

SPECIAL PUBLIC NOTICE

**US Army Corps
of Engineers
Kansas City District**

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Expiration Date: N/A**

FINALIZATION OF THE MISSOURI BAT PROGRAMMATIC INFORMAL CONSULTATION FRAMEWORK

This notice is an informational notice only, no comments are requested.

PURPOSE: The purpose of this public notice is to announce the Kansas City, Little Rock, St. Louis, Rock Island, and Memphis Districts of the U.S. Army Corps of Engineers (Corps) and the United States Fish and Wildlife Service (USFWS) have completed programmatic informal consultation for all activities requiring Department of the Army permits. This consultation, which covers activities in waters of the United States within the state of Missouri, complies with the provisions of Section 7 of the Endangered Species Act (ESA).

Completion of this consultation eliminates the need for individual ESA consultation on most permit applications submitted to the Corps for activities located in habitat for bats protected under the ESA. The completion of this consultation will improve the permit evaluation process by reducing the time required for evaluation of many permit applications while assuring compliance with the requirements of the ESA.

The Missouri Bat Programmatic (MBP) informal consultation covers three bat species (Indiana bat, Northern long-eared bat, and Gray bat) listed under the ESA within the state of Missouri. The large majority of consultations conducted by the Corps in Missouri are for the listed bats, and with the finalization of the MBP, many future consultations are anticipated to be covered under this standardized framework. Other listed fish, wildlife and plant species are not addressed by this consultation and will be subject to individual consultation requirements. In order for the Corps to utilize the MBP, the applicant must voluntarily agree to implement the required conservation measures. If the applicant chooses not to adhere to the conservation measures in the MBP, the Corps will consult with the USFWS for listed bat species using formal or informal procedures.

BACKGROUND: What is ESA consultation? Section 7 of the ESA requires federal agencies, such as the Corps, to consult with USFWS to ensure any action authorized by the agency is not likely to jeopardize the continued existence of species listed as threatened or endangered or result in the destruction or adverse modification of critical habitat for those species. Under the Corps' permit program, permit applications are reviewed to determine any potential adverse effects on listed threatened and endangered species and their critical habitat. The Corps then consults with USFWS, using formal or informal procedures, to evaluate the potential effects of the proposed work and any conservation measures which can be implemented to help protect the listed species and their habitat.

What is a programmatic consultation? A programmatic consultation covers a range of actions proposed to be authorized by a federal agency such as the types of activities subject to the Corps' regulatory jurisdiction. Once a programmatic consultation is completed, case-by-case ESA consultations are no longer required for the specified activities as long as the terms and conditions of the programmatic consultation are met by the permittee.

Why is a programmatic consultation needed? Three species of listed bats make up a large majority of the consultations conducted between the Corps and the USFWS in Missouri in a given year. These consultations generally produce the same repeatable outcome but still take approximately 30 days. Also, these bats are found in upland and riparian environments across nearly all of Missouri, with the exception of the Gray bat which is tied specifically to certain areas of the Ozarks. Most permit applications received by the Corps impact bat habitat which has resulted in a substantial increase in workload for both the Corps and USFWS, and increased the length of time required for the processing of permit applications.

CONSULTATION SPECIFICS

What types of activities are covered by this programmatic consultation? Regulated activities (i.e., actions) that fall under this biological evaluation (BE) are limited to those activities that are proposed to impact areas delineated as jurisdictional Waters of the United States (33 CFR §328) and areas considered to be in the action area under the ESA (50 CFR §402.02), when considering the potential direct and indirect effects that are reasonably certain to occur, and contain suitable habitat for listed bats in Missouri. This BE applies to actions that are authorized with Standard or Individual Permits, Letters of Permission, or General Permits which include Nationwide Permits, Regional General Permits, and Programmatic General Permits.

The Corps action will be evaluated using the project's location within one of three habitat zones as defined by the USFWS (Enclosure 1). Zone 1 conservation measures apply to actions within the State of Missouri excluding Zones 2 and 3. Zone 2 conservation measures apply to actions within 5.0 miles (radius) of a known capture of a listed bat. Zone 3 conservation measures apply to actions that occur within 0.25 miles (radius) of a known roost tree or hibernacula.

What does a permit applicant need to do to be covered by this consultation? An applicant can expedite the review of their project by reviewing the conservation measures associated with the zone in which their project is located and insure the project design complies with those requirements. Conservation measures are actions that benefit or promote the recovery of a listed species that a Federal agency includes as an integral part of its proposed action and that are intended to avoid, minimize or compensate for potential adverse effects of the action on the listed species. When the application is received by the Corps, it can be expeditiously processed without a need to further consult with USFWS. The conservation measures are identified below.

1. All tree clearing will occur during the bat inactive season from November 1 to March 31 unless negative presence/probable absence survey results were obtained for the action area through appropriate surveys approved by the USFWS.

2. The applicant must conduct a bat habitat assessment if the applicant's overall project will occur in Zone 1 and includes more than 10 acres of tree clearing. If the results indicate that more than 10 acres of suitable roosting habitat will be cleared, the Corps will require presence/probable absence surveys to determine if additional consultation is necessary or the project will not affect listed bats.
3. The applicant must conduct a bat habitat assessment if the applicant's overall project will occur in Zone 2 and includes more than 5 acres of tree clearing. If the results indicate that more than 5 acres of suitable roosting habitat will be cleared, the Corps will require presence/probable absence surveys to determine if additional consultation is necessary or the project will not affect listed bats.
4. If located in Zone 1, the applicant's overall project will not remove more than 10 acres of suitable roosting habitat during the inactive season.
5. If located in Zone 2, the applicant's overall project will not remove more than 5 acres of suitable roosting habitat during the inactive season.
6. A Corps action will not result in the removal of trees in Zone 3.
7. Tree clearing associated with the applicant's overall project and the Corps action will not result in a cumulative loss of more than 5% of the baseline (2005) forested acreage of each District over 20 years.
8. If the applicant's overall project is located in a karst area and will involve construction methods that may cause deep ground disturbance, the applicant must conduct a cave search to be conducted to determine if any caves are present in the action area that would be considered suitable habitat for listed bats and/or are currently or formerly used by listed bats.

What if my project does not qualify for the programmatic consultation? Permit applicants whose projects cannot adhere to the conservation measures in the BE, or have chosen not to abide by the conservation measures, may still apply to the Corps for a permit but individual consultation with USFWS will be required for ESA compliance before a decision can be made. Individual consultations may be time-consuming and can delay the Corps decision on the permit application. While not every project can be modified to meet the terms and conditions of the programmatic consultation, it is in the best interest of the applicant to consider configuring a proposed project to fit within those limits.

EFFECTIVE DATE: The MBP is effective with the issuance of this notice.

PERIODIC REVIEW: The MBP informal consultation framework will be reviewed annually by the Corps and USFWS and updated as necessary based upon experiences during use.

ADDITIONAL INFORMATION: Your best source of information is the Regulatory District who will process your permit application. Each District's geographical areas of responsibility, phone numbers, and email addresses can be found on our website or in the attached map (Enclosure 2).



United States Army Corps of Engineers Biological Evaluation – Programmatic Informal Consultation for Regulatory Program Actions Affecting Missouri Bat Species

Executive Summary

This Biological Evaluation (BE) provides a framework to streamline Endangered Species Act (ESA) Section 7 consultations on U.S. Army Corps of Engineers (USACE) Regulatory permitting actions that occur in the range of the federally listed northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), and the gray bat (*Myotis grisescens*) [collectively, listed bats] in Missouri. This document provides background information on the species, as well as reviews steps to determine whether the proposed work would avoid adverse effects to the species. Adherence to this framework should streamline review for most routine activities that do not adversely affect the species, minimizing permit review time and staff resources on no/low risk activities.

Because the USACE regulatory program covers such a diverse range of activities, this programmatic framework targets those effects that could degrade or destroy suitable listed bat habitat or affect individuals rather than the individual projects themselves.

I. BACKGROUND

Pursuant to Section 7(a)(2) of the ESA, federal agencies are to consult with the applicable Service (US Fish and Wildlife Service (USFWS) or National Marine Fisheries Service) to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered species. Per 50 CFR 402.14(a), federal agencies are required to consult with the appropriate Service if a proposed action “may affect” a listed species or designated critical habitat.

The intent of this consultation is to evaluate the USACE Regulatory Program permit actions in the state of Missouri that may affect, but are not likely to adversely affect (NLAA) the three federally listed bats. The USACE, in cooperation with the USFWS, proposes these guidelines containing conservation measures that the USFWS has deemed acceptable to concur with a NLAA determination for the listed bats when implemented on USACE regulatory permit actions issued under this consultation. Thus, this will be a programmatic informal consultation. This programmatic informal consultation only covers effects of proposed projects on the three listed bat species. This programmatic informal consultation only applies if the permit applicant voluntarily agrees to implement the conservation measures in those areas that fall outside of the USACE action area(s) and the applicant’s overall project does not involve the installation or operation of wind turbines. Additional consultation is required for projects with the potential to affect other listed species. In addition, any activities not included in this consultation will be subject to separate Section 7(a)(2) consultation.

This evaluation outlines the necessary consultation requirements; USACE Program structure; distribution and status of the listed species; description of Regulatory Program and actions; proposed conservation measures to limit potential impacts from regulatory actions and activities; and a determination/conclusion. This Framework will serve as guidance that establishes programmatic baseline standards for conserving listed bats through the USACE regulatory actions.

- a) *Applicability.* The programmatic guidelines are applicable to all USACE Regulatory Program actions in the state of Missouri that meet the conservation measures established by this agreement. Those USACE Districts with Regulatory Programs within the state of Missouri which are included in this agreement are Kansas City, St. Louis, Little Rock, Memphis, and Rock Island.
- b) *Timeline and Revision.* This informal consultation will be effective beginning from the date of USFWS concurrence on the USACE's NLAA determination, indefinitely or until either party determines a need for revision or re-initiation. The USFWS generated Zone Map will also be updated annually by the USFWS based on recent survey findings.
- c) *Goal.* The USACE's goal is to implement conservation guidelines that will allow it to efficiently and effectively meet its CWA and ESA regulatory responsibilities while concurrently supporting conservation of the listed bats.
- d) *Section 7 Consultation.* Participating USACE Districts will ensure their authorizations comply with all conservation measures identified in this document through coordination with the applicant and/or by conditioning authorizations/permits with the applicable conservation measures. If any changes to the regulated activity are necessary or if additional actions will occur that are not covered by this informal consultation, the applicable USACE District will consult with the USFWS Missouri Field Office to determine whether additional informal or formal consultation is appropriate.

II. ADDITIONAL CONSULTATION

In authorizing actions that deviate from this BE and that “may affect” the listed bats or for actions in which further consultation has been agreed to, the USACE will comply with the consultation requirements of Section 7 of the ESA per the implementing regulations at 50 CFR 402, and USACE policies and guidance.

- a) *Informal Consultation.* The USACE recognizes that informal consultation with the USFWS is critical to resolve potential problems and establish the foundation to proactively address issues. For any “may affect” determinations, the USACE Districts will work with the applicant to modify proposed actions and work with the USFWS to obtain concurrence on a “may affect, but not likely to adversely affect” (NLAA) determination. Issue resolution through informal consultation is preferred.
- b) *Formal Consultation.* If implementation of these guidelines is not possible or feasible for a proposed action and adverse effects cannot be avoided, the USACE District will initiate formal Section 7 conference/consultation in accordance with the procedures in 50 CFR 402 and applicable USACE policies and guidance.

- c) *Confirmation.* The NLAA determination and concurrence of this BE will stay in effect indefinitely starting from the date of USFWS concurrence, however the Agencies will meet annually to review and modify/re-initiate consultation if necessary. The USACE will re-initiate consultation on these guidelines if (i) information arises indicating that implementation of the guidelines may not avoid adverse impacts on the listed bats for certain activities; (ii) data/new research endorses inclusion of new, or modification of established, measures in the guidelines that still support a NLAA determination; or (iii) a “take” occurs even though the USACE is fully implementing the guidelines. The USACE will notify USFWS within five business days if issues pertaining to (i) and/or (iii) arise, and work with the USFWS on addressing such issues through informal consultation. The USACE will make the necessary changes to the guidelines, if any, and conduct the necessary internal review prior to submitting the revised document to USFWS for concurrence. During this period, the NLAA concurrence will still be valid for the conservation measures not subject to any scrutiny or concern.
- d) *Programmatic Informal Consultation Process.* Each USACE District will screen applicable activities through a USACE/USFWS cooperatively generated checklist (Appendix 1) to ensure the activity is conducted as described in this BE. If the action does not fit the framework of the checklist, initiation of informal/formal consultation is required. The checklist will be submitted to the USFWS Missouri Field Office when the project is authorized/verified. For each activity completed under the programmatic informal consultation, each USACE District will document site-specific information including the activities implemented, and describe how compliance was maintained with the conservation guidelines/measures within this document (i.e., checklist, Appendix 1). At the end of a one year period from the effective date of this consultation, and annually thereafter, the USACE will collectively provide one summary report to the USFWS that documents the number of projects, amount of suitable habitat cleared within each Zone (Appendix 2), and report the number and results of any surveys (Appendix 3) conducted for all activities that occurred that are covered by this consultation. The USFWS generated Zone Map will also be updated annually by the USFWS based on recent survey findings.
- e) *Other Listed Species.* Other federally listed species may also occur in the area of proposed activities covered by this BE. This BE addresses only the Indiana bat, gray bat, and northern long-eared bat. The USACE will comply with the consultation requirements of Section 7 of the ESA per the implementing regulations at 50 CFR 402, and USACE policies and guidance for other federally listed species as well. Those analyses may accompany this framework to most efficiently complete informal consultation, as appropriate.

III. USACE REGULATORY PROGRAM

Purpose and Scope

The USACE has been involved in regulating certain activities in the nation’s waters since 1890. Until 1968, the primary thrust of the USACE’s regulatory program was the protection of navigation. As a result of several new laws and judicial decisions, the program has evolved to one involving the consideration of the full public interest by balancing the favorable impacts against the detrimental impacts. This is known as the “public interest review.” The program is one which

reflects the national concerns for both the protection and utilization of important resources.

Authorities

The following legislation authorizes USACE to issue permits:

- a) *Section 9 of the Rivers and Harbors Act*, approved March 3, 1899 (33 U.S.C. 401), prohibits the construction of any dam or dike across any navigable water of the United States in the absence of Congressional consent and approval of the plans by the Chief of Engineers and the Secretary of the Army. Where the navigable portions of the waterbody lie wholly within the limits of a single state, the structure may be built under authority of the legislature of that state if the location and plans or any modification thereof are approved by the Chief of Engineers and by the Secretary of the Army. The instrument of authorization is designated a permit. Section 9 also pertains to bridges and causeways but the authority of the Secretary of the Army and Chief of Engineers with respect to bridges and causeways was transferred to the Secretary of Transportation under the Department of Transportation Act of October 15, 1966 (49 U.S.C. 1155g(6)(A)). A Department of the Army permit pursuant to section 404 of the Clean Water Act is required for the discharge of dredged or fill material into waters of the United States associated with bridges and causeways.
- b) *Section 10 of the Rivers and Harbors Act* approved March 3, 1899, (33 U.S.C. 403), prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in or over any navigable water of the United States, the excavating from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The instrument of authorization is designated a permit. The authority of the Secretary of the Army to prevent obstructions to navigation in navigable waters of the United States was extended to artificial islands, installations, and other devices located on the seabed, to the seaward limit of the outer continental shelf, by Section 4(f) of the Outer Continental Shelf Lands Act of 1953 as amended (43 U.S.C. 1333(e)).
- c) *Section 11 of the Rivers and Harbors Act* approved March 3, 1899, (33 U.S.C. 404), authorizes the Secretary of the Army to establish harbor lines channel-ward of which no piers, wharves, bulkheads, or other works may be extended or deposits made without approval of the Secretary of the Army. Effective May 27, 1970, permits for work shoreward of those lines must be obtained in accordance with Section 10 and, if applicable, Section 404 of the Clean Water Act (see § 320.4(o) of this part).
- d) *Section 13 of the Rivers and Harbors Act* approved March 3, 1899, (33 U.S.C. 407), provides that the Secretary of the Army, whenever the Chief of Engineers determines that anchorage and navigation will not be injured thereby, may permit the discharge of refuse into navigable waters. In the absence of a permit, such discharge of refuse is prohibited. While the prohibition of this section, known as the Refuse Act, is still in effect, the permit authority of the Secretary of the Army has been superseded by the permit authority provided the Administrator, Environmental Protection Agency (EPA), and the states under Sections 402 and 405 of the Clean Water Act, (33 U.S.C. 1342 and 1345).

- e) *Section 14 of the Rivers and Harbors Act* approved March 3, 1899, (33 U.S.C. 408), provides that the Secretary of the Army, on the recommendation of the Chief of Engineers, may grant permission for the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States. This permission will be granted by an appropriate real estate instrument in accordance with existing real estate regulations.
- f) *Section 404 of the Clean Water Act* (33 U.S.C. 1344), authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the United States at specified disposal sites. The selection and use of disposal sites will be in accordance with guidelines developed by the Administrator of EPA in conjunction with the Secretary of the Army and published in 40 CFR part 230. If these guidelines prohibit the selection or use of a disposal site, the Chief of Engineers shall consider the economic impact on navigation and anchorage of such a prohibition in reaching his decision. Furthermore, the Administrator can deny, prohibit, restrict or withdraw the use of any defined area as a disposal site whenever he determines, after notice and opportunity for public hearing and after consultation with the Secretary of the Army, that the discharge of such materials into such areas will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas.
- g) *Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972*, as amended (33 U.S.C. 1413) (hereinafter referred to as Section 103), authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearing, for the transportation of dredged material for the purpose of disposal in the ocean where it is determined that the disposal will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. The selection of disposal sites will be in accordance with criteria developed by the Administrator of the EPA in consultation with the Secretary of the Army and published in 40 CFR parts 220 through 229. However, similar to the EPA Administrator's limiting authority cited in paragraph (f) of this section, the Administrator can prevent the issuance of a permit under this authority if he finds that the disposal of the material will result in an unacceptable adverse impact on municipal water supplies, shellfish beds, wildlife, fisheries, or recreational areas.

Permits

Department of the Army (DA) permits for the above described activities are issued under various forms of authorization, including:

- a) *Nationwide Permits*. The USACE issues nationwide permits (NWP) to authorize certain activities that require DA permits under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. The NWP authorize activities that have minimal individual and cumulative adverse environmental effects. The NWP are proposed, issued, modified, reissued, and revoked from time to time (generally five years), after an opportunity for public notice and comment.
- b) *Individual Permits*. The term individual permit means a DA authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the

procedures of this regulation and 33 CFR 325, and a determination that the proposed structure or work is not contrary to the public interest pursuant to 33 CFR 320.

- c) *Letters of permission.* Letters of permission are a type of permit issued through an abbreviated processing procedure outlined in 33 CFR 325.2 which includes coordination with Federal and state fish and wildlife agencies, as required by the Fish and Wildlife Coordination Act, and a public interest evaluation, but without the publishing of an individual public notice.
- d) *General Permits.* The term general permit means a DA authorization that is issued on a nationwide or regional basis for a category or categories of activities when (1) those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or (2) the general permit would result in avoiding unnecessary duplication of the regulatory control exercised by another Federal, state, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal.

IV. DISTRIBUTION AND STATUS OF THE INDIANA BAT

The Indiana bat was one of 78 species first listed as being in danger of extinction under the Endangered Species Preservation Act of 1966 (32 FR 4001, March 11, 1967). Current threats to the Indiana bat are discussed in detail in the Indiana Bat Draft Recovery Plan (Recovery Plan) (USFWS 2007) and the 5-Year Review (USFWS 2009). Traditionally, habitat loss/degradation, forest fragmentation (lack of connectivity), winter disturbance, and environmental contaminants have been considered the greatest threats to Indiana bats. The most recent 5-Year Review included white-nose syndrome (WNS), which is now considered the most significant obstacle to the recovery of the species. The current status of the species is declining across most or all of its range.

- a) *Action Area.* Missouri is in the Ozark-Central Recovery Unit of the range-wide Indiana bat population. From late fall through winter Indiana bats in Missouri hibernate in caves in the Ozarks and Ozark Border Natural Divisions. During the spring and summer, Indiana bats use living, injured (e.g., split trunks and broken limbs from lightning strikes or wind), dead or dying trees for roosting throughout the state. Indiana bat roost trees tend to be greater than 9 inches diameter at breast height (dbh) (optimally greater than 20 inches dbh) with loose or exfoliating bark. Most important are structural characteristics that provide adequate space for bats to roost. Preferred roost sites are located in forest openings, at the forest edge, or where the overstory canopy allows some sunlight exposure to the roost tree, which is usually within 1 km (0.6 mi.) of water. Indiana bats forage for flying insects (particularly moths) in and around the tree canopy of floodplain, riparian, and upland forests.

The basic resource needs for the Indiana bat are safe winter hibernation sites; forested spring staging/fall swarming habitat; connected forested summer habitat for roosting, foraging, and commuting; forested migratory stopover habitat; safe migration passage; insects; and clean drinking water.

- b) *Protection and Managing Hibernacula.* The key steps in conserving and managing winter colonies and hibernacula include: maintaining both large and small hibernating populations; maintaining or providing appropriate physical structure, airflow, and microclimate of the

hibernacula; maintaining forest habitat surrounding hibernacula (e.g., fall swarming/spring staging); avoiding disturbance of hibernating bats which can lead to excessive arousal and premature depletion of fat reserves; and minimizing disturbance of bats during the swarming period that can lead to disruptions in mating and foraging activity.

Various projects may impact active season bats and/or their habitat. Bats may be exposed to stressors (e.g., noise, smoke, tree removal, collision with vehicles, and collision with turbines) during the active season. Depending on the proximity to these stressors, responses of the bats may vary from nothing to injury or death.

- c) *Threats to the Species.* Destruction and degradation of Indiana bat habitat (i.e., forests) is identified as a longstanding and ongoing threat to the species (USFWS 2009). Not all forest is suitable for Indiana bat and there is interest in locating Indiana bats in the summer to ensure conservation of Indiana bat habitat. Currently, the greatest single cause of conversion of forests within the range of the Indiana bat is urbanization and development (USFWS 2007).

Depending on their characteristics and location, forested areas can function as summer maternity habitat, staging and swarming habitat, migration or foraging habitat, or sometimes, combinations of more than one habitat type. Tree clearing can have a variety of impacts on the bat depending on the quality, amount, and location of the lost habitat, and the time of year of clearing. These impacts could directly impact Indiana bats during the active season, or indirectly via habitat loss during the hibernation season.

Various projects may contribute to a variety of stressors considered under this threat: loss of roosts, loss/degradation of foraging and/or roosting habitat (staging/swarming, maternity, migratory stopover), and loss of travel corridors.

V. DISTRIBUTION AND STATUS OF THE NORTHERN LONG-EARED BAT

On April 2, 2015, the USFWS published a document that is both a final rule to list the northern long-eared bat as a threatened species and an interim 4(d) rule to provide measures that are necessary and advisable to provide for the conservation of the northern long-eared bat (USFWS 2015). WNS is considered the most significant obstacle to the recovery of the species. The current status of the species is declining across most or all of its range.

- a) *Action Area.* The northern long-eared bat is found in the United States from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, even reaching into eastern Montana and Wyoming. In Canada it is found from the Atlantic Coast westward to the southern Yukon Territory and eastern British Columbia. For organizational purposes the northern long-eared bat's range is segregated into four parts: eastern range, Midwest range, southern range, and western range. The Midwestern geographic area includes the following States: Missouri, Illinois, Iowa, Indiana, Ohio, Michigan, Wisconsin, and Minnesota. The species is captured during summer mist-net surveys in varying abundance throughout most of the Midwest, and historically was considered one of the more frequently encountered bat species in the region. However, historically the species was observed infrequently and in small numbers during hibernacula surveys throughout the majority of its range in the Midwest. WNS has since been documented in Illinois, Indiana,

Ohio, Michigan, Wisconsin, and Missouri. There are no firm population size estimates for the northern long-eared bat rangewide. However, a rough estimate of the population size in a portion of the Midwest has been calculated (USFWS 2015). That estimate shows there may have been more than four million bats in the six-state area that includes the states of Illinois, Indiana, Iowa, Ohio, Michigan, and Missouri (USFWS 2015). The range-wide trend over the past 10 years, or three generations, is uncertain but the number of subpopulations as well as the overall population size clearly have declined to a large degree. Abundance has declined sharply and summer survey data have confirmed the declines (USFWS 2015).

The northern long-eared bat has been documented in 76 of 114 counties in Missouri; its abundance in the summer is variable across the state and is likely related to the presence of suitable forest habitat and fidelity to historical summer areas. There are approximately 269 known northern long-eared bat hibernacula that are concentrated in the karst landscapes of central, eastern, and southern Missouri. Similar to other more predominantly karst areas, the northern long-eared bat is difficult to find in Missouri caves. Additionally, their tendency to seek out cracks and crevices when hibernating and their hibernating behaviors leading them to cluster in small groups makes it extremely rare to find northern long-eared bats in large numbers. The northern long-eared bat population in Missouri is considered part of a single, range-wide population, although they are considered short-distance migrants (generally less than 75 miles). Recent surveys of caves and mines in Missouri have shown the dramatic decline of northern long-eared bats, from 2,684 in 2015 to just six this past winter (USFWS and MDC unpublished data 2017). Aside from treatments for WNS, recovery actions include protection of maternity habitat and wintering hibernacula, similar to the Indiana bat.

During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds.

- b) *Protection and Managing Hibernacula.* The key steps in conserving and managing winter colonies and hibernacula include: maintaining both large and small hibernating populations; maintaining or providing appropriate physical structure, airflow, and microclimate of the hibernacula; maintaining forest habitat surrounding hibernacula (e.g., fall swarming/spring staging); avoiding disturbance of hibernating bats which can lead to excessive arousal and premature depletion of fat reserves; and minimizing disturbance of bats during the swarming period that can lead to disruptions in mating and foraging activity.

Various projects may impact active season bats and/or their habitat. Bats may be exposed to stressors (e.g., noise, smoke, tree removal, collision with vehicles, and collision with turbines) during the active season. Depending on the proximity to these stressors, responses of the bats may vary from nothing to injury or death.

Threats to the Species. There are several factors that affect the northern long-eared bat to a greater or lesser degree such as hibernacula modification, disturbance of hibernating bats, forest management activities, and forest conversion; however, USFWS has found that no other threat is as severe and immediate to the northern long-eared bat's persistence as WNS. WNS is currently the predominant threat to the species, and if WNS had not emerged or was not affecting northern

long-eared bat populations to the level that it is, it is unlikely the northern long-eared bat would experience such dramatic declines (USFWS 2015). The causative fungus of WNS, *Pseudogymnoascus destructans*, was first detected in Missouri in the winter of 2009–2010 and the disease confirmed in winter 2011-2012. Since confirmation of the disease in northeast Missouri, numerous WNS-positive sites have been confirmed across the state.

VI. DISTRIBUTION AND STATUS OF THE GRAY BAT

The March 30, 2006, *Federal Register* notice initiated a 5-year review (71 FR 16176) for the gray bat. New information considered in this review includes relevant information generated since the November 6, 1991, formal status review (56 FR 56882), the 1982 approved recovery plan, published reports in peer reviewed literature, gray literature, and data received from various state personnel. With a few exceptions gray bats are one of the few species of bats in North America that inhabit caves year-round. The species occupies cold hibernating caves or mines in winter and warmer caves during summer; gray bats hibernate in deep vertical caves that trap large volumes of cold air and the species typically forms large clusters. It is estimated that 95% of the species range-wide population is confined to only nine caves. As of 2007, gray bat population levels have increased approximately 104% since 1982 (USFWS 2009).

- a) *Action Area.* The primary range of gray bats is concentrated in the cave regions of Alabama, Arkansas, Kentucky, Missouri and Tennessee, with smaller populations found in adjacent states, including a growing population in a quarry in Clark County, Missouri, Southeastern Kansas, and Indiana (USFWS 2009). Gray bats have been documented in at least 219 caves or about 3.5% of all Missouri caves. However, despite the species growth, in Missouri the state population is still only about 46% of the maximum historic population.
- b) *Protection and Managing Hibernacula.* The main focus of the 1982 recovery plan was to protect hibernacula and maternity sites from disturbance, and there have been extensive efforts undertaken since 1982 to accomplish this task. With the exception of Marvel Cave in Missouri, all Priority 1 hibernacula and Priority 1 maternity sites have been protected through acquisition, gates, fences, or signage.
- c) *Threats to the Species.* Human disturbance and natural and man-made flooding were the largest contributing factors in the decline of the gray bat prior to WNS. WNS has been documented in gray bats in Tennessee but no WNS-associated mortality of gray bats has been observed. However, since its initial discovery in New York in 2006, WNS has spread across the country. There is increased risk of gray bats coming in contact with bats infected with WNS because 1) gray bats have been documented to regularly migrate from 17 to 437 kilometers between summer maternity sites and winter hibernacula with some individuals moving as much as 689 to 775 kilometers; 2) the species often co-occurs at roosts with other species which also migrate considerable distances between winter hibernacula and summer maternity sites; and 3) gray bat maternity roosts or hibernacula can include tens of thousands of individuals in a single cave (USFWS 2009).

VII. DESCRIPTION OF REGULATORY ACTIVITIES AND APPLIED CONSERVATION MEASURES

- a) *Regulatory Activities.* Regulated activities (i.e., actions) that fall under this BE are limited to those activities that are proposed to impact areas delineated as jurisdictional Waters of the United States (33 CFR §328) and areas considered to be in the Action Area under the ESA (50 CFR §402.02), when considering the potential direct and indirect effects that are reasonably certain to occur, and contain suitable habitat for listed bats in Missouri as described in Sections IV, V, and VI above.

The USACE action will be assessed according to the conservation measures of their corresponding Zone (Appendix 2). Zone 1 conservation measures apply to actions within the State of Missouri excluding Zones 2 and 3. Zone 2 conservation measures apply to actions within 5.0 miles (radius) of a known capture of a listed bat. Zone 3 conservation measures apply to actions that occur within 0.25 miles (radius) of a known roost tree or hibernacula. This BE applies to actions that are authorized with Standard or Individual Permits, Letters of Permission, or General Permits which include Nationwide Permits, Regional General Permits, and Programmatic General Permits.

- b) *Interrelated and Interdependent Activities.* The implementing regulations (50 CFR §402.02) of Section 7 of the ESA define the "effects of the action" as the "direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action." Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.
- c) *Projects with Limited Federal Control.* In cases where aspects of the applicant's overall project are not interrelated and interdependent of the USACE action or the USACE has limited federal control of a project, the applicant must have proposed to clear trees from November 1 to March 31 as part of the applicant's overall project design for this programmatic consultation to be applicable.
- d) *Conservation Measures.* Conservation measures are actions that benefit or promote the recovery of a listed species that a Federal agency includes as an integral part of its 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 falls within this consultation framework.

The Service understands that the following bat conservation measures which restrict tree clearing dates can only be applied and enforced by the USACE in their area of federal control (action area):

1. All tree clearing will occur during the bat inactive season from November 1 to March 31 unless negative presence/probable absence survey results were obtained for the action area through appropriate surveys (Appendix 3) approved by the Service.

2. The applicant must conduct a bat habitat assessment if the applicant's overall project will occur in Zone 1 and includes more than 10 acres of tree clearing. If the results indicate that more than 10 acres of suitable roosting habitat will be cleared, the USACE will require presence/probable absence surveys to determine if additional consultation is necessary or the project will not affect listed bats.
3. The applicant must conduct a bat habitat assessment if the applicant's overall project will occur in Zone 2 and includes more than 5 acres of tree clearing. If the results indicate that more than 5 acres of suitable roosting habitat will be cleared, the USACE will require presence/probable absence surveys to determine if additional consultation is necessary or the project will not affect listed bats.
4. If located in Zone 1, the applicant's overall project will not remove more than 10 acres of suitable roosting habitat during the inactive season.
5. If located in Zone 2, the applicant's overall project will not remove more than 5 acres of suitable roosting habitat during the inactive season.
6. A USACE action will not result in the removal of trees in Zone 3.
7. Tree clearing associated with the applicant's overall project and the USACE action will not result in a cumulative loss of more than 5% of the baseline (2005) forested acreage of each District over 20 years (Appendix 4).
8. If the applicant's overall project is located in a karst area and will involve construction methods that may cause deep ground disturbance, the applicant must conduct a cave search to be conducted to determine if any caves are present in the action area that would be considered suitable habitat for listed bats and/or are currently or formerly used by listed bats.

Below is an example of a special condition that will be added to the USACE permit regarding the aforementioned conservation measures:

*“Please be aware that the endangered Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*) and the threatened northern long-eared bat (*Myotis septentrionalis*) may be present within your project area. To “not adversely affect” these listed species, you must not cut or clear trees during the bats’ active season, April 1 – October 31. If implementation of the seasonal tree cutting restriction is not possible, please contact the Corps of Engineers, Regulatory Branch, for further consultation with the United States Fish and Wildlife Service.”*

In addition to the above special condition, the following language will also be added to the USACE permit regarding the applicant's overall ESA responsibilities.

The USFWS encourages the applicant to minimize tree clearing and fragmentation and maintain as many travel/riparian corridors as possible. The applicant is responsible for compliance with the Endangered Species Act outside the Corps' action area and suitable habitat for federally listed bats species may occur in their project area beyond the Corps' action area. Therefore, we recommend the applicant contact the U.S. Fish and Wildlife, Missouri Ecological Service Field Office (101 Park DeVill Drive, Columbia, Missouri 65203, (573) 234-2132) for additional coordination to reduce or avoid adverse effects to listed bat species outside the Corps defined action area.

Several flow diagrams have been added to this document to assist USACE Project Managers with implementing the above conservation measures and making the correct effect determination on listed bats. These resources are located Appendix 5 of this BE.

VIII. CONCLUSIONS

Based on the USACE's intent to follow USFWS guidance on listed bat conservation and carry out the conservation measures as described in Section VII, the USACE has determined that implementation of actions covered under this document **"may affect, but are not likely to adversely affect"** the Indiana bat, the gray bat, and the northern long-eared bat.

- a) **Request of Concurrence.** The USACE requests that the USFWS review our findings and determinations stated in this BE and provide a programmatic letter of concurrence. If necessary, the applicable USACE Regulatory Office will initiate site-specific consultation with the USFWS Missouri Field Office on activities not included in this BE or if there is additional site-specific information to suggest alternative conservation measures.

IX. LITERATURE CITED

- U.S. Fish and Wildlife Service (USFWS). 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. U.S. Fish and Wildlife Service, Fort Snelling, MN. 258 pp.
- U.S. Fish and Wildlife Service (USFWS). 2009. Gray bat (*Myotis grisescens*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Midwest Region, Missouri Ecological Services Field Office. 34 pp.
- U.S. Fish and Wildlife Service (USFWS). 2009. Indiana bat (*Myotis sodalis*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Midwest Region, Bloomington Ecological Services Field Office. 27 pp.
- U.S. Fish and Wildlife Service (USFWS). 2015. Endangered and Threatened Wildlife and Plants; Listing the Northern Long-Eared Bat With a Rule Under Section 4(d) of the Act. Federal Register 80:2371-2378.

U.S. Fish and Wildlife Service (USFWS). 2016. Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions. U.S. Fish and Wildlife Service, Midwest Region. Available at <http://www.fws.gov/midwest/endangered/mammals/nleb/nlebBOs.html>.

APPENDIX 1

PROGRAMMATIC INFORMAL CONSULTATION FORM FOR U.S. ARMY CORPS OF ENGINEERS, REGULATORY PROGRAM ACTIONS AFFECTING MISSOURI BAT SPECIES

Pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), federal agencies are to consult with the applicable Service to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered species. Per 50 CFR 402.14(a), federal agencies are required to consult with the appropriate Service if a proposed action “may affect” a listed species or designated critical habitat.

This form serves as documentation that the U.S. Army Corps of Engineers’ (USACE) Districts, within the State of Missouri, have completed their consultation requirements under the Section 7(a)(2) of the ESA, as they pertain to the northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), and gray bat (*Myotis grisescens*). Specifically, this form summarizes the USACE-Regulatory action, its potential effects to the above mentioned bat species, and the conservation measures undertaken by the applicant in adherence with the U.S. Army Corps of Engineers’ Biological Evaluation – Programmatic Informal Consultation for Regulatory Program Actions affecting Missouri Bat Species.

This form will be submitted to the U.S. Fish and Wildlife Service (USFWS) Missouri Field Office via email when the action is authorized and recorded internally following USACE guidance. This form is not necessary if an agency determines that a proposed action will have no effect or an adverse effect on the aforementioned bats species. Actions that may cause an adverse effect to the aforementioned species require an incidental take statement under a separate formal consultation. If the action does not fit the framework outlined in this form, initiation of informal/formal consultation is required. Providing this information does not address Section 7(a)(2) compliance for any other listed species.

I. GENERAL PROJECT INFORMATION (ALL FIELDS REQUIRED)

USACE District:

USACE Project Number:

IPAC Consultation Code:

Applicant: (Name, Address, Email, Phone No.):

Project Name:

Project Location (County, State, S/T/R, Coordinates, Waterbody):

Basic Project Description: \

Acres (Aerial Coverage) of Tree Removal within the Applicant’s Overall Project Area:

II. PROJECT SCREENING

The USACE action is located in Zone 1 , Zone 2 , Zone 3 .

YES NO N/A

1. Presence/probable absence surveys were conducted within the project area, and within five years of the construction date.* [Explain if applicable]:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The applicant’s overall project will occur in a karst area and will involve construction methods that may cause deep ground disturbance. A cave search was conducted to determine if any caves were present that could provide habitat for bats and were evaluated for bat use. [Explain if applicable]:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All survey results for the agency action indicate the probable absence of listed bats within the project area?** Yes No N/A

***Additional conservation measures (Section III) are not required for an USACE action to be covered under this programmatic consultation framework so long as USFWS approved surveys yield negative (probable absence) results.**

****The above surveys must be conducted in accordance with USFWS approved protocol and must have yielded negative (probable absence) results. If survey results return positive (presence), this consultation form cannot be used.**

III. PROJECT CONSERVATION MEASURES

YES NO N/A

1. In the area of the applicant’s overall project , tree clearing will only occur during the bat inactive season from November 1 to March 31.*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The applicant’s overall project is located in Zone 1 and will not cause the removal of more than 10 acres of suitable habitat during the inactive season.*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The applicant’s overall project is located in Zone 2 and will not cause the removal of more than 5 acres of suitable habitat during the inactive season.*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The applicant’s overall project is located in Zone 3 and will not cause the removal of suitable habitat regardless of the time of year*.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tree clearing dates outside the bats’ active season were proposed by the applicant as part of the USACE application: Yes No

The USACE has conditioned the permit to avoid the bats’ active season: Yes No

***You must answer “YES” to question 1 AND question 2 or 3, or individually answer “YES” to question 4, in order to use this consultation form.**

Supplemental question for tracking purposes only:

	YES	NO
1. Does the applicant's overall project affect bridges or culverts that could be suitable for bats?*	<input type="checkbox"/>	<input type="checkbox"/>

*Bridges considered to provide suitable roosting habitat have the following characteristics: constructed of concrete; parallel box beam construction; cast in-place or made of prestressed concrete girder spans; contain crevices ≥ 12 inches in depth and 0.5 to 1.25 inches wide; ≥ 10 feet above the ground; water-tight from above; receive partial to full sun for a majority of the day; and are not situated over busy roadways. Non-enclosed, road-level wooden bridges are not considered suitable roosting habitat. Enclosed wooden bridges (e.g. covered bridges) are considered suitable. Culverts considered to provide suitable roosting habitat have the following characteristics: constructed of concrete; 5 to 10 feet tall; ≥ 300 feet long; openings protected from strong winds; not susceptible to flooding (i.e., unlikely to flood between April -August); dark interior; and exhibit roughened walls or ceilings, crevices or other types of imperfections.

IV. AGENCY DETERMINATION

By signing this form, the USACE determines that this project may affect, but is not likely to adversely affect the northern long-eared bat (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), and/or the gray bat (*Myotis grisescens*). On April 24, 2019 the USFWS signed a programmatic letter of concurrence for actions outlined within the U.S. Army Corps of Engineers' Biological Evaluation – Programmatic Informal Consultation for Regulatory Program Actions affecting Missouri Bat Species and employ appropriate conservation measures (Section III). No project specific concurrence letter is required to use this form.

The USFWS understands that the USACE will implement all activities as described herein. The USACE will promptly report any departures from the described activities to the appropriate USFWS Field Office to determine if additional consultation is required. The USACE will provide the appropriate USFWS Field Office with the results of all surveys conducted for the aforementioned species when submitting this form. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick bat.

Signature: _____ Date Submitted: _____

Copy Furnish:
USFWS Missouri Field Office via email
USACE internal tracking system

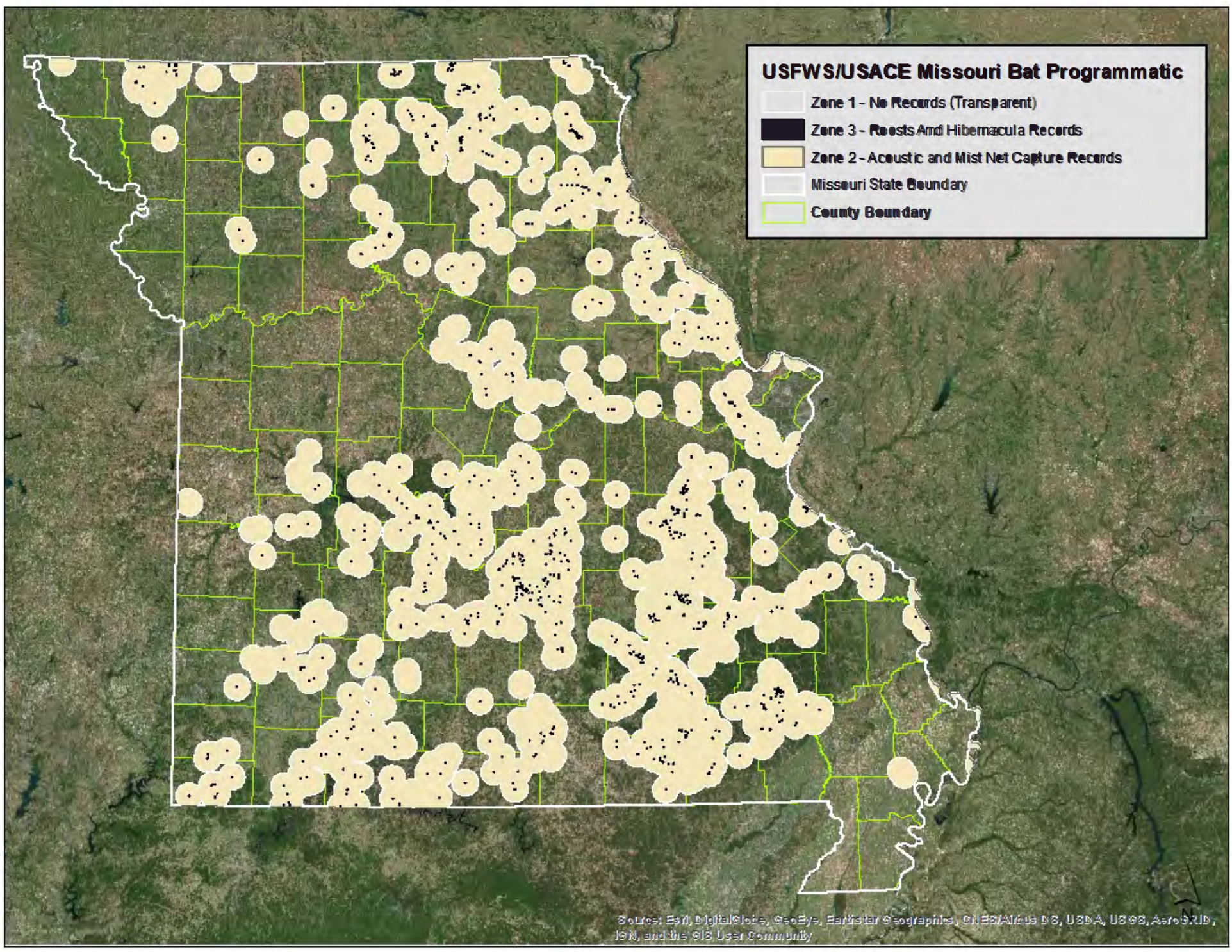
APPENDIX 2

NORTHERN LONG-EARED, INDIANA, AND GRAY BAT ZONE MAP

Zone Map will be provided in Google Earth and/or ArcGIS formats to USACE Project Managers and updated annually by the USFWS.

USFWS/USACE Missouri Bat Programmatic

- Zone 1 - No Records (Transparent)
- Zone 3 - Roosts And Hibernacula Records
- Zone 2 - Acoustic and Mist Net Capture Records
- Missouri State Boundary
- County Boundary



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

APPENDIX 3

PRESENCE/PROBABLE ABSENCE SURVEY PROTOCOL FOR LISTED BATS

For current guidance on summer survey protocols and reporting documents, project proponents should refer to:

<https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>

Please bear in mind that site-specific authorization from the USFWS is needed *prior* to mist netting or otherwise handling federally listed species.

FOR ACOUSTIC P/A SURVEYS: Only high quality acoustic recordings should be analyzed making it imperative that detectors are deployed in a manner to maximize the quality of call files. Analysis of acoustic data should be conducted only by individuals with sufficient experience distinguishing among bat species of the eastern United States and must follow steps outlined in the Rangewide Indiana Bat Summer Survey Guidance (pages 6-8), including optional coarse filtering for high-frequency or Myotis calls, automated analysis for each night at each site that had high-frequency or Myotis calls, and qualitative analysis (i.e. manual vetting) of likely Indiana bat and northern long-eared bat calls as indicated by maximum likelihood results if presence is not being assumed. Screenshots of representative calls for each group (e.g. high-frequency or Myotis) and/or species (Indiana bat, northern long-eared bat, red bat, little brown bat, gray bat, etc.) identified should be taken and submitted with survey results. If qualitative analysis results in a modification to an identification made by an automated classifier, an explanation and screenshot should be included in the survey report.

Upon completion of the survey, a report of presence/probable absence results should be submitted to the Service, as well as to the federal action agency if different than the entity conducting the survey. Also, note that in 2016, USFWS implemented a new standardized approach for reporting of bat survey data. In addition to a traditional written report, federal permit holders are now required to submit their survey data using the standardized permit reporting spreadsheets available on the R3 Indiana Bat Summer Survey Guidance webpage. Surveyors conducting acoustic-only surveys are encouraged to contribute their data as well using the same reporting system. (<http://www.fws.gov/midwest/Endangered/mammals/inba/inbasummersurveyguidance.html>)

APPENDIX 4

ANNUAL CUMULATIVE FOREST LOSS BY DISTRICT

USACE District Boundary	Total Acres	Forested Acres	5% loss of baseline forest acres over 20 years	Annual Cap over that time
St. Louis	8,635,485.4	3,820,937.2	191,046.9	9,552.3
Kansas City	23,099,340.9	6,861,177.7	343,058.9	17,152.9
Little Rock	8,649,022.7	4,532,204.3	226,610.2	11,330.5
Rock Island	1,814,861.5	404,407.0	20,220.4	1,011.0
Memphis	2,389,890.8	175,252.6	8,762.6	438.1

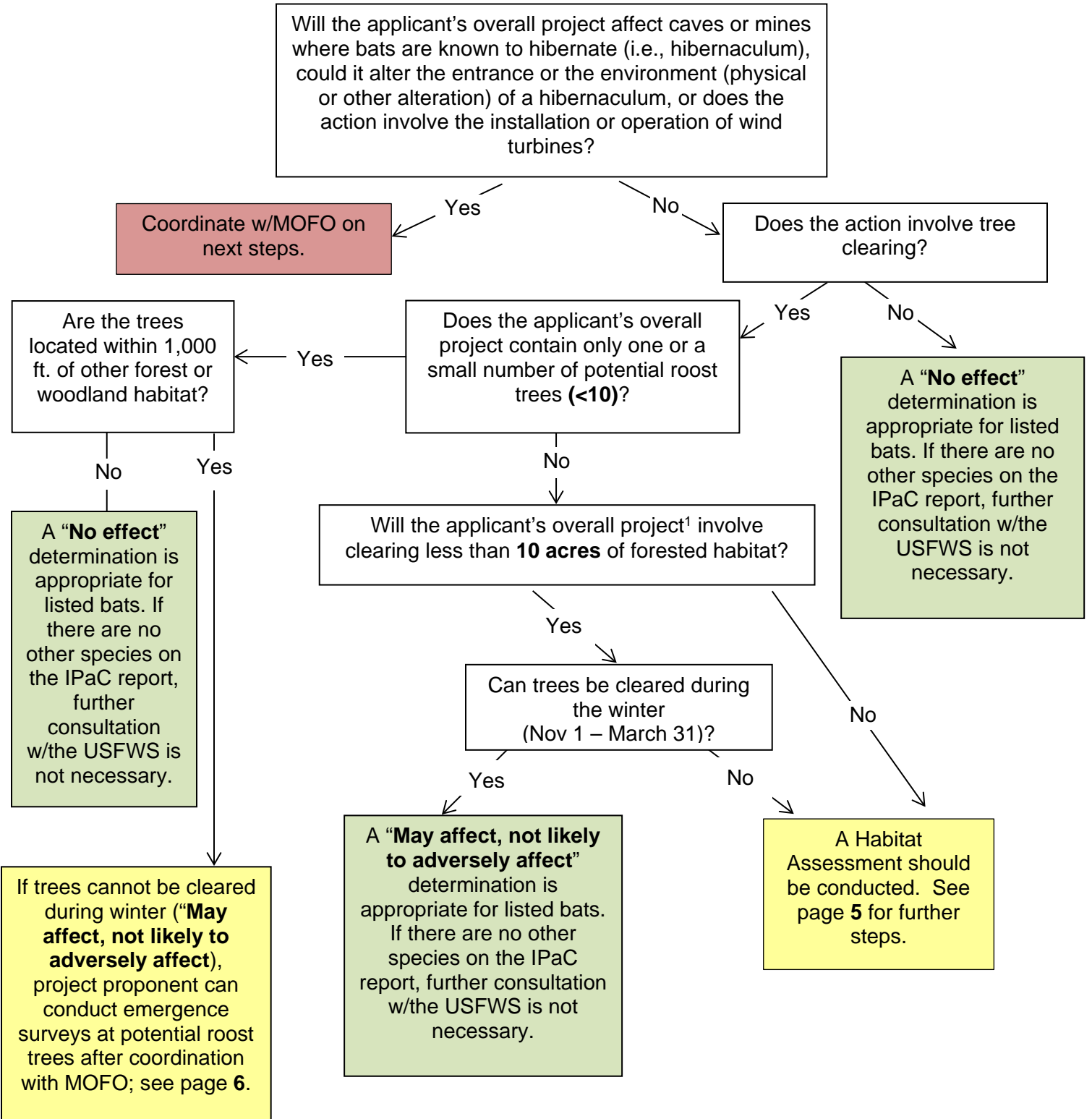
Source: 2005 land cover <ftp://msdis.missouri.edu/pub/lulc/lulc05>

APPENDIX 5

CONSULTATION PATHWAY FLOW DIAGRAMS

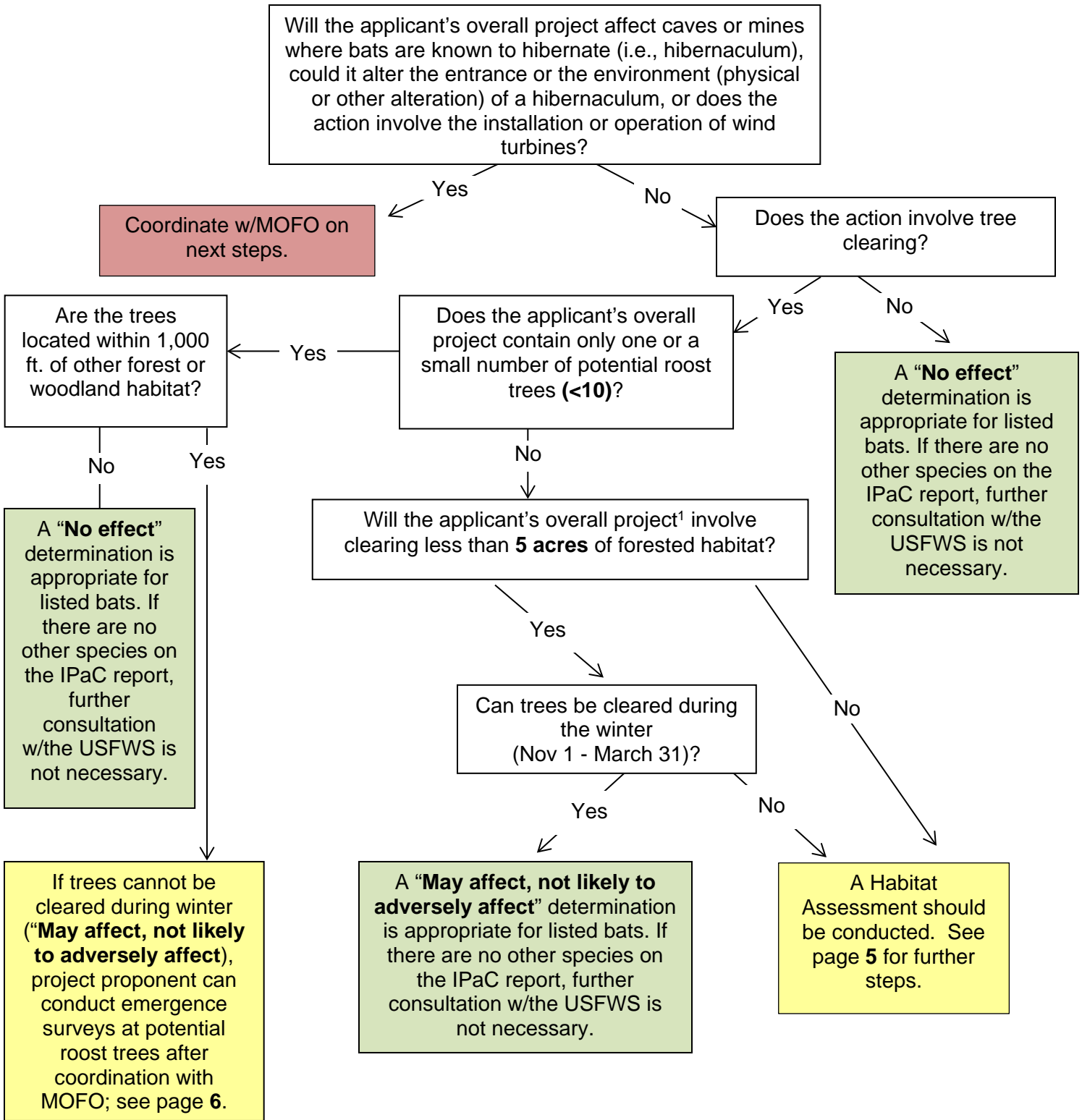
Decision Tree for Listed Bat¹ Consultations

USACE CWA Section 404 Programmatic NLAA for Missouri Zone 1



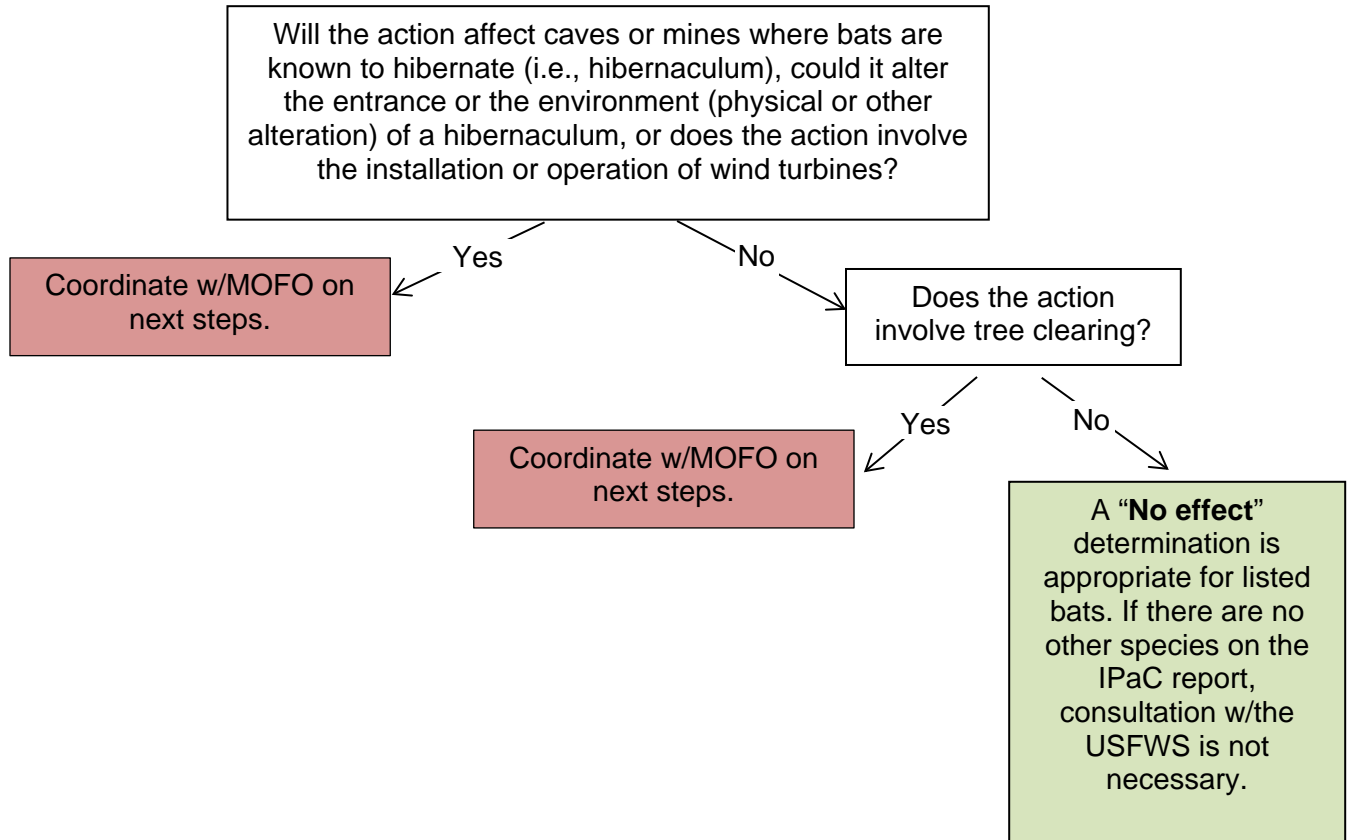
¹Listed bats include Indiana bat, Northern Long-eared bat and Gray bat as described in the Programmatic BE.

Decision Tree for Listed Bat¹ Consultations USACE CWA Section 404 Programmatic NLAA Missouri Zone 2



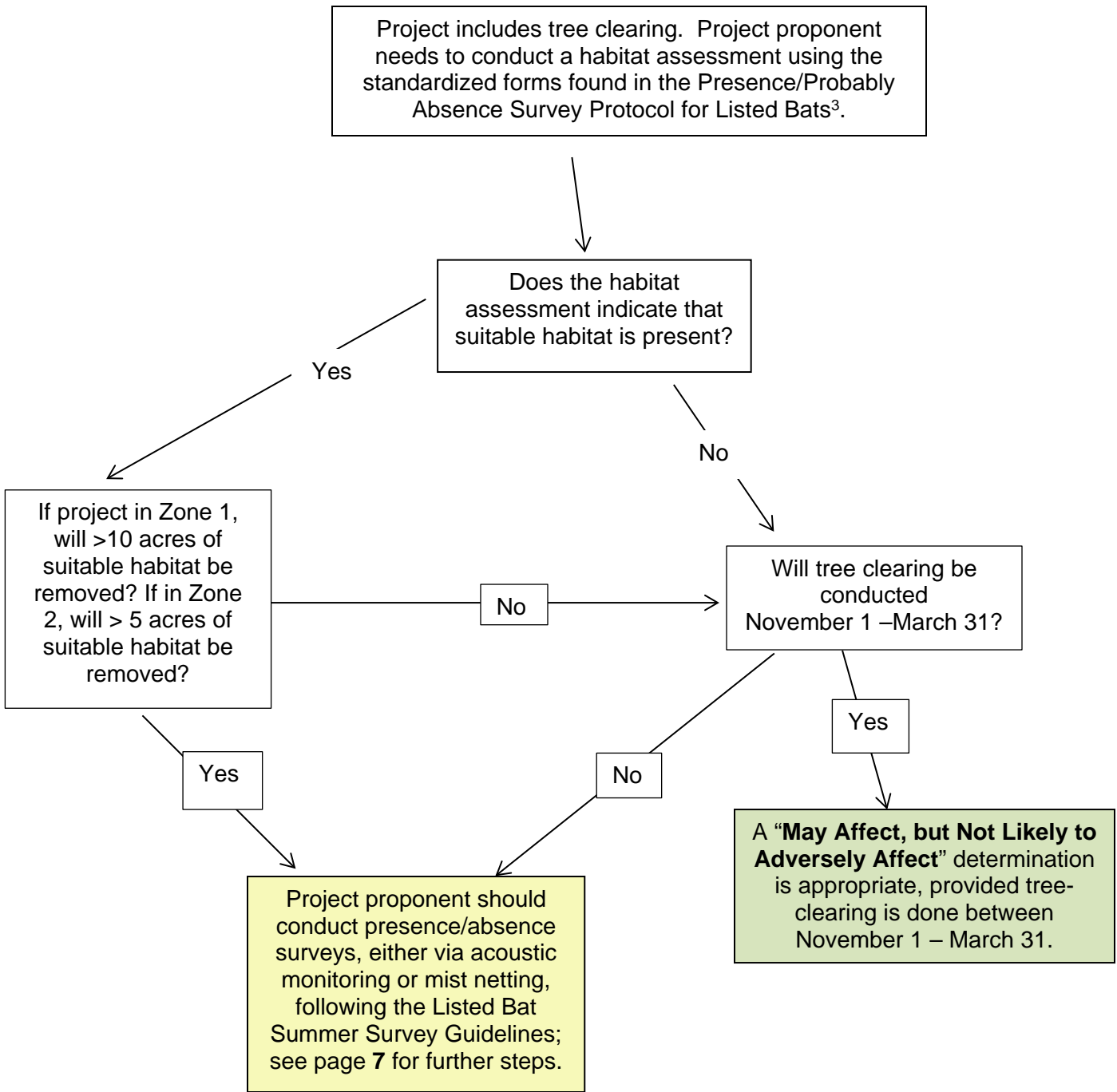
¹Listed bats include Indiana bat, Northern Long-eared bat and Gray bat as described in the Programmatic BE.

Decision Tree for Listed Bat¹ Consultations
USACE CWA Section 404 Programmatic NLAA Missouri
Zone 3



¹Listed bats include Indiana bat, Northern Long-eared bat and Gray bat as described in the Programmatic BE.

Decision Tree for Listed Bat¹ Consultations USACE CWA Section 404 Programmatic NLAA for Missouri Habitat Assessment²

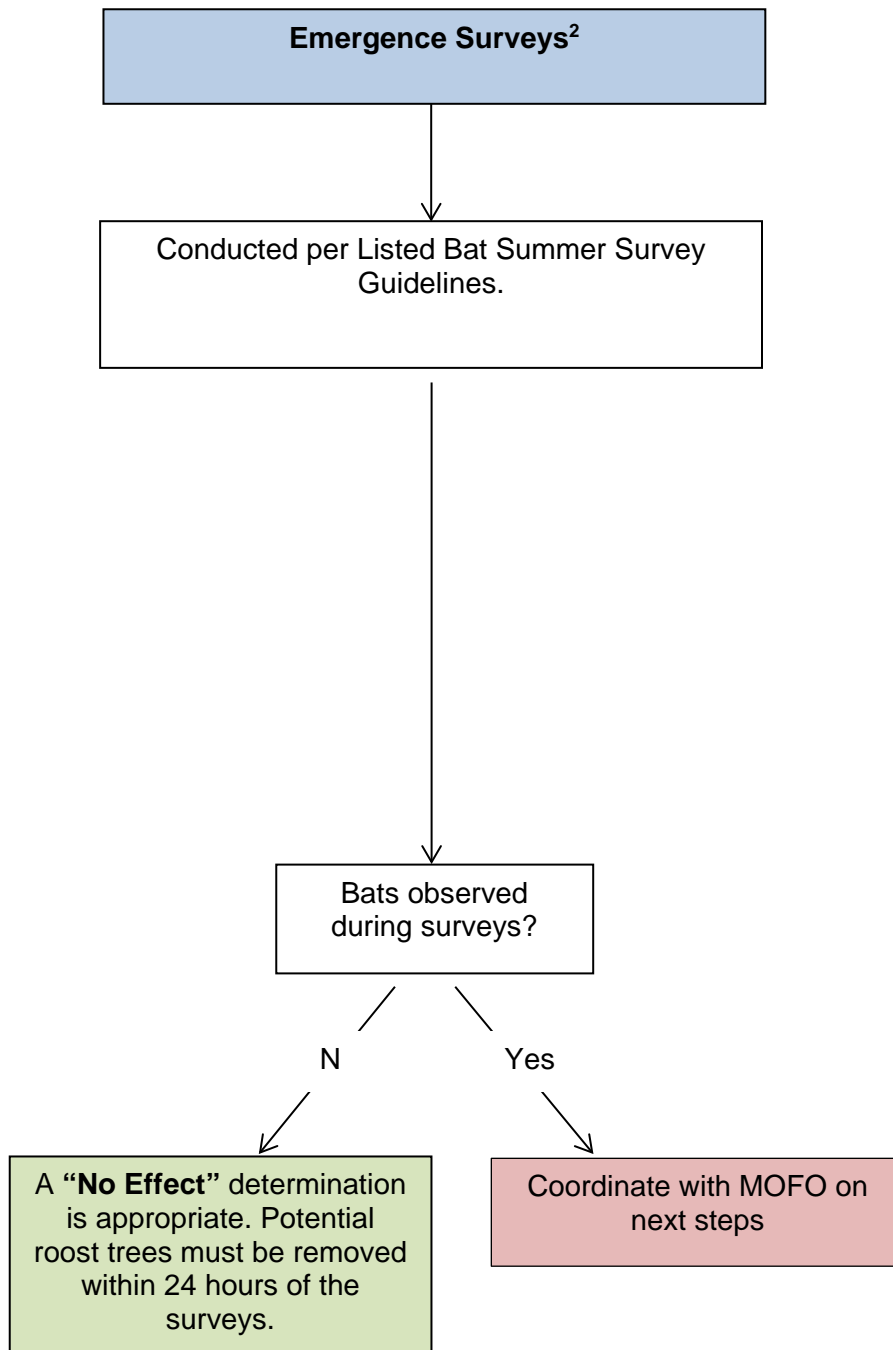


¹Listed bats include Indiana bat, Northern Long-eared bat and Gray bat as described in the Programmatic BE.

²Continued from previous pages for Zones 1 and 2. Refer to Steps for Zones 1 and 2 before completing these steps.

³See Appendix 3 for current guidance on summer survey protocols and reporting documents

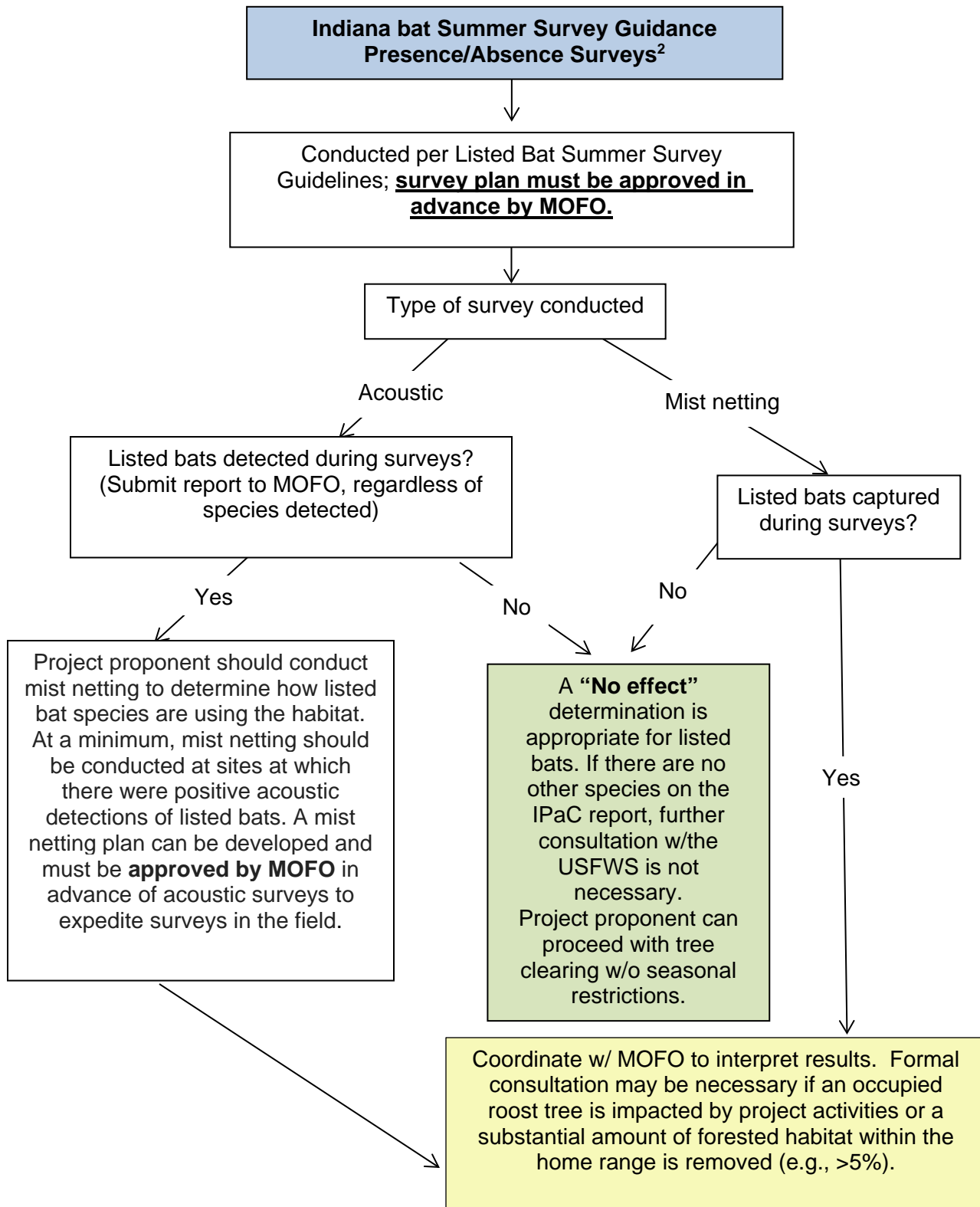
Listed Bat¹ Consultation Decision Tree – Emergence Surveys



¹Listed bats include Indiana bat, Northern Long-eared bat and Gray bat as described in the Programmatic BE.

²Continued from previous pages for Zones 1 and 2. Refer to Steps for Zones 1 and 2 before completing these steps.

Listed Bat¹ Consultation Decision Tree – Presence Absence Surveys



¹Listed bats include Indiana bat, Northern Long-eared bat and Gray bat as described in the Programmatic BE.

²Continued from previous pages for Zones 1 and 2. Refer to Steps for Zones 1 and 2 before completing these steps.



US Army Corps of Engineers

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August 2018

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