mitigation site may be dug and connected to the West Fork of the White River, which will maintain aquatic habitat throughout the year.

MITIGATION TYPE AND THEME

The mitigation site will restore and protect a unique yet dwindling habitat that is a bottomland oxbow ecosystem. Restoration/Replacement, Conservation/Preservation, and Education would be the mitigation themes for this site.

*NWI Impact Areas-Eagan Ditch, South Fork Prairie Creek, Epsom Lateral, Vertrees Ditch, First Creek and Doans Creek
*Open Water Impact Total - 1.4 acres
**Forest Impacts Within Colony Circle - 0 Acres


Ilene Ditch
White River
White River
Grindstone Branch
Vertrees Ditch
Elnora
57
58
57
58
57
West Fork
White River/Elnora
Maternity Colony
Proposed Mitigation Area
0 0.25 0.5 0.75 1 Miles
N
Wet Forests (PFO) (672 ac)
Wet Scrub/Shrub (PSS) (54 ac)
Emergent Wetlands (PEM) (219 ac)
Open Water (PUB/PAB) (104 ac)
Tree cover
Proposed Mitigation Area
Core Areas (21 ac)
Streams
Highways
Tree Cover (1319 ac)
Mist Netting Capture - Indiana Bat
Roosts

Lower White River Watershed – Section 4
Proposed Pooled Mitigation –Doans Creek

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☐
Located adjacent or near managed lands	☒
Contains caves or karst features	☐
Contains other recorded TES species	☐

WETLAND IMPACT TYPES (NWI Data)

Forested	0 acres	Scrub / Shrub	0 acres
Emergent	0 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS* 371 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	0 acres
Upland Forests	1115 acres
Size of Mitigation Site (Proposed)	1115 acres

DESCRIPTION The location of this mitigation site (see map on back) is located along Doans Creek near Crane Naval Surface Warfare Center. The area is a mix of bottomland and upland hardwood forest with interspersed grazing. Opportunities for mitigation in this area are excellent due to the vast amount of forest in the adjacent Crane Naval Surface Warfare Center.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat		
State Listed	Northern Harrier	Bobcat	Timber Rattlesnake
	Loggerhead Shrike	Little Brown bat	Cerulean Warbler
	Worm-Eating Warbler	Red-Shouldered Hawk	Butternut
Other Species	Wild Turkey	Bob-White Quail	Shagbark Hickory

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	United State Fish and Wildlife Service
Educational Centers / Research	Four Rivers Resource Conservation and Development

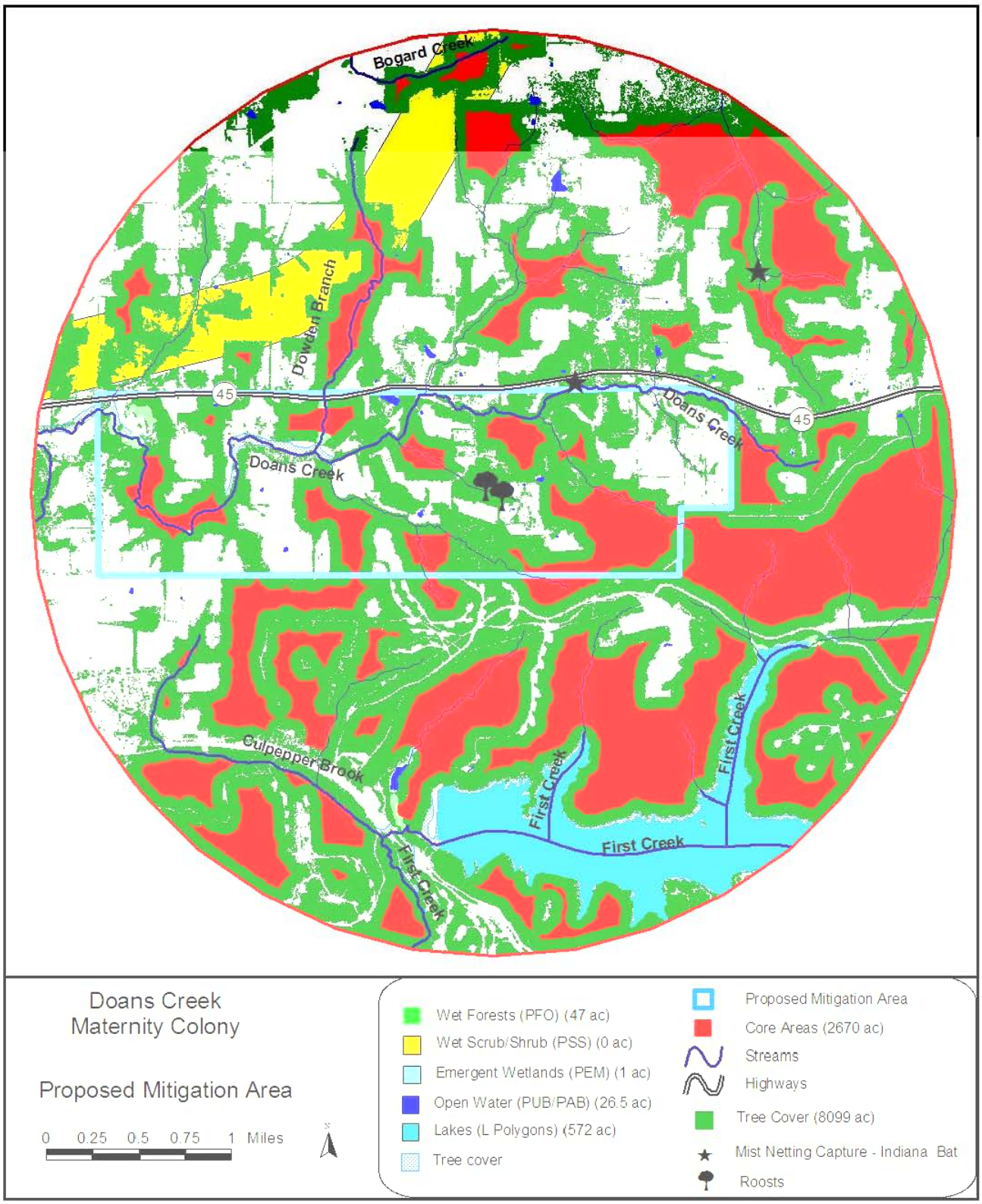
CONCEPTUAL PLAN

The concept is to add core forest area to the Doans Creek floodplain so as to provide habitat for the Indiana bat and other TES species. Restore riparian areas to Doans Creek for better water quality and habitat benefits.

MITIGATION TYPE AND THEME

The mitigation type is bottomland, riparian woods and upland forest enhancement, along with core forest development. Restoration/Replacement and Conservation/Preservation would be the mitigation themes for this site.

*Forest Impacts within Colony Circle – 82 acres



Doans Creek
Maternity Colony

Proposed Mitigation Area

Lower East Fork of the White River Watershed – Section 4
Proposed Pooled Mitigation-Plummer Creek

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☒
Located adjacent or near managed lands	☒
Contains caves or karst features	☒
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	8.6 acres	Scrub / Shrub	0 acres
Emergent	0.8 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 371 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	35 acres
Upland/Bottomland Forest	1115 acres
Size of Mitigation	1140 acres

DESCRIPTION This mitigation site (see map on back) is in Greene County. This area has very unique geological features such as Rock Springs and Ashcraft Cave. In addition, Rankin Springs is located immediately to the south. This area would be an excellent opportunity for increasing summer and winter habitat for the Indiana bat and increasing wetlands along Black Ankle Creek that are fed by Rankin Springs. There are a number of springs in this area.

SPECIES This mitigation site is targeted for the following:

Federally Listed	Indiana bat		
State Listed	Bobcat	Southeastern Bat	Butternut
	Hoary Bat	Least Weasel	Red-shouldered Hawk
	Sharp-Shinned Hawk	Barn Owl	Timber rattlesnake
Other Species	Forest Dependent Birds	Wild Turkey	Deer

POTENTIAL PARTNERSHIPS

Martin State Forest (IDNR)	Educational Centers/Research
United States Fish and Wildlife Service	Four Rivers Research Conservation and Development

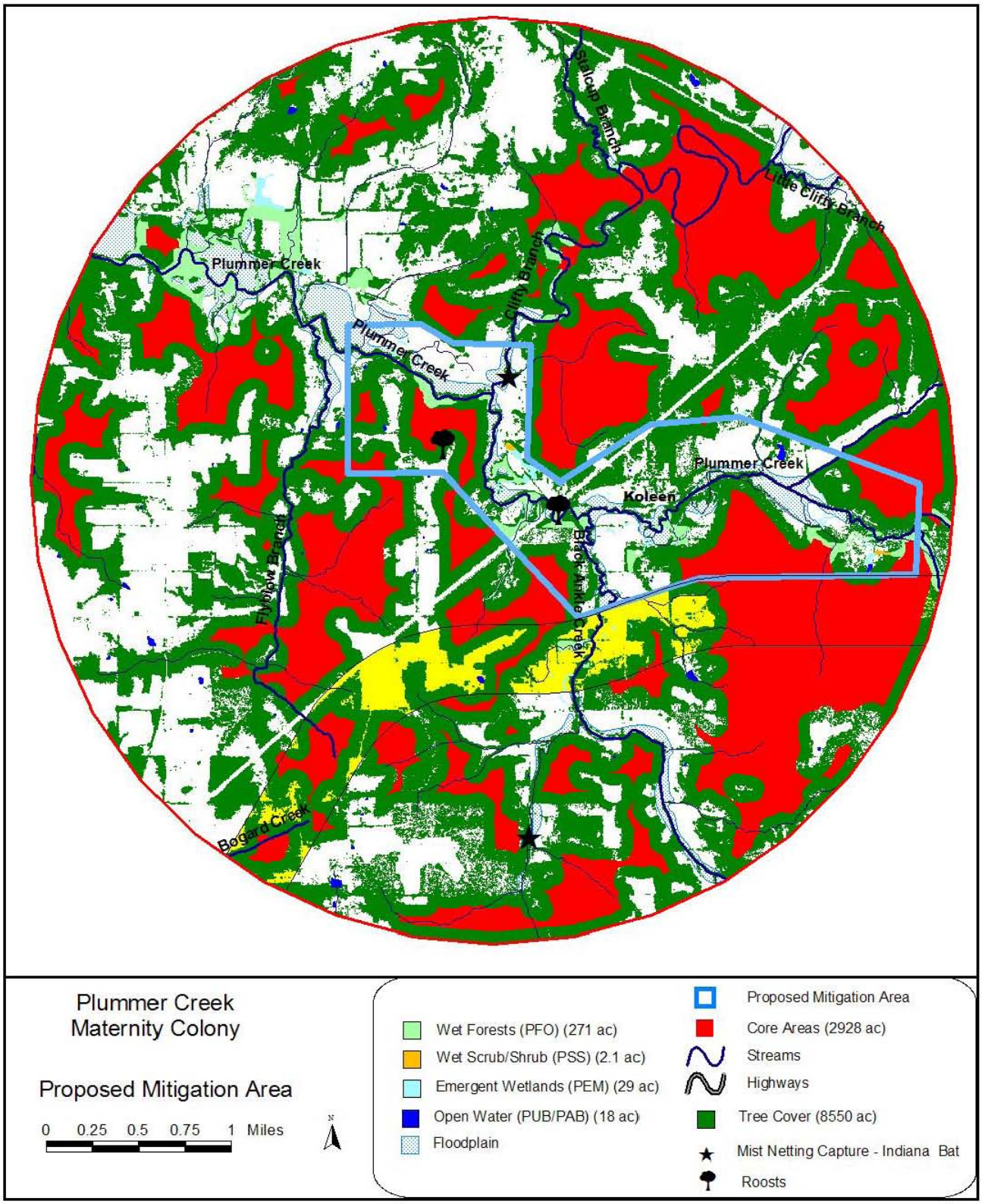
CONCEPTUAL PLAN

The concept is to restore bottomland woods and forested wetlands so as to provide habitat for the Indiana bat and other TES species. Revegetation of riparian areas will also help water quality in this area as well as provide travel corridors for the bobcat and flyways for the Indiana bat.

MITIGATION TYPE THEME

The mitigation type is bottomland woods and forested wetland restoration enhancement, and core forest development. Restoration/Replacement, Conservation/Preservation and Education would be the mitigation themes for this site.

*NWI Impact Areas - Black Ankle Creek, Dry Branch and Plummer Creek
**Forest Impacts within Colony Circle – 181 acres


Plummer Creek
Maternity Colony
Proposed Mitigation Area
0 0.25 0.5 0.75 1 Miles
N
Wet Forests (PFO) (271 ac)
Wet Scrub/Shrub (PSS) (2.1 ac)
Emergent Wetlands (PEM) (29 ac)
Open Water (PUB/PAB) (18 ac)
Floodplain
Proposed Mitigation Area
Core Areas (2928 ac)
Streams
Highways
Tree Cover (8550 ac)
Mist Netting Capture - Indiana Bat
Roosts
Plummer Creek
Plummer Creek
Plummer Creek
Koleen
Cliffy Branch
Little Cliffy Branch
Flyjow Branch
Black Arkle Creek
Bogard Creek

Lower East Fork of the White River Watershed – Section 4
Proposed Pooled Mitigation – Indian Creek

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☐
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☐
Located adjacent or near managed lands	☐
Contains caves or karst features	☒
Contains other recorded TES species	☐

WETLAND IMPACT TYPES (NWI Data*)

Forested	10.3	acres	Scrub / Shrub	0.4 acres
Emergent	0	acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 371 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	40	acres
Upland Forests	1115	acres
Size of Mitigation Site (Proposed)	1155	acres

DESCRIPTION The location of the proposed mitigation site (see map on back) is located in the Indian Creek Area east of SR 45. Forest mitigation will come in the form of protecting existing woods and the planting of additional upland and bottomland woods.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat		
State Listed	Bobcat	Southeastern Bat	Least Weasel
	Butternut	Henslows Sparrow	Red-shouldered Hawk
	Sharp-shinned Hawk	Northern harrier	
Other Species	Forest Dependent Birds	Wild Turkey	

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	Indiana Karst Conservancy
United States Fish and Wildlife Service	Sycamore Land Trust
Educational Centers/Research	Hoosier Heartland

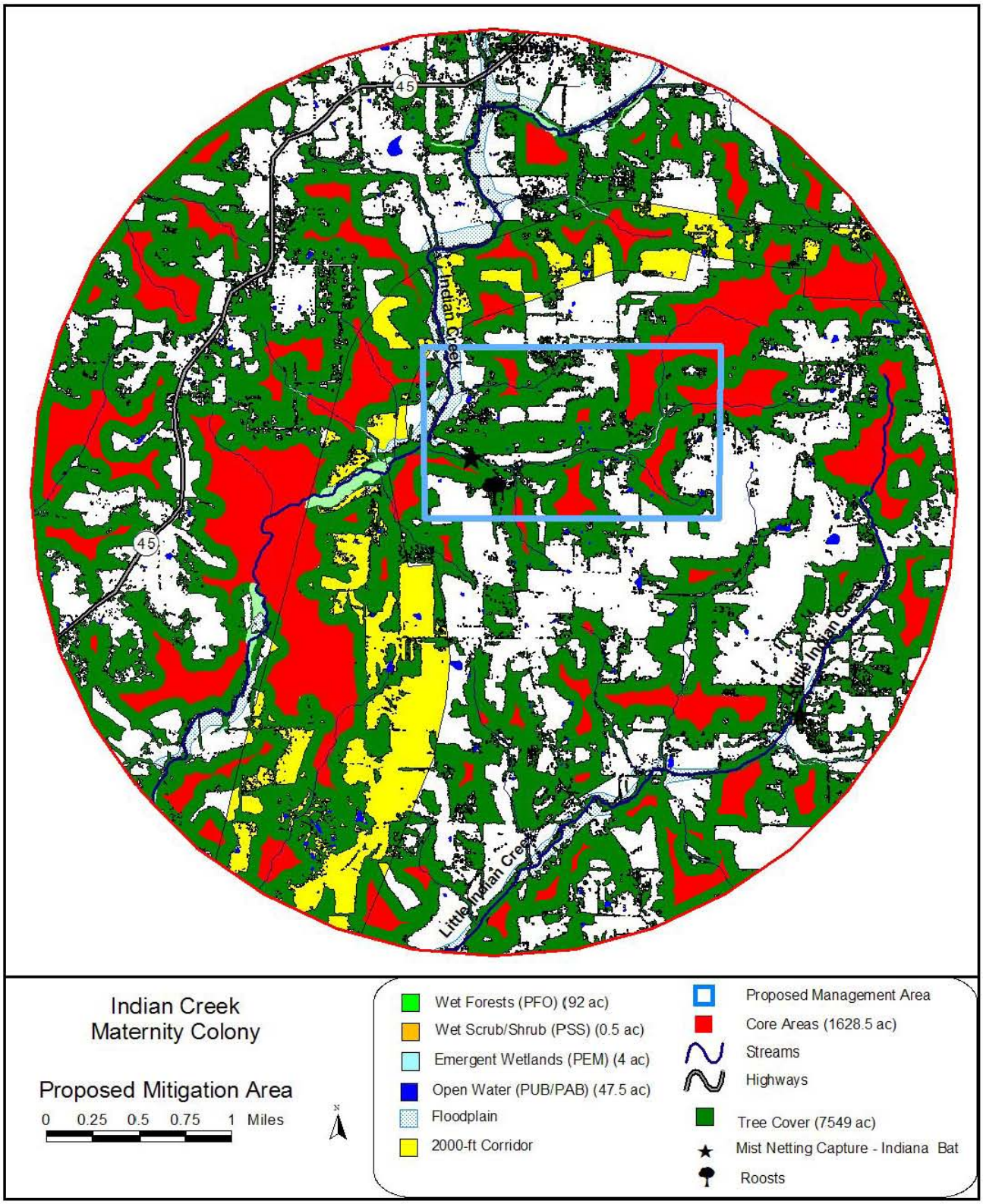
CONCEPTUAL PLAN

To design an open, upland woods with many clearings. Some of the clearings will be wetlands, while others will be planted as wet to dry prairies. The concept is to provide habitat that will provide a year long source of food for the Indiana bats and core forest dependent species.

MITIGATION TYPE AND THEME

Providing more core forest for Indiana bat and other species through reforestation and preservation will be the type of mitigation used for this area. Restoration/Replacement, Conservation/Preservation and Education/Research would be the mitigation themes for this site.

*NWI Impact Areas-Indiana Creek and Jackson Creek
*Open Water Impact Total - 1.5 acres
**Forest Impacts within Colony Circle – 327 acres


45
45
Indian Creek
Little Indian Creek
Little Indian Cr
Indian Creek
Maternity Colony
Proposed Mitigation Area
0 0.25 0.5 0.75 1 Miles
N
Wet Forests (PFO) (92 ac)
Wet Scrub/Shrub (PSS) (0.5 ac)
Emergent Wetlands (PEM) (4 ac)
Open Water (PUB/PAB) (47.5 ac)
Floodplain
2000-ft Corridor
Proposed Management Area
Core Areas (1628.5 ac)
Streams
Highways
Tree Cover (7549 ac)
Mist Netting Capture - Indiana Bat
Roosts

Lower White River Watershed – Section 5
Proposed Pooled Mitigation –White River/Bryant Creek

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☒
Located adjacent or near managed lands	☐
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	0.6 acres	Scrub / Shrub	0 acres
Emergent	0.2 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 295 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	5 acres
Upland Forests	885 acres
Size of Mitigation Site (Proposed)	890 acres

DESCRIPTION The location of the proposed mitigation site (see map on back) is just east of the confluence of Bryant Creek with the West Fork White River directly south of Paragon. The purchasing of /or obtaining of conservation easements in this area would be an excellent opportunity for creating riparian buffers along the West Fork White River and/or Bryant Creek and improving habitat for the Indiana bat and bald eagle. There were six roost trees found in this area. One of them was a primary roost with bat numbers reaching up to 128 per night.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Bald Eagle	Indiana Bat	
State Listed	Kirkland's Snake	Northern Crawfish Frog	Cerulean Warbler
	Red-Shouldered Hawk	Barn Owl	Northern Harrier
Other Species	Great Blue Heron	Forest Dependent Birds	Wild Turkey

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	United States Fish and Wildlife Service
The Nature Conservancy	Educational Centers / Research

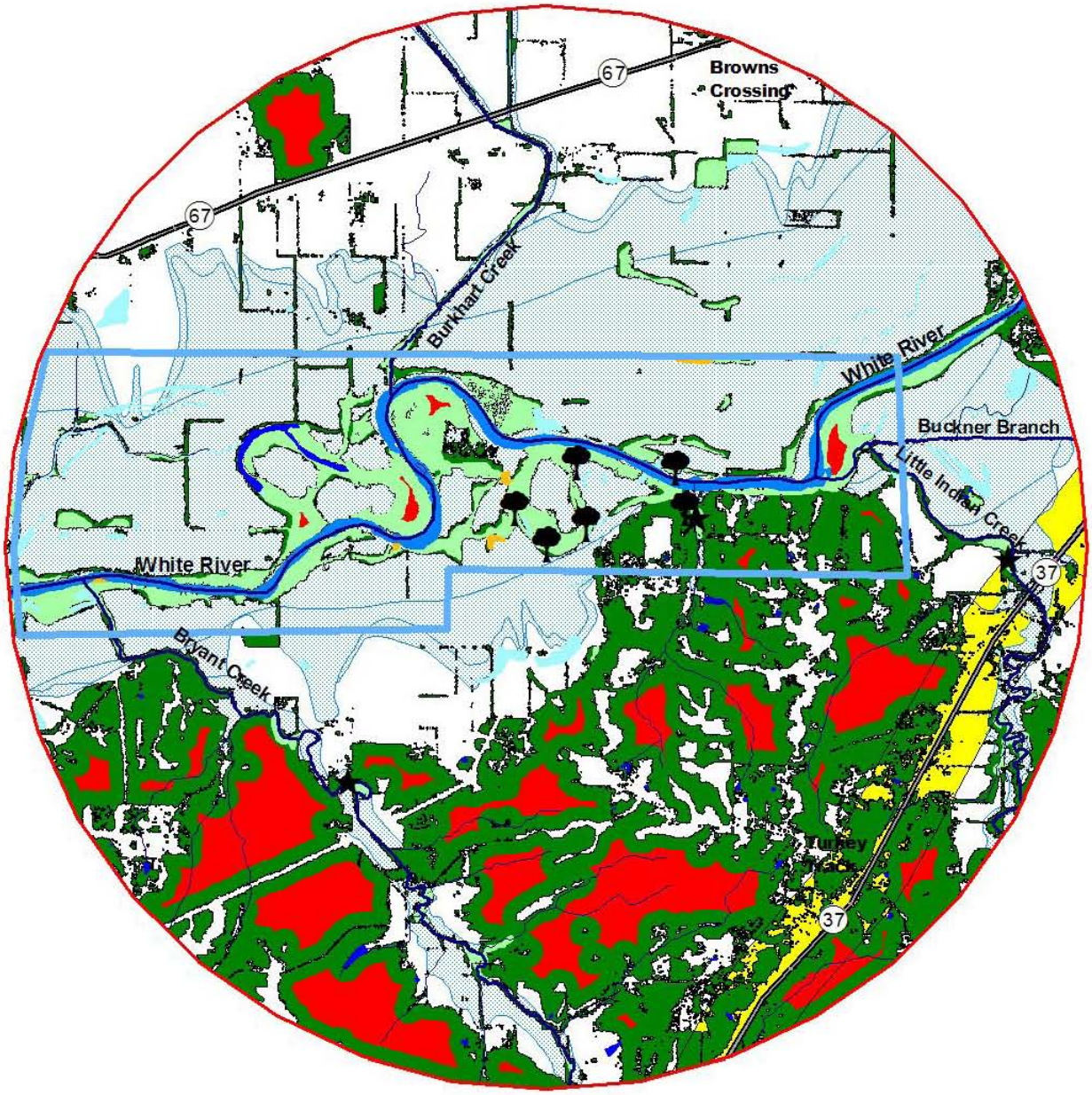
CONCEPTUAL PLAN

To design a bottomland woods with riparian buffers along the White River and/or Bryant Creek. Such habitat could be used by the Indiana bat and bald eagle, and improve the water quality of the White River. Improving the water quality may reduce siltation and improve water conditions for mussels in this area of the White River. In addition, this replacement of riparian habitat will enhance the White River flyway for the Indiana bat.

MITIGATION TYPE

Creating bottomland woods, wetlands, and riparian buffers would create a desirable habitat for many federal and state listed species. Restoration/Replacement and Conservation/Preservation will be the mitigation themes for this site.

*NWI Impact Areas- Little Indian Creek (The rest of the impacted areas where in the adjacent watershed to the south)
*Open Water Impact Total - 0.7 acres
* NWI Impacts in other watersheds (Forested wetlands 7.3acers, Emergent wetlands 1.6 acres and open water 0.8 acres)
**Forest Impacts within Colony Circle - 80acres



West Fork White River /
Bryant Creek Maternity Colony

Tree Cover Patches - No Build

0 0.25 0.5 0.75 1 Miles

N

- Wet Forests (PFO) (597 ac)
- Wet Scrub/Shrub (PSS) (10 ac)
- Emergent Wetlands (PEM) (139 ac)
- Open Water (PUB/PAB) (32 ac)
- Floodplain
- 2000-ft Corridor
- Proposed Mitigation Area
- Core Areas (865 ac)
- Streams
- Highways
- Tree Cover (4709.5 ac)
- Mist Netting Capture - Indiana Bat
- Roosts

Upper White River Watershed – Section 6
Proposed Pooled Mitigation – White River (Clear Creek)

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☒
Located adjacent or near managed lands	☒
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	2.8 acres	Scrub / Shrub	0 acres
Emergent	3 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 85 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	20 acres
Upland Forests	255 acres
Size of Mitigation Site (Proposed)	275 acres

DESCRIPTION This mitigation area is located (see map on back) along the West Fork White River north of Martinsville where Clear Creek and White Lick Creek merge with the White River. This area could possibly border Blue Bluff Nature Preserve, which contains an abundance of the rare shrub flowering raspberry. The preserve also displays a richly varied early spring flora, and a profusion of ferns. There are a few sizeable trees located within the Blue Bluff Nature Preserve. Mitigation near this area would provide an excellent opportunity for providing habitat for the Indiana bat and bald eagle.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat	Bald Eagle	
State Listed	Evening Bat	American Badger	Barn Owl
	Alligator Snapping Turtle	Henslow's Sparrow	River Otter
Other Species	Blue Heron	Cedars	Flatwoods

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	United States Fish and Wildlife Service
Educational Centers / Research	Sycamore Land Trust
The Nature Conservancy	Morgan Monroe State Forest

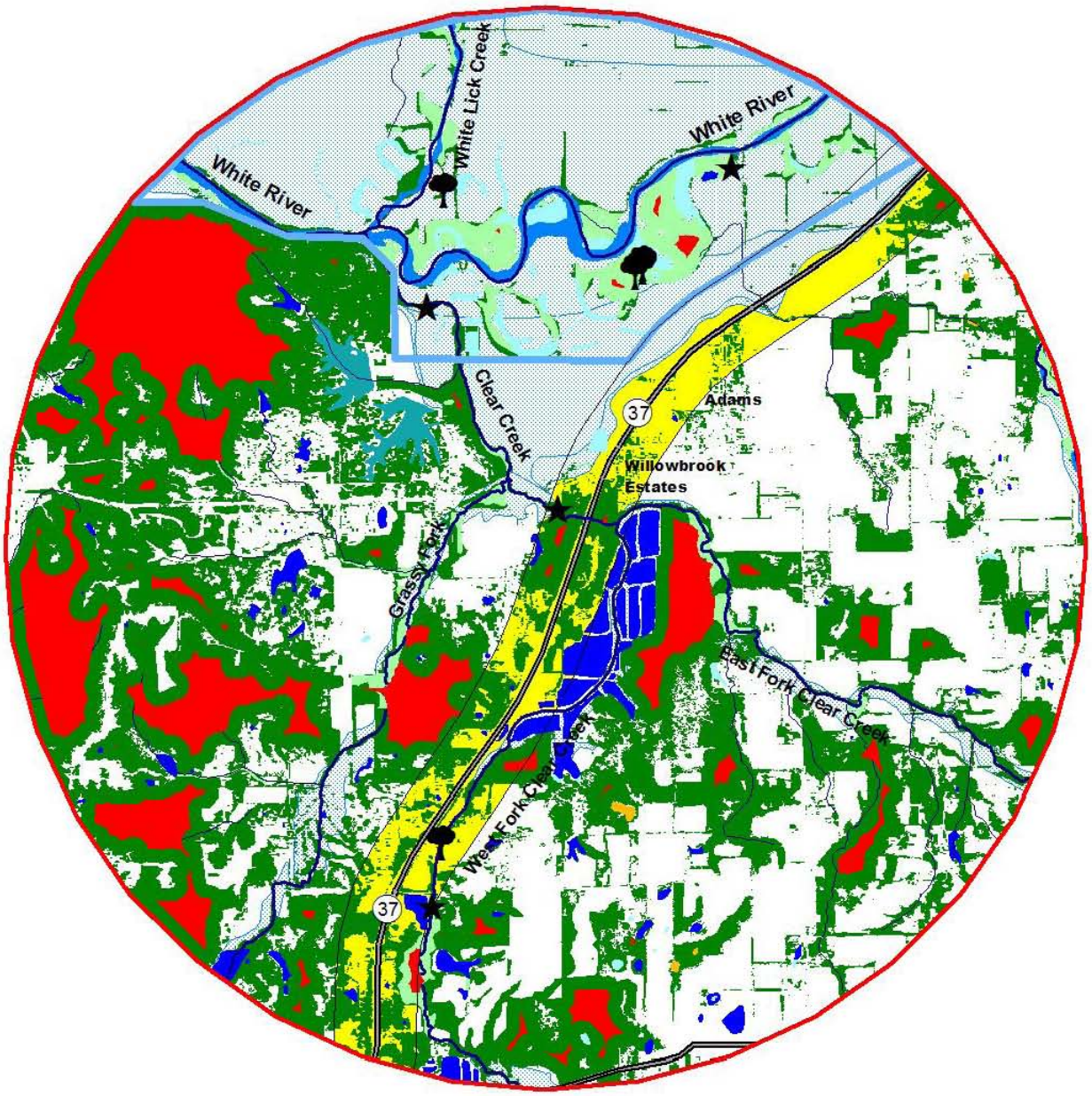
CONCEPTUAL PLAN

The concept is to restore wetlands and bottomland woods and provide habitat for both aquatic and terrestrial TES species. Similarly, oxbows that dry up in the mitigation site may be dug and connected to the West Fork of the White River. This mitigation would develop habitat for the Indiana bat and bald eagle, and provide for more permanent aquatic ecosystems.

MITIGATION TYPE

The mitigation site will restore and protect a unique yet dwindling habitat that is the bottomland oxbow ecosystem. Restoration/Replacement and Conservation/Preservation are the mitigation themes for this site.

*NWI Impact Areas-Indian Creek, Clear Creek and W.F. Clear Creek
*Open Water Impact Total - 6.2 acres
**Forest Impacts within Colony Circle – 58 acres



West Fork of the White River / Clear Creek Maternity Colony

Proposed Mitigation Area

0 0.25 0.5 0.75 1 Miles

N

Wet Forests (PFO) (369 ac)
Wet Scrub/Shrub (PSS) (6 ac)
Emergent Wetlands (PEM) (132 ac)
Ponds (PUB/PAB) (63 ac)
Lakes (L polygons) (69.5 ac)
2000-ft Corridor

Proposed Mitigation Area
Core Areas (959 ac)
Streams
Highways
Tree Cover (5375 ac)
Mist Netting Capture - Indiana Bat
Roost

Upper White River Watershed – Section 6
Proposed Pooled Mitigation – White River (Crooked Creek)

MITIGATION CRITERIA

Indiana bat capture site(s)	☐
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☐
Contains hydric soils	☐
Located adjacent or near managed lands	☐
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	2.6 acres	Scrub / Shrub	0 acres
Emergent	0 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 85 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	10 acres
Upland Forests	255 acres
Size of Mitigation Site (Proposed)	265 acres

DESCRIPTION This mitigation area is located (see map on back) along the West Fork White River north of Martinsville where Crooked Creek merge with the White River. There are two primary roost trees located within this area. There is also an upland woodland area where one of the primary roosts is located that is almost completely dominated by shagbark hickories. Mitigation near this area would provide and excellent opportunity for providing habitat for the Indiana bat and bald eagle.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat	Bald Eagle	
State Listed	Evening Bat	American Badger	Barn Owl
	Alligator Snapping Turtle	River Otter	Night Herons (both)
Other Species	Blue Heron	Cedars	Flatwoods

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	United States Fish and Wildlife Service
Educational Centers / Research	The Nature Conservancy
The Sycamore Land Trust	Hoosier Heartland

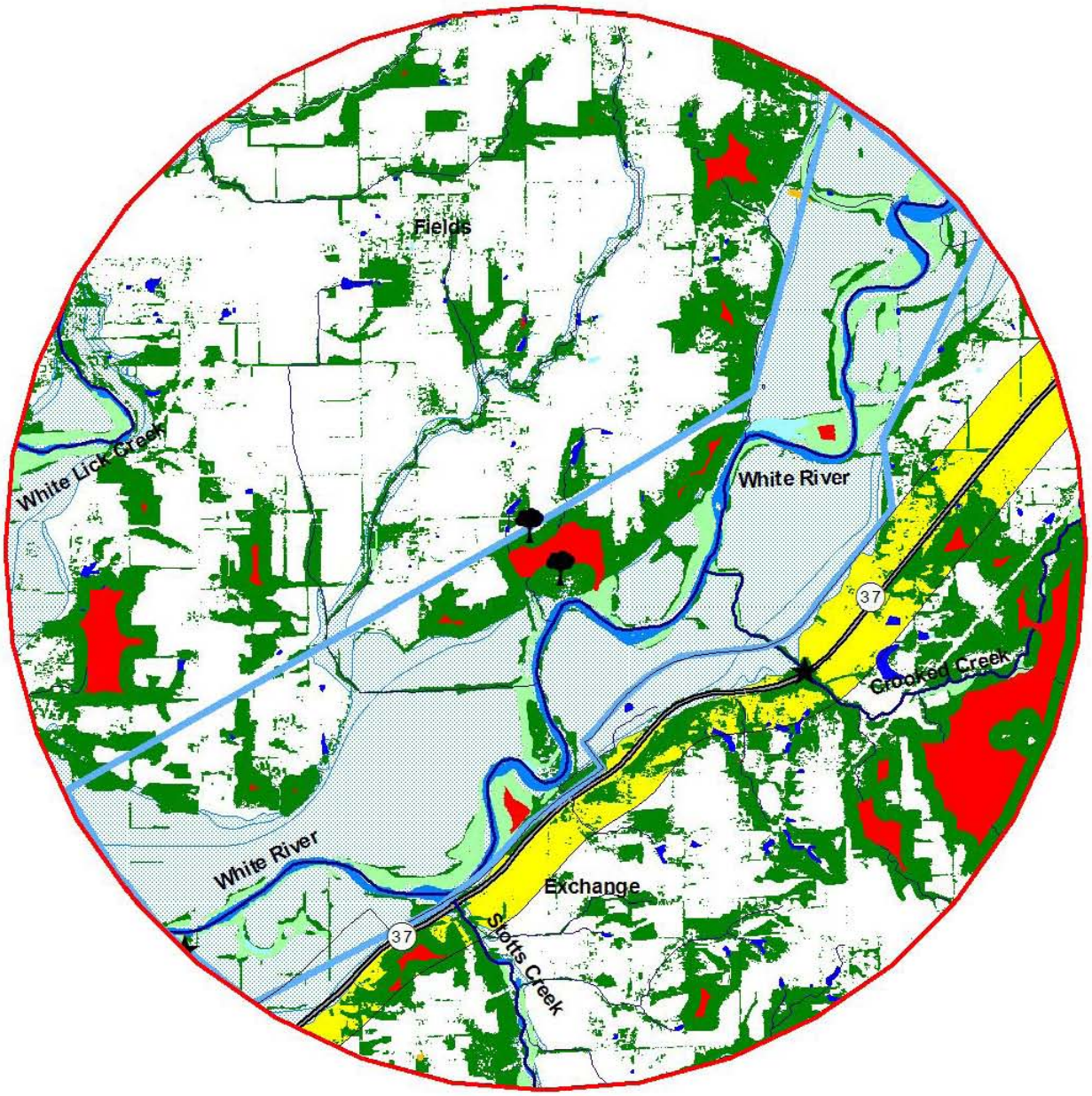
CONCEPTUAL PLAN

The concept is to restore wetlands and bottomland woods, preserve the upland hickory dominated woodland site and provide habitat for both aquatic and terrestrial TES species. Similarly, oxbows that dry up in the mitigation site may be connected once again through woodland corridors to the West Fork of the White River. This mitigation would develop habitat for the Indiana bat and bald eagle, and provide for more permanent aquatic ecosystems.

MITIGATION TYPE

The mitigation site will restore and protect a unique yet dwindling habitat that is the bottomland oxbow ecosystem. Restoration/Replacement and Conservation/Preservation would be the mitigation themes for this site.

*NWI Impact Areas-Crooked Creek
*Open Water Impact Total – 1.9 acres
**Forest Impacts within Colony Circle – 136 acres



West Fork of the White River / Crooked Creek Maternity Colony

Proposed Mitigation Area

0 0.25 0.5 0.75 1 Miles

N

Wet Forests (PFO) (397 ac)
Wet Scrub/Shrub (PSS) (2.5 ac)
Emergent Wetlands (PEM) (20 ac)
Ponds (PUB/PAB) (63 ac)
2000-ft Corridor
Proposed Mitigation Area
Core Areas (339 ac)
Streams
Highways
Tree Cover (3722 ac)
Mist Netting Capture - Indiana Bat
Roost

Upper White River Watershed – Section 6
Proposed Pooled Mitigation – White River (Pleasant Run)

MITIGATION CRITERIA

Indiana bat capture site(s)	☒
Indiana bat roost tree(s)	☒
Create more core forest habitat	☒
Increases existing wetland habitat	☒
Contains streams with little or no riparian habitat	☒
Contains degraded stream(s)	☒
Contains hydric soils	☒
Located adjacent or near managed lands	☒
Contains caves or karst features	☐
Contains other recorded TES species	☒

WETLAND IMPACT TYPES (NWI Data*)

Forested	7.3 acres	Scrub / Shrub	0 acres
Emergent	3.1 acres		

UPLAND/BOTTOMLAND FOREST IMPACTS** 85 acres

MITIGATION

NWI Wetlands Plus 25% Buffer	40 acres
Upland Forests	255 acres
Size of Mitigation Site (Proposed)	295 acres

DESCRIPTION This mitigation area is located (see map on back) along the West Fork White River South of Southwestway Park. There are two secondary roost trees located within this area. This area provides many opportunities to restore vast floodplain fields into bottomland forest and help control further development from the south side of Indianapolis into this area. Mitigation near this area would provide an excellent opportunity for providing habitat for the Indiana bat and bald eagle.

SPECIES The proposed mitigation site is targeted for the following:

Federally Listed	Indiana bat	Bald Eagle	
State Listed	Evening Bat	American Badger	Barn Owl
	N. Leopard Frog	River Otter	Four-toed Salamander
	Bobcat	Crawfish frog	Kirkland's snake
Other Species	Blue Heron	Cedars	Flatwoods

POTENTIAL PARTNERSHIPS

Indiana Department of Natural Resources	United States Fish and Wildlife Service
Educational Centers / Research	Indianapolis Parks and Recreation Department

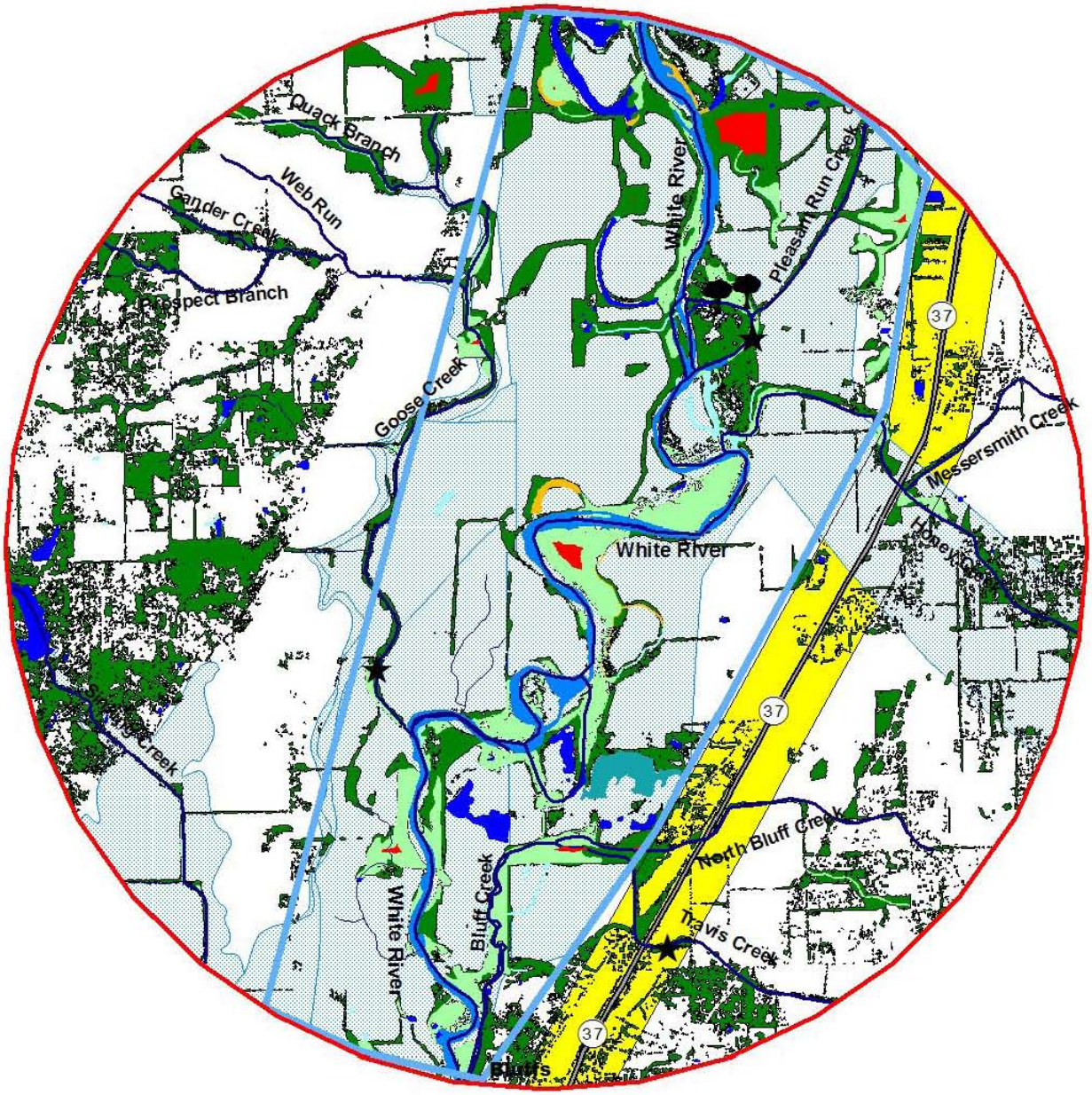
CONCEPTUAL PLAN

The concept is to restore wetlands, bottomland woods, and riparian areas to provide habitat for both aquatic and terrestrial TES species. This reestablishment of forest in this area would also greatly benefit the water quality. In addition, oxbows that dry up in the mitigation site, may be connected once again through woodland corridors to the West Fork of the White River. This mitigation would develop habitat for the Indiana bat and bald eagle, and provide for more permanent aquatic ecosystems. This area could be connected with Southwestway Park as a natural area and could serve as an educational tool for the public.

MITIGATION TYPE

The mitigation site will restore and protect a unique yet dwindling habitat that is the bottomland oxbow ecosystem. Restoration/Replacement, Conservation/Preservation, and Education would be the mitigation themes for this site.

*NWI Impact Areas - Bluff Creek, Honey Creek, Orme Ditch and power plant area
*Open Water Impact Total - 14.8 acres
**Forest Impacts within Colony Circle – 10 acres



West Fork of the White River / Pleasant Run Creek Maternity Colony

Proposed Mitigation Area

0 0.25 0.5 0.75 1 Miles

N

- Wet Forests (PFO) (530 ac)
- Wet Scrub/Shrub (PSS) (19 ac)
- Emergent Wetlands (PEM) (40 ac)
- Ponds (PUB/PAB) (137 ac)
- Lakes (L Polygons) (33 ac)
- 2000-ft Corridor
- Proposed Mitigation Area
- Core Areas (35 ac)
- Streams
- Highways
- Tree Cover (2276 ac)
- Mist Netting Capture - Indiana Bat
- Roost

Part B: Comparison of Conceptual Mitigation Plan in Original BA and the Revised Conceptual Mitigation Plan in the BA Addendum

Comparison of Conceptual Mitigation Plan in Original BA and the Revised Conceptual Mitigation Plan in the BA Addendum

Original Conceptual Mitigation Plan	Revised Conceptual Mitigation Plan
The impact acres used were based on an alignment in the center of the 2,000 foot corridor using National Wetland Inventory (NWI) mapped wetlands. 65 acres forested wetland impacts 5 acres scrub/shrub wetland impacts 5 acres emergent wetland impacts 1,062 acres upland forest impacts	The impact acres used were based on a representative alignment (worse case) within the 2,000 foot corridor using NWI mapped wetlands. 100 acres forested wetland impacts 5 acres scrub/shrub wetland impacts 15 acres emergent wetland impacts 2,050 acres upland forest impacts
Mitigation was based on the Wetland MOU using the impacts identified above. 220 acres wetland mitigation 55 acres wetland mitigation buffer 3,186 acres upland forest mitigation	Mitigation was based on the Wetland MOU using the impacts identified above. 345 acres wetland mitigation 90 acres of wetland mitigation buffer 6,150 acres of upland forest mitigation
Forest impacts were based on general information from the Tier 1 analysis and using older aerial photographs that had low resolution	Forest impacts were based on more detailed information from the Tier 2 analysis which used higher resolution aerial photographs and field reconnaissance.
Mitigation sites were based on 16 potential sites located along and near the 2,000 foot corridor. No Indiana bat maternity colonies were identified.	Mitigation sites were focused on the 13 identified Indiana bat maternity colonies. Focus areas are defined as areas within the maternity colony most conducive to mitigation that adds to existing biologically attractive areas, thus developing larger tracts of biologically significant ecosystems.
No focus areas were identified within the 16 potential mitigation site locations	Primary focus areas were identified within the 13 mitigation site locations as identified during Tier 2 bat surveys.
No scoring system was used for the potential mitigation site locations	A 10 criteria scoring system was developed to identify the priority of the 13 mitigation site locations. The criteria used for scoring included whether the site contained the following: Indiana bat capture site(s), Indiana bat roost tree(s), Creates more core forest habitat, Increases existing wetland habitat, Contains streams with little or no riparian habitat, Contains degraded stream(s), Contains hydric soil(s), Located adjacent or near a managed land(s), Contains caves or karst features, and/or Contains other recorded Threatened and/or Endangered Species (TES).

The difference between the Conceptual Mitigation Plan in the Tier 1 BA and the Revised Conceptual Mitigation Plan in the Tier 1 BA Addendum are as follows:

1. The Conceptual Mitigation Plan in the Tier 1 BA Addendum used "representative" alignments to identify potential impacts based on Tier 2 studies, while the Tier 1 BA used the working alignment from the Tier 1 EIS for calculation of impacts. The representative

alignment used in the BA Addendum was the footprint for the alternative of those alternatives that were still under study as of November 14, 2005 with the largest Tier 2 forest impacts for each Tier 2 section.

2. The mitigation areas were narrowed from 16 large 5-mile radius proposed mitigation areas in the Tier 1 BA to 13 smaller (2.5 mile radius circles) mitigation areas focusing on the Indiana Bat Maternity Colonies identified during the Tier 2 studies presented in the Tier 1 BA addendum. The 13 mitigation areas in the Tier 1 BA Addendum were located in approximately the same vicinity as the original 16 mitigation areas identified in the Tier 1 BA. Within the Tier 1 BA Addendum 13 mitigation areas, mitigation focus areas were identified that would improve the overall water quality of the watersheds, improve the forest and core forest habitat in the area by connecting existing forest blocks, and improve the overall wildlife habitat.