USDA United States Department of Agriculture
Forest Service
Hoosier National Forest
Supervisor's Office
811 Constitution Avenue
Bedford, IN 47421
812-275-5987
TDD: 800-877-8339
Fax: 812-279-3423

File Code: 1950
Date: February 14, 2020

Dear Interested Parties:

This letter is in response to your objection to the Draft Decision Notice (DDN) for the Houston South Vegetation Management and Restoration Project Environmental Assessment (EA) and Finding of No Significant Impact (FONSI).

To be eligible to object to a project, one must have submitted timely and specific written comments for an eligible proposed project or activity subject to the objections process during a designated opportunity for public comment. Eligibility may also be established by basing the objection on project-related new information that had not previously been available for comment per 36 Code of Federal Regulations (CFR) 218.5 and 218.7.

Eleven objections were received and met the eligibility requirements. In this letter, I am responding to objections from Michael Bean, Ann Deutch, the Hoosier Environmental Council, the Indiana Forest Alliance, the Monroe County Commissioners (along with the Monroe County Environmental Commission), the Monroe County Council, Bowden Quinn (Sierra Club, Hoosier Chapter), Mary Reardon, Dave Simcox, Karen Smith, and Tom Zeller.

Background

The Houston South Vegetation Management and Restoration Project (Houston South Project) proposed action is based on and would fulfill the 2006 Hoosier National Forest Land and Resource Management Plan's (Forest Plan) direction associated with the goal of maintaining and restoring sustainable ecosystems. It will treat vegetation and conduct related management activities to improve forest health and sustainability of the oak-hickory ecosystems, enhance wildlife habitat, and move the Hoosier National Forest toward its desired future condition as identified in the Forest Plan. The actions are proposed on the Brownstown Ranger District, with the majority of the project area in the northwest corner of Jackson County and a small portion on the northeast corner of Lawrence County.

This proposal is needed to provide a mosaic of forest conditions dominated by hardwoods and restore dry hardwood forest ecosystems that have not experienced periodic disturbance similar to

fire or other naturally occurring events. Improving stand structure within the project area, which is currently dominated by mature forest, would provide the early successional habitat that is more suitable for a wider array of wildlife species. It will also improve overall vegetation health, creating an ecosystem more resilient to the effects of insects, disease, and climate change.

Objection and Review

I have read your objection and have reviewed the EA, FONSI, and DDN. What follows is a summary of the analysis of your issues. A team of Forest Service resource professionals assisted me in this review.

Michael Bean Issue 1

Objects to the conclusion in the DDN/FONSI that design measures, best management practices (BMPs), and Forest Plan Guidelines and Standards "will limit adverse effects to such an extent that they will be not be significant." Relying upon an array of BMPs to eliminate any and all significant impacts is wishful thinking.

Analysis: The impacts of silvicultural manipulation, prescribed fire, road and trail construct/reconstruct actions, and Aquatic Organism Passage installation were considered and addressed throughout the environmental review process for the Houston South Project. The Responsible Official acknowledged the short-term potential for limited impacts (DDN, p. 4) and that the use of design criteria in the form of BMPs, Standards and Guidelines, and project design features would reduce the effects below significance (DDN, p. 4). The EA discusses the environmental effects and associated use/basis for design criteria to reduce or minimize such effects (pp. 14-70, pp. 80-83).

The EA acknowledges that prescribed fire effects are based on temperature, consumption of material, slope, climate, and intensity (pp. 14-19). The EA also indicates that low intensity or severity fires due to climate and vegetation conditions have limited effects on soil biota and water chemistry and water quality (pp. 15-16) based on studies and monitoring of effects from low intensity fires. The proposed prescribed fire for this project is anticipated to have the same types of results (EA, p. 16).

The EA acknowledges short-term impacts to air quality (p. 16). Air quality within the analysis area currently meets the National Ambient Air Quality Standards (NAAQS) for ozone and fine particulates. This means that current sources of pollution, including intermittent emissions from prescribed fire, are not causing air quality to exceed the current thresholds established to protect human health and welfare (EA, p. 16).

The EA also acknowledges the potential spread of nonnative invasive species (NNIS) plants from prescribed fire actions (pp. 16-18). Prescribed burning produces mixed effects on NNIS plants depending on the individual species, the timing of the burn, and fire intensity. Burning contributes to disturbance that can create conditions susceptible to new invasive plant invasion or expansion of existing infestations. Fire would create a nutrient flush for a short period that would benefit both native and invasive plants. Where appropriate and feasible, the Forest would implement actions including manual, mechanical, and herbicide techniques to control NNIS plants according to the Nonnative Invasive Species Plant Control Program Analysis (USDA FS 2009a). Design measures such as requiring equipment to be cleaned and inspected before entering the project area were developed to decrease NNIS introduction and spread (EA, p. 17).

NNIS plants and their possible spread or establishment were considered in the Houston South NNIS report. Post timber harvest and prescribed burning monitoring would occur as part of this project to monitor changes to existing NNIS within the project area and to locate any new NNIS that may pioneer in from the changed conditions and will be treated under the NNIS program as necessary (NNIS report, pg. 13).

The EA acknowledges that "direct effects to soil and water from initial disturbance which may affect soil productivity and water quality are: soil decomposition (compaction, rutting, and movement), localized erosion/sedimentation, and water pollution" but notes that these effects are localized in that their impacts do not extend beyond the project boundary (p. 20). To address issues with soil erosion and water quality concerns associated with timber management, road and trail use, and placement of three aquatic organism passage (AOP) structures, a soils erosion risk assessment was completed for all risks posed by the project's proposed timber harvesting and associated road/trail construction and AOP installation activities (EA, pp. 20-27). Based upon this risk, the use of effects monitoring and associated BMPs was determined to address and reduce or minimize such risks (EA, p. 24; DDN p. 7). The effectiveness of such BMPs is addressed in both the EA (pp. 24-27) and in references cited (PR, g32, IDNR2018, pp.7-11).

Conclusion: Concerns regarding effectiveness and reliance on design measures, BMPs, and Forest Plan Guidelines and Standards to limit adverse effects from prescribed fire, silviculture management, trail and roads, and AOPs were sufficiently considered in the analysis.

Michael Bean Issue 2

Objects to the Forest Service maneuver to dispel all controversy, adverse, potential, and cumulative impact as "insignificant." Objects to the "answer" that these concerns have been "addressed in the No Action Alternative" and therefore "resolved," and that "public comments did not drive additional alternatives."

Analysis: The term controversy in the context of National Environmental Policy Act (NEPA) refers to cases where substantial scientific dispute exits rather than to public opposition of a proposed action or alternative.

Significance as it relates to the (NEPA) is measured in context and intensity of 10 factors of significance that are addressed in the Houston South FONSI.

According to 40 CFR §1508.27, "context" means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short and long-term effects are relevant. "Intensity" refers to the severity of impact.

With regard to context, the context of the action is local and specific to the general area surrounding the project area. Using herbicide as an example, the effects would be the distance that residue could reasonably travel before breaking down to its constituent components. The intensity of the effect would include the volume and toxicity of residual amounts of the herbicide at a given range from the activity.

The application of herbicide proposed in the EA is regulated and closely managed by a range of state and federal laws, regulation, and policy. Section 1.1 a (Laws and Policy Direction, found on page 4 of the NNIS Plant Control Program Analysis) outlines the laws specific to herbicide use.

Unregulated, the context would rely on the intensity, as the range of effects would increase with the amount of herbicide applied and where it was applied. Aerial application and most broadcast applications common to agricultural use are indiscriminate in the amount of herbicide applied to target species. The unknowns associated with aerial and broadcast application methods drive these alternatives beyond Forest Plan consistency (Forest Plan, Appendix F), which states that "application of pesticides would occur in ways that minimize the dose rate, vapor loss, and drift with the lowest toxicity necessary." Therefore, broadcast application of any sort, including aerial application, is not proposed for the Houston South Project.

The target species are primarily woody vegetation (EA, p. 12). The application methods are described briefly in the EA on page 35 and described in detail in Kochenderfer (2012) (PR g40). Using the prescribed methods, herbicide is applied directly to vegetation with an unmeasurably small amount of herbicide missing the target species. In terms of significance, the context of this activity is limited to the entire area receiving treatment, with the intensity being nearly zero since no measurable amount of herbicide enters the soil.

Overall, by all current estimates, herbicides break down relatively quickly (Kochenderfer 2012; EA, p. 38; Borggaard and Gimsing 2008). Given the preciseness of application and distance to surface water when considering product type and established 100-foot buffers (EA, p. 80), the probability of any herbicide being retained in soil more than two years (Kochenderfer 2012; Borggaard and Gimsing 2008) or ultimately arriving as an intact compound and contacting surface water is immeasurably small and remote.

According to the Council on Environmental Quality's (CEQ) 40 Most Asked Questions, mitigation measures may be relied upon to make a finding of no significant impact only if they are imposed by statute or regulation or are submitted by an applicant or agency as part of the original proposal (Question 40). Compliance with federal and state law is directed by the NNIS Plant Control Program Analysis (USDA FS 2009a), which is incorporated by reference in the EA. The Forest Service also relies on scientific reviews by other agencies such as the Environmental Protection Agency. Further, the use of herbicides is governed through state and local laws, which regulate application within the state and contribute local attributes to the selection and use of materials.

The project area boundary was established based on identified needs for treatment discussed in the Preliminary Project Proposal (PR a03) comparing on-the-ground conditions and desired conditions stated in the Forest Plan (pp. 3-28).

NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail (40 CFR 1500.1 (b)). Public scoping led to the identification of 12 issues (40 CFR 1500.4 9(g)). Issues deemed relevant to the project were combined to eliminate repetitive discussion (40 CFR 1500.4 (i)) and are discussed beginning on page 14 of the EA. The project record contains summary responses to scoping comments that led to issue development.

Alternatives to a proposed activity must meet the need for the proposal. In the case of the Houston South Project, the need included treatments to improve forest health by restoring a mosaic of forest conditions and reestablishing a historic fire regime that led to suppression of oak-hickory seedlings by a shade-tolerant midstory. The proposed action also includes reduction and removal of nonnative pines planted between 1940 and 1970. Originally planted for soil retention on abandoned agricultural ground, the pines encroached and closed the canopy to the point that native plant species, important to native wildlife, were unable to grow due to a lack of direct sunlight (EA, pp. 7-8). Many publicly proposed alternatives included project elements such as recreation and watershed protection measures that were included in the proposed action. Other alternatives such as relocating the project did not meet the need for the proposal as identified by specialists in the Preliminary Planning Proposal (PR a03).

Unlike an Environmental Impact Statement (EIS), an EA does not require a no-action alternative. However, the no-action alternative may be defined as continuing with the present course of action until that action is changed (CEQ 40 Most Asked Questions). As such, a no-action alternative may be used to establish a baseline to measure the effects of proposed activities (EA, p. 14). In the case of Houston South, a No Action alternative was fully analyzed.

Conclusion: The EA is consistent with NEPA and adequately discloses the effects to the public.

Ann Deutch Issue 1

The Forest Service has not adequately addressed the potential detrimental impacts of the project on visual quality along trail corridors.

Analysis: The potential negative visual quality impacts of the project have been thoroughly addressed throughout the project record. Visual character of the project area would be changed by silvicultural treatments (Houston South Visuals Recreation, p. 1). Whether all of these changes would be considered negative is subjective. Impacts from treatment include a landscape with a more open appearance, visual evidence of woody debris and stumps, some areas appearing heavily disturbed, smoke during and for a short period following burning, and potential scar burns to tree (EA, pp. 32-33). Visuals within the project area would be changed particularly during the first several years of the project.

This project incorporates direction from the Forest Plan and represents site-specific, project-level planning necessary to implement the Forest Plan. According to the Forest Plan, the project area has a visual quality objective (VQO) of modification as stated in the Forest Plan. The objector's statement of "outdated visual goals" is a concern outside the scope of this project. Effects of management on visual landscapes are analyzed in the Forest Plan Environmental Impact Statement (EIS), to which the Houston South EA is tiered (RTC, p. 58).

Treatments will not all take place at once, so all aspects of visual quality will not be disrupted at the same time (EA, p. 33). Debris resulting from vegetative management and prescribed fire would be treated to meet visual quality objectives defined in the Forest Plan (Houston South Visuals Recreation, p. 2). Though some of these effects will last longer than others, they are not permanent and will be resolved. The Forest Plan states, "Long-term visual goals are not necessarily negated by short-term disruption of visual character" (RTC, p. 99). The impact is further explained here:

> *A mosaic of forest conditions would be visible in the treated areas, providing diverse forest age classes and habitat types, thus increase the diversity of viewable wildlife and*

> *perspectives of the forest from a visuals standpoint. In several years, the stands would appear more natural as regeneration proceeds. The visual evidence of woody debris and stumps would diminish as the stands grow in new vegetation. Portions of the treatment areas would appear as heavily disturbed landscape at first, but would eventually blend in during later growing seasons.* (Houston South Visuals Recreation, p. 1)

The proposed actions may initially cause some unsightliness, but in the long run will create an overall healthier and aesthetically pleasing environment.

Conclusion: The Forest Service has adequately addressed impacts to visual quality along trail corridors. Some aspects of visual quality may be negatively affected, but they will recover and, in some cases, even be enhanced to comply with Forest Plan goals.

Hoosier Environmental Council Issue 1

The environmental analysis of the project violates the National Environmental Policy Act (NEPA) by failing to consider appropriate and reasonable alternatives to the proposed action.
Analysis: The objector contends that the EA does not present an adequate number of alternatives and presents three alternatives: one moving the project out of the watershed, another prioritizing watershed protection, and a third prioritizing non-consumptive recreation.

NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail (40 CFR 1500.1 (b)). Public scoping led to the identification of 12 issues (40 CFR 1500.4 9(g)). Issues deemed relevant to the project were combined to eliminate repetitive discussion (40 CFR 1500.4 (i)) and are discussed beginning on page 14 of the EA. The project record contains summary responses to scoping comments that led to issue development.

Issues are used to develop alternative methods to achieve the need for the proposal. In the case of the Houston South EA, the need included treatments to improve forest health by restoring a mosaic of forest conditions and reestablishing a historic fire regime that led to suppression of oak-hickory seedlings by a shade-tolerant midstory. The proposed action also includes reduction and removal of nonnative pines planted between 1940 and 1970. Originally planted for soil retention on abandoned agricultural ground, the pines encroached and closed the canopy to the point that native plant species, important to native wildlife, were unable to grow due to a lack of direct sunlight (EA, pp. 7-8).

Relocating the project would not meet the Purpose for Action (EA, p. 7), which is to promote tree growth, reduce insect and disease levels and move the landscape toward desired conditions through Forest Plan direction (Forest Plan, pp. 3-28). It would also increase the resiliency and

structure of forested areas (stands) by restoring the composition, structure, pattern, and ecological processes necessary to make these ecosystems sustainable.

Prioritization of Watershed protection is discussed throughout the EA, with additional direction provided by the Forest Plan (Forest Plan, pp. 3-13). Specifically, page 11 of the EA states that activities protecting the watershed are considered in the Proposed Action, including road decommissioning.

While there is one identified action alternative, that alternative includes design features proposed alternatively by the objector in their letter (h03_HEC), including recreation development and watershed protection. The Proposed Action is described in the EA beginning on page 10. Detailed design criteria for the Proposed Action can be found in Appendix A of the EA beginning on page 80.

The third proposed alternative suggests "providing and enhancing sustainable outdoor recreation opportunities: trails, backcountry campsites, fishing and hunting access points, canoeing and kayaking access." In addition, the proposal included vegetation management "necessary to provide user safety and to eliminate invasive species."

- Enhancing recreation is included in the analysis and detailed on page 82 of the EA.
- Elimination of invasive species is discussed in the EA and tiers to the Nonnative Invasive Species (NNIS) analysis located in the project record (PR e07).
- Each of these proposed activities would require ground-disturbing activities in very close proximity or adjacent to surface water.

Conclusion: The EA's stated need for the proposal includes vegetative management for forest health and in turn to maintain a critical food source for wildlife. This project would also rectify past management activities such as the planting of nonnative pines, which exacerbate the shift in vegetative communities and thus increase the need in this area. The area proposed for treatment is delineated by the project area boundary. The need is clearly stated in the EA and supported by the Forest Plan.

The objector's proposed alternatives do not meet the need for the proposal.

The effects of implementation of the proposed alternatives beyond currently proposed project elements cannot be meaningfully evaluated (36 CFR §220.4 (a)(1); NEPA's 40 Questions) within the scope of this analysis. Recreation opportunities, watershed protection, and vegetative management are considered in detail within the EA.

Hoosier Environmental Council Issue 2

The environmental analysis of the project violates NEPA, given that the EA does not adequately analyze cumulative impacts of the proposed project.

Analysis: The objector states that the cumulative effects boundaries are not well justified and contends that the Lake Monroe watershed should be considered the cumulative effects geographic area because impacts to soils and water, and to maintaining sustainable ecosystems, would potentially extend to the lake and surrounding lands.

An analysis of cumulative effects begins with consideration of the direct and indirect effects on the environment that are expected or likely to result from the alternative proposals for agency action (36 CFR220.4 (f)). Council on Environmental Quality (CEQ) regulations, however, do not require agencies to catalog or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decision-making (40 CFR 1508.7; 36 CFR220.4 (f)). The presence of cumulative effects relies on the presence of direct and indirect effects. The direct effects of the proposed activity are described in detail, by issue and resource throughout the EA and explained in the Houston South FONSI.

The EA discloses project area boundaries by issue throughout the EA. For each issue, direct or indirect effects are not present or are mitigated through design criteria within the project area; thus direct or indirect effects are not present outside the project area boundary. Analysis areas were established based on experience of similar projects and peer-reviewed sources.

Conclusion: The EA thoroughly analyzes and mitigates the direct and indirect effects of the proposed action for each resource, by issue. Appropriate buffers and other mitigations for resources are discussed in the EA and in Appendix A, Design Criteria. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR 1508.8). As the EA concludes that direct and indirect effects will be mitigated within the South Fork Salt Creek HUC 10 watershed, the EA further concludes that there will be no contribution to cumulative effects in the next watershed downstream (Lake Monroe) from that of the project area.

Hoosier Environmental Council Issue 3

The environmental analysis of the project fails to adequately consider or address the multiple, substantive concerns raised in our comments on the project: Roads, Special Areas and Research Natural Areas, Nonnative Invasive Species, Climate Change and Carbon.

Analysis: As mentioned in the objection, the EA clearly states on page 13 that there would be approximately 3.2 miles of new road construction added to the current road system, and 8.3 miles of temporary road, making a total of 11.5 miles of road construction. There will also be road reconstruction for approximately 5 miles. Trails would be affected by closures, reconstruction, and potential location changes. This would affect recreation, though all effects would not occur at the same time, nor would all trails within the project be affected. See Indiana Forest Alliance Issue 3 response below for more information on the project's effects on trails.

Effects are not expected beyond one complete vegetative growing cycle because the vegetative growth and decreased disturbance would protect against sediment movement (EA, p. 20). Road work may cause short-term sedimentation of drainages and downhill movement of earthwork material, but erosion control methods, seeding, and mulching in these areas would minimize these effects (EA, p. 20). Existing degrading roads currently contribute to sedimentation in the South Fork Salt Creek Watershed and would continue to do so in the absence of action. Rehabilitation of these roads would decrease sedimentation and its effects to the watershed (EA, p. 21). The Forest Service has a method to monitor soil disturbance with set thresholds during harvesting (EA, p. 21). The Forest Service has multiple means to keep erosion and sedimentation to a minimum during the project. See pages 20-28 of the EA for a thorough discussion of this topic.

It was addressed in the Response to Comments (RTC) that increased future illegal ATV use is only speculative and could not be evaluated as a cumulative effect (RTC, p. 143). Illegal ATV, or other off-road motor vehicle, use occurs at multiple locations across the National Forest and there is no data or other evidence to suggest that this activity is any more or less common in areas where timber harvests have occurred recently.

Alternatives were considered, but they did not meet the purpose and need of the project (RTC, pp. 9, 143).

Surveying the area for potential Research Natural Areas or Special Areas would be out of the scope of the project as stated in RTC 73-4 (p. 135) and such areas were identified in the Forest Plan.

The project would likely contribute to the spread of NNIS, but there would be an increase of NNIS populations regardless of the alternative selected (EA, p. 49; Houston South NNIS, p. 22). To keep NNIS spread to a minimum during the project, the Forest would implement actions including manual, mechanical, and herbicide techniques for control of NNIS plants. The Forest would also require cleaning and inspection of equipment prior to entering the project area (EA, p. 17). With proper diligent implementation of project-level design criteria, and application of invasive plant control treatment when feasible and necessary, the Forest anticipates a low to

moderate risk for new introductions and possible spread of NNIS (EA, p. 49). Also see design measures for mitigating spread of NNIS on page 80 of the EA.

See response to David Simcox Issue 3 below for discussion on climate change and carbon.

Conclusion: The Forest has adequately responded to and considered the objector's concerns. The project record thoroughly addresses the potential effects of the proposed actions and describes how the Forest will implement measures to reduce risks of adverse effects.

Hoosier Environmental Council Issue 4

The environmental analysis does not provide or compare adequate quantifiable information needed to assess the effects for the project, as required by Forest Service directives.

Analysis: The EA and associated supporting documents in the project record contain a multitude of quantified information used to assess the effects of the project. The EA (pp. 14-71) contains descriptions of the issue analysis boundaries, analysis of effects, and discussions of those effects for the Houston South Project. These analyses contain information pertaining to the current condition, effects from the proposed actions, what mitigations may offset effects, and/or why they are discountable. Examples of quantified information within the EA itself that demonstrate conditions and conclusions include but are not limited to the current age class distribution of forests within the project area that are quantitatively described in Figures 3 and 4, showing that young forest conditions (0-9 years) are lacking in the Houston South Project area. Table 2 in the EA (p. 11) describes the acres and treatment proposed in the Houston South Project. Table 3 describes the soils ratings (EA, pp. 21-22) within the project and the harvest operability suitability. Table 4 lists the miles of trail affected by the project (EA, p. 29). Herbicide use and effects are displayed in Tables 6-8 (EA, pp. 35-39). Data on Regional Forester Sensitive Species is well described in the EA (p. 40). The EA also includes climate change effects and analysis (pp. 55-59) and NNIS current conditions and project effects on spread (pp. 47-55).

Additionally, upon reviewing the project record's supporting documentation, it is clear that quantified information was considered to prepare the EA. Soil heavy equipment suitability and erosion potential mapping information are in the record (PR e21 and e22) in the form of Natural Resources Conservation Service maps of soil risks. Information on carbon-level baseline on the Hoosier National Forest (PR e14), soil and water resource conditions and project effects (PR e11 specialist report), and air quality (PR e9, report) are examples in the record that directly provide quantified data to inform the EA. References also provide quantified data that was used to inform the analysis found in the EA. Moss (1995) (PR g52), for example, reviews water quality effects from clear-cutting on municipal watersheds in a project setting that is similar to the Houston South Project. This study found no effects on phosphorous outflows from the clear-

cutting in that project. Further, this study found that small, low-intensity prescribed fire following the clear-cut resulted in small water quality hazard. Another reference document that provides considered quantified information is "Indiana Division of Forestry: Evaluating the Use of Best Management Practices for water Quality with Emphasis on the Monroe Lake Watershed" (PR g31 2018). This analysis shows that use of forestry best management practices (BMPs) on federal lands (including the Hoosier National Forest) in the Monroe Lake Watershed are 96.5% effective in preventing non-point source pollution. Further logging has few impacts to water quality when BMPs are implemented. The project record also contains analysis of effects to Regional Forester Sensitive Species (both plant and vertebrate) that may be present or influenced by the Houston South Project (PR e8 and e12).

Hence, it is clear that the EA contains and relied upon volumes of quantifiable information to assess the project's effects.

Conclusion: Concerns that the EA did not rely upon or provide adequate quantifiable information to assess the project's effects are unwarranted. The project analysis conforms with FSH 1909.15 pertaining to providing sufficient evidence to support and analyze the proposed actions and alternatives.

Indiana Forest Alliance Issue 1

This project needlessly threatens to degrade the water quality of Monroe Reservoir, the sole drinking water supply of Monroe County and surrounding communities.

Analysis: The EA (p. 3) clearly shows that the Houston South Project is not located directly along the shore of the Monroe Reservoir proper. While it falls within the South Fork of Salt Creek that eventually drains to the Monroe Reservoir, there is a significant distance before any influence from the project such as non-point source pollution (sediment/soil) could arrive in Monroe Reservoir. Regardless, the EA (p. 16) directly addresses impacts from prescribed fire on water quality and soil stabilization. It relies on studies by Elliot and Voss (2005) (PR, g18) that evaluate low-intensity, low-severity fires in similar settings on water quality and soil stabilization. This study evaluated effects on four sub-watersheds with low-intensity and low-severity fires and two control sub-watersheds with no fire on water quality and soil stability changes. This study found no difference between burned and control sub-watersheds on water quality pertaining to soil solution, sedimentation, and stream chemistry.

The EA further addresses the concern under Issues 2, 3, and 4 pertaining to soil erosion, sedimentation, and nutrient-loading from trails and roads used for timber management. The EA acknowledges that road construction/reconstruction, stream/drain crossings, and log landings have the potential to impact soil erosion and water quality (pp. 19-28). The project further

discusses the use of design features such as timing restrictions, Best Management Practices (BMPs) for water quality, sediment capture basins, and other measures to prevent soil erosion and water quality (pp. 19-28, 81-83). The Houston South Soil and Water Report, Silviculture Report, and Aquatics Report all evaluated this issue (PR e03, e07, e10, and e11). These analyses concluded that with proper monitoring and use of design features/BMPs, this project would effectively mitigate effects on water quality. These reports and the EA are bolstered by reviewing results from BMP and Water Quality monitoring research found in the supporting documents (PR g05, g31, g36, and g47). All these reference materials show that silviculture is not likely to have any significant influence on Monroe Reservoir and that using BMPs and design features ensures such.

The EA also addresses the use of herbicide chemicals and its potential to affect Salt Creek Watershed (pp. 34-38). This analysis shows that the proposed chemical uses have been evaluated in terms of potential toxicity to soil organisms and aquatic conditions. Application would be conducted within the label specifications as described in the EA.

The project record also contains two Responses to Comments (RTC) that also discuss the issue of water quality (RTC 20-2 and 29-3). Both commenters raised concerns about the project's effects on Monroe Reservoir and the aquatic environment. The responses adequately address why the South Fork of Salt Creek is currently classified as impaired watershed and how the project would proceed with that classification in mind. They also discuss how herbicide is not likely to influence water quality based on the proposed use in the project.

Conclusion: Concerns regarding the proposal's effects on the Monroe Reservoir and drinking water quality are adequately addressed in the EA and the supporting project record.

Indiana Forest Alliance Issue 2

The project as planned and designed will subject endangered, threatened, and rare wildlife species and their habitats to needless immediate harm or threat of harm.

Analysis: The EA Issue 9 acknowledges that prescribed fire can have a short-term impact on wildlife via direct harm or displacement (pp. 39-47). However, the EA also shows that wildlife depend on prescribed fire's outcome of improved oak/hickory forest conditions. Over 500 species of native Lepidoptera (moths and butterflies) rely on the forest type and condition (EA, p. 40) that would result from the project. The analysis in this section recognizes that there will be short- and long-term changes for various wildlife species, but also point to the fact that most of these native wildlife species are associated with disturbance and recovery (EA, pp. 44-45).

Further, the project record contains the Regional Forester Sensitive Species (RFSS) Report for the Houston South Project, which covers the 141 RFSS with appropriate determinations based on their presence in the project area (PR e12). Federally listed threatened and endangered species are also covered in the Biological Evaluation for Threatened and Endangered Species (PR e13). The analysis of effects is appropriate for evaluating federally listed species and the proper determinations have been made per the requirements of the Endangered Species Act (ESA) Section 7(a) 2. The record also documents that the Responsible Official sent a letter to the U.S. Fish and Wildlife Service (USFWS) with the evaluation and determination of effects to complete the ESA requirement (PR c14 and c15). This letter documents that the Houston South Project complies with the Hoosier National Forest Plan Biological Opinion and Incidental Take of Indiana Bat (PR c14) and addresses northern long-eared bat compliance with the ESA 4(d) rule governing actions affecting the species. The USFWS has concurred with Forest's evaluation and determination of effects.

Conclusion: The EA acknowledges that some short- and long-term damage or loss of habitat may occur from the Houston South Project. However, it also documents that the actions may be benign or even beneficial to hundreds of species of native wildlife (include rare and declining species) that require the habitat conditions proposed in the project (EA, pp. 39-47). Hence, it acknowledges the trade-offs and benefits to wildlife. Further, the project record documents the effects to RFSS and shows compliance with the ESA (EA, pp. 68-72). Hence, the record indicates that this objection point was adequately addressed.

Indiana Forest Alliance Issue 3

The project will degrade values of the area that make it geographically unique.

Analysis: See Ann Deutch Issue 1 response above for a discussion of visual values.

The project would temporarily interrupt some experiences for recreationists in a limited manner. About 14.5 miles of trail would be affected by intermittent closures during timber sales. Approximately 11.5 miles of trails would be affected by silviculture treatments, and another 3 miles may be affected by skidding and hauling timber. However, the entire 14.5 miles of trails would not be closed and affected at the same time and those closures would be temporary. Closures for implementation of prescribed fires would also be temporary, approximately five days at a time or less, but this would only occur during the active time of burning and for a short period afterwards to ensure public safety (EA, p. 31). Additionally, not all trails and trail segments would be affected simultaneously (EA, p. 28).

Some trails may be converted to system or temporary road. Approximately 1 mile of road with attached trail would be decommissioned and returned to trail-only status. Roads constructed on

designated trails would be returned to their previous, or an improved, condition following expiration of road use. Some trail segment relocation may occur to more suitable areas, and this would improve long-term trail conditions and recreational experiences (EA, p. 29).

As the EA states, "Although silvicultural treatments and prescribed burns would negatively affect trail use and other recreational activities in the project area, the long-term benefit of restoring early successional habitat and the regeneration of oak and hickory trees substantiates the need for short term impacts to recreation" (p. 30). The Forest acknowledges that the project will cause some negative effects to recreation, but in the long run the project will be best for forest health. Pages 28-34 of the EA contain a thorough description of how the project would affect trails. Alternative trails for use during closures are also listed in the EA to accommodate some inconvenience to recreationists.

Two undersized culverts and one undersized concrete structure would be replaced by appropriately sized Aquatic Organism Passages (AOPs). The current structures obstruct upstream passage of aquatic organisms and natural materials. The AOPs would allow for more natural flow, which would also decrease bank erosion and mitigate channel incision. Approximately 14 miles of upstream habitat would be improved through implementation of these AOPs (EA, p. 13).

The location of these AOPs as described in the EA would be on Tower Ridge Road at Combs Branch (not Combs Creek as stated in the objection), County Road 825 North at Callahan Branch, and County Road 980 West at a tributary to Tipton Creek. The AOPs are located within the South Fork Salt Creek Watershed (EA, p. 13). There would be approximately four acres disturbed during the construction of the AOPs. Watershed restoration techniques would occur to repair head cut and gullying taking place in the project area. Because the sections being rehabilitated are small, restoration would have minimal disturbance. (EA, p. 26).

Conclusion: As with any project, there would be some disturbances and inconveniences, but they would be temporary in nature, and recreationists would still have the opportunity to use this area. The proposal of the three AOPs appears to be thoroughly described in the project record.

Indiana Forest Alliance Issue 4

The Forest Service failed to examine alternatives to this project that could achieve the project's objectives on Hoosier National Forest lands while avoiding activities that threaten the water quality of Monroe Reservoir.

Analysis: The EA recognized the issue of water quality and Monroe Reservoir and addressed those concerns via implementation of Forest Plan Standards and Guidelines, BMPs for water

quality, and design criteria with commensurate monitoring (pp. 14-27, 80-83). See Indiana Forest Alliance Issue 1 response, in this letter, for additional information on how the proposed action (including the use of such mitigation measures and design criteria) adequately addressed water quality and sedimentation concerns to the South Fork Salt Creek HUC 10 watershed and Monroe Reservoir downstream.

Pertaining to the need for more alternatives, public scoping did not drive a new alternative that meets the need for action in the Houston South Project area. The project is consistent with the Forest Plan Area 2.8 objectives (PR bb78, RTC 53-5, 62-4, and 64-6). Extensive public scoping was conducted for the project, and over 90 comments did not raise any new issues not already identified and addressed by the Interdisciplinary Team in the EA (DDN/FONSI-corrected, p. 3).

Conclusion: The EA and project record adequately responded to and considered the concerns raised with regards to water quality and the Monroe Reservoir (see Indiana Forest Alliance Issue 1 response).

As it pertains to need for alternatives beyond no action and the proposed action, the RTC and DDN/FONSI both indicate that extensive scoping was conducted and no new issues beyond those already identified in the EA arose that met the need for action. Hence, there is no need for a further range of alternatives.

Monroe County Commissioners Issue 1

The degree of risk introduced by the project for soil erosion and water contamination of our drinking water is simply not acceptable, particularly given large amounts of manageable Hoosier National Forest land located outside of the surface drinking water watershed.

Analysis: The EA recognized the issue of water quality and Monroe Reservoir and addressed the concerns via implementation of Forest Plan Standards and Guidelines, Best Management Practices (BMPs) for water quality, and design criteria with commensurate monitoring (pp. 14-27, 80-83). See Indiana Forest Alliance Issue 1 response, in this letter, for additional information on how the proposed action (including the use of such mitigation measures and design criteria) adequately addressed water quality and sedimentation concerns to the South Fork Salt Creek HUC 10 watershed and Monroe Reservoir downstream.

Pertaining to the need for more alternatives, public scoping did not drive a new alternative that meets the need for action in the Houston South Project area. The project is consistent with the Forest Plan Area 2.8 objectives (PR bb78, RTC 53-5, 62-4, and 64-6). Extensive public scoping was conducted for the project, and over 90 comments did not raise any new issues not already identified and addressed by the Interdisciplinary Team in the EA (DDN/FONSI-corrected, p. 3).

Conclusion: The EA and project record adequately address the concerns raised concerning water quality and Monroe Reservoir (see Indiana Forest Alliance Issue 1 response).

As it pertains to need for alternatives beyond no action and the proposed action, the RTC and DDN/FONSI both indicate that extensive scoping was conducted and no new issues beyond those already identified in the EA arose that met the need for action. Hence, there is no need for a further range of alternatives.

Monroe County Commissioners Issue 2 and Issue 3

The Forest Service attempts to marginalize the project's contribution to carbon emissions. The Forest Service does not address the cumulative effects of sedimentation and nutrient runoff or climate change.

Analysis: The issue of the project's contribution to carbon emissions was not raised by the objector during the opportunities to comment, and therefore are not eligible issues per 36 CFR 218.10 (4). However, responses to similar objections raised by other objectors are included in this letter.

Regarding cumulative effects of sedimentation and nutrient runoff, see responses to Hoosier Environmental Council Issue 2, Indiana Forest Alliance Issue 1, Dave Simcox Issue 1 contained in this letter.

Regarding climate change, see responses to Monroe County Council Issue 1 and David Simcox Issue 3 contained in this letter.

Conclusion: As the EA concludes that direct and indirect effects will be mitigated within the South Fork Salt Creek HUC 10 watershed, the EA further concludes that there will be no contribution to cumulative effects in the next watershed downstream (Lake Monroe) from that of the project area. The Forest Service has analyzed potential impacts of the proposed actions on climate change. Effects were found to be negligible.

Monroe County Commissioners Issue 4

We remain concerned about and thus object to the use of glyphosate in the project area given that it involves drinking water supplies.

Analysis: This concern appears to be based on a quote ("Much is still to be learned about the fate of glyphosate in soils") that was submitted by the objector during public comments and attributed to Borggaard and Gimsing (2008), "Fate of Glyphosate in Soil and the Possibility of Leaching to Ground and Surface Waters: A Review," in *Pest Management Science*.

The Forest Service does not challenge Borggaard and Gimsing's content or findings, which are consistent with those used in the Houston South EA and supporting record with regard to the movement and decay of glyphosate in varying soils. The full quotation is found in the article's conclusion, where they note that the "review has clearly shown that sorption, degradation and leaching of glyphosate can be very different from soil to soil, and much is still to be learnt about the fate of glyphosate in soils. This variability and uncertainty make it difficult to draw clear and unambiguous conclusions about glyphosate behaviour in soil in general" (p. 453). Borggaard and Gimsing go on to conclude:

> *The occurrence of glyphosate in drainage water does not necessarily mean leaching to groundwater, because deeper soil layers may sorb and even degrade the herbicide before it reaches the groundwater, as is also indicated by rarely reported occurrences of glyphosate in groundwater. However, dissolved and suspended glyphosate in drainage water will run into surface waters together with glyphosate transported by surface runoff (presumably resembling overland phosphate runoff), but very little information is available on this transport or on its influence on surface water quality.* (p. 453)

The application of herbicide proposed in the Houston South Project is regulated and closely managed by a range of state and federal laws, regulation, and policy. Section 1.1 a (Laws and Policy Direction, found on page 4 of the NNIS Plant Control Program Analysis) outlines the laws specific to herbicide use.

The target species are primarily woody vegetation (EA, p. 12). The application methods are described briefly in the EA on page 35 and described in detail in Kochenderfer (2012) (PR g40). Using the prescribed methods, herbicide is applied directly to vegetation with an unmeasurably small amount of herbicide missing the target species. In terms of significance, the context of this activity is limited to the entire area receiving treatment, with the intensity being nearly zero since no measurable amount of herbicide enters the soil.

Overall, by all current estimates, herbicides break down relatively quickly, according to Kochenderfer (2012) (EA, p. 38) and Borggaard and Gimsing (2008) (RTC 67-8). Given the preciseness of application and distance to surface water when considering product type and established 100-foot buffers (EA, p. 80), the probability of any herbicide being retained in soil more than two years (Kochenderfer 2012; Borggaard and Gimsing 2008), ultimately arriving as an intact compound, and contacting surface water is very small.

Conclusion: The EA and supporting record include discussion of the amount and application of glyphosate, making it clear that, overall, the amount of glyphosate that may encounter soils is too small to measure using the methods described.

Monroe County Commissioners Issue 5

The Forest Service is willing to accept risks in a municipal surface drinking water watershed, further threatening the sole source of drinking water for the entire population of Bloomington and much of its suburbs in Monroe County. Why has the Forest Service not seriously considered alternate locations that do not threaten a community's drinking water supply?

Analysis: The EA's proposed application of herbicide is regulated and closely managed by a range of state and federal laws, regulation, and policy. . Section 1.1 a (Laws and Policy Direction, found on page 4 of the NNIS Plant Control Program Analysis) outlines the laws specific to herbicide use.

Unregulated, the context would rely on the intensity, as the range of effects would increase with the amount of herbicide applied and where it was applied. Aerial application and most broadcast applications common to agricultural use are indiscriminate in the amount of herbicide being applied to target species. The unknowns associated with aerial and broadcast application methods drive these alternatives beyond Forest Plan consistency (2006 Forest Plan, Appendix F), which states that "application of pesticides would occur in ways that minimize the dose rate, vapor loss, and drift with the lowest toxicity necessary." Therefore, broadcast application of any sort, including aerial application, is not proposed for the Houston South Project.

The target species are primarily woody vegetation (EA, p. 12). The application methods are described briefly in the EA on page 35 and described in detail in Kochenderfer (2012) (PR g40). Using the prescribed methods, herbicide is applied directly to vegetation with an unmeasurably small amount of herbicide missing the target species. In terms of significance, context of this activity is limited to the entire area receiving treatment, with the intensity being nearly zero since no measurable amount of herbicide enters the soil.

Overall, by all current estimates, herbicides break down relatively quickly, according to Kochenderfer (2012) (EA, p. 38) and Borggaard and Gimsing (2008) (RTC 67-8). Given the preciseness of application and distance to surface water when considering product type and established 100-foot buffers (EA, p. 80), the probability of any herbicide being retained in soil more than two years (Kochenderfer 2012; Borggaard and Gimsing 2008), ultimately arriving as an intact compound, and contacting surface water is very small.

What constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case, according to the Council on Environmental Quality (CEQ) 40 Most Asked Questions. The current analysis (alternative) includes mitigations to the short-term displacement of soils. Alternatives to a proposed activity must meet the need for the proposal. The Houston

South Project proposal includes treatments to improve forest health by restoring a mosaic of forest conditions and reestablishing a historic fire regime that led to suppression of oak-hickory seedlings by a shade-tolerant midstory. The proposed action also includes reduction and removal of nonnative pines planted between 1940 and 1970. Originally planted for soil retention on abandoned agricultural ground, the pines encroached and closed the canopy to the point that native plant species, important to native wildlife, were unable to grow due to a lack of direct sunlight (EA, pp. 7-8). Many publicly proposed alternatives included project elements such as recreation and watershed protection measures that were included in the proposed action. Other alternatives such as relocating the project did not meet the needs identified by specialists in the Preliminary Project Proposal (PR a03).

Project-level analyses are tiered to the Forest Plan for that particular forest. Forest Plans and their associated analysis are prepared at the forest-wide scale to "identify suitability of lands for resource management, provide for obtaining inventory data on the various renewable resources, and soil and water, and identify special conditions or situations involving hazards to the various resources and their relationship to alternate activities" (National Forest Management Act 1976).

Project area boundaries and alternatives are established based on current conditions (EA, p. 3) as compared to the desired conditions for the area indicated in the 2006 Hoosier National Forest Plan. Other project areas across the Forest have been, and could in the future be, considered based on ecological need much like the Houston South Project. The Schedule of Proposed Actions (SOPA) is an ongoing record of projects and proposals that is regularly updated for public review and is available on the Forest Service website. The SOPA for the Hoosier National Forest was most recently updated in January 2020.

Rationale for selecting the project area boundary is outlined in the Houston South EA (p. 15) and is supported in the Preliminary Project Proposal (PR a02). The project area responds directly to the need for the proposal, which is to provide a mosaic of forest conditions dominated by native hardwoods and restore (i.e., mimic) naturally occurring disturbances to hardwood forest ecosystems. The project also includes removal of nonnative pine to allow a return to native vegetation and improve wildlife habitat (EA, p.7).

Conclusion: The EA's proposed action alternative meets the need for the proposal. The Hoosier National Forest's SOPA and project archive webpage provide examples of similar projects outside of the Lake Monroe watershed.

Monroe County Council Issue 1

As we all know, the recent Indiana Climate Change Impact Assessment forecasts a continued increase in extreme rainfall events, making erosion control even a greater challenge. We are

deeply concerned that the FONSI will allow the project to proceed without serious consideration of alternatives that would help protect Lake Monroe from further increased sediment, which contributes to algal blooms.

Analysis: Under normal circumstances, prescribed burning has no effect on soil and water resources due to the thick duff layer that remains after burning. This prevents soil displacement until revegetation occurs, usually in 45 days or less. Prescribed burns are primarily of low intensity and take place during the cool season on the Hoosier National Forest, lessening the loss of nutrients and reducing the overall level of sediment runoff into streams. Because the prescribed burns are usually low in intensity, substantial effects to nutrients and organic matter breakdown are not expected. Forest Plan Guidelines and best management practices (BMPs) will be used for heavy equipment use to avoid and reduce negative impacts (EA, p. 15).

A study measuring the effects of prescribed burning on soil solution chemistry and streamwater quality found that low-intensity, low-severity prescribed burns could restore vegetation structure and composition in mixed pine-hardwood ecosystems without negatively impacting water quality. See page 16 of the EA for more information.

See the EA, pages 81-83, for design measures to mitigate erosion.

Extreme rain amounts were taken into consideration during the analysis. Soil and water analysis took place during a period of increased rain, 6.15 inches more than normal (RTC, p. 34).

The EA is required to describe the proposed action and alternatives that meet the project's need. With no specific number of alternatives required for analysis, the Forest has also analyzed the no-action alternative. See RTC 64-6 on page 76.

Effects from road work are short-term sedimentation of drainages and downhill movement of some earthwork material. Erosion control methods, seeding, and mulching of the disturbed areas would help to minimize these effects.

Conclusion: The Forest takes into account erosion and sedimentation as effects of the proposed action and incorporates many protective measures to reduce this risk. See also responses to Indiana Forest Alliance Issue 1, Monroe County Commissioners Issue 1, Dave Simcox Issue 1 and Karen Smith Issue 4 contained in this letter.

Monroe County Council Issue 2

To date, we have not seen any evidence that alternate locations outside of the Lake Monroe watershed were seriously considered by the FS, Monroe County's population is one of the fastest

growing in the state, and these families depend on the lake for clean drinking water. It is imperative that the FS conduct a thorough analysis of alternatives to the current site to meet the agency's own mandate of not unduly impacting municipal water sources.

Analysis: What constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case, according to the Council on Environmental Quality (CEQ). The current analysis (alternative) includes mitigations to the short-term displacement of soils.

Federal agencies are directed to "implement procedures to make the NEPA process more useful to decisionmakers and the public; to reduce paperwork and the accumulation of extraneous background data; and to emphasize real environmental issues and alternatives" (40 CFR §1500.2 (b)).

The National Forest Management Act (NFMA) of 1976 directs Forests to "(1) provide for multiple use and sustained yield of the products and services obtained therefrom in accordance with the Multiple-Use, Sustained-Yield Act of 1960, and in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness."

Project-level analyses are tiered to the Forest Plan for that particular forest. Forest Plans and their associated analysis are prepared at the forest-wide scale to "identify suitability of lands for resource management, provide for obtaining inventory data on the various renewable resources, and soil and water, and identify special conditions or situations involving hazards to the various resources and their relationship to alternate activities" (NFMA 1976).

Project area boundaries and alternatives are established based on current conditions (EA, p. 3) as compared to the desired conditions for the area indicated in the 2006 Hoosier National Forest Plan. Other project areas across the Forest have been, and in the future could be, considered based on ecological need much like the Houston South Project. The Schedule of Proposed Actions (SOPA) is an ongoing record of projects and proposals that is regularly updated for public review and is available on the Forest Service website. The SOPA for the Hoosier National Forest was most recently updated in January 2020.

Rationale for selecting the project area boundary is outlined in the Houston South EA (p. 15) and is supported in the Preliminary Project Proposal (PR a02). The project area responds directly to the need for the proposal, which is to provide a mosaic of forest conditions dominated by native hardwoods and restore (i.e., mimic) naturally occurring disturbances to hardwood forest ecosystems. The project also includes removal of nonnative pine to allow a return to native vegetation and improve wildlife habitat (EA, p.7).

Conclusion: The EA's proposed action alternative meets the need for the proposal. The Hoosier National Forest's SOPA and project webpage provide examples of similar projects outside of the Lake Monroe watershed.

Monroe County Council Issue 3

The short-term impacts from your project will contribute to more carbon in the atmosphere (as was acknowledged in the draft EA on page 56). Claims made about favorable long-term impacts from logging ignore the preponderance of evidence that mature, unharvested forests retain more carbon over the long term.

Analysis: The project would contribute a small amount of carbon in the atmosphere in the short term, with only a temporary effect on atmospheric carbon levels. There would be no loss of forest land. Stands are being managed to promote growth and productivity, which would in the long run contribute to carbon uptake and storage (EA, p. 17). Carbon in harvested trees would not be released to the atmosphere at the time of harvest, but would be stored in forest products, for varying levels of time depending on the types of products, while the land where they were harvested will regenerate with new, carbon storing trees.

While the objector claims that mature, unharvested forests retain more carbon over the long term, in fact carbon uptake and sequestration rates decline as forests age (Carbon Assessment, p. 18). Stands on the Hoosier National Forest are mostly middle to older aged. If not managed soon, they may become a source of carbon (EA, p. 60).

See the response to David Simcox Issue 3 below for more discussion on climate change and carbon emissions.

Conclusion: The amount of carbon released during this project would be negligible and for a short period of time. The proposed actions would help prevent stands from becoming a source of carbon, and trees lost would be replaced and would begin absorbing carbon.

Bowden Quinn (Sierra Club Hoosier Chapter) Issue 1

The Forest Service has not adequately assessed or addressed the potential detrimental impacts of the project on future global warming and the resulting catastrophes associated with climate change.

Analysis: See responses to Monroe County Council Issue 3 and David Simcox Issue 3.
Conclusion: The Forest Service has analyzed potential impacts of the proposed actions on climate change. Effects were found to be negligible.

Mary Reardon Issue 1

The draft doesn't go far enough in addressing the very critical impact on migrating and ground-nesting birds.

These issues were not raised by the objector during the opportunities to comment, and therefore are not eligible issues per 36 CFR 218.10 (4), although a response to a similar objection can be found in the analysis of Tom Zeller Issue 3 below.

Mary Reardon Issue 2

The draft neglects to address the extreme recreation and economic impacts on horse riders, businesses, and hikers due to closures. The Knobstone Trail is one of our most valued and traversed trails.

Analysis: See response to Indiana Forest Alliance Issue 3 for effects to recreation

Conclusion: The issue of the project's economic impacts on horse riders, business and hikers due to closures was not raised by the objector during the opportunities to comment, and therefore are not eligible issues per 36 CFR 218.10 (4). However, effects to recreational opportunities have been thoroughly addressed in the EA. The limited and temporary nature of trail closures, along with abundant alternative trail mileage in the vicinity make any negative economic impact highly unlikely.

Dave Simcox Issue 1

The Forest Service has not proven that soil erosion and sedimentation will not impact the drinking water supplied by Lake Monroe, the drinking water source for 120,000+ people. The claim that best management practices (BMPs) will prevent significant sediment runoff is not grounded in the facts. Conclusions cannot be drawn from the 1995 moss logging study. A sediment monitoring program is no safeguard for preventing contamination of Lake Monroe.

Analysis: The EA (p. 3) clearly shows that the Houston South Project is not located directly along the shore of the Monroe Reservoir proper. While it falls within the South Fork of Salt Creek that eventually drains to the Monroe Reservoir, there is a significant distance before non-point source pollution (sediment/soil) from the project could arrive in Monroe Reservoir. Regardless, the EA (p. 16) directly addresses impacts from prescribed fire on water quality and soil stabilization. It relies on Elliot and Voss's (2005) (PR g18) evaluation of low-intensity, low-

severity fires in similar settings on water quality and soil stabilization. This study evaluated effects to four sub-watersheds with low-intensity and low-severity fires and two control sub-watersheds with no fire on water quality and soil stability changes. Results of this study found no difference between burned and control sub-watersheds on water quality pertaining to soil solution, sedimentation, and stream chemistry.

The EA further addresses the concern under Issues 2, 3, and 4 pertaining to soil erosion, sedimentation, and nutrient loading from trails and roads used for timber management. The EA acknowledges that road construction/reconstruction, stream/drain crossings, and log landings have the potential to impact soil erosion and water quality (EA, pp. 19-28). The project further discusses the use of design features such as timing restrictions, best management practices (BMPs) for water quality, sediment capture basins, and other measures to prevent soil erosion and water quality (EA, pp. 19-28, 81-83). The Houston South Soil and Water Report, Silviculture Report, and Aquatics Report all evaluated this issue (PR e03, e07, e10, and e11) and concluded that proper monitoring and use of design features/BMPs would limit effects on water quality from this project. These reports and the EA are bolstered by reviewing results from BMP and Water Quality monitoring research found in the supporting documents (PR g05, g31, g36, g47, and g52). All these reference materials show that silviculture is not likely to have any significant influence on Monroe Reservoir, including the Moss 1995 study, but using BMPs and design features ensures it.

The EA also addresses the use of herbicide chemicals and the potential to affect the Salt Creek Watershed (EA, pp. 34-38). This analysis shows that the proposed chemical uses have been evaluated for potential toxicity to soil organisms and aquatic conditions; if applied correctly and within the label as described in the EA, concerns over degradation to drinking water supply are discountable.

The project record also contains two Responses to Comments (RTC) that discuss the issue of water quality (RTC 20-2 and 29-3). Both commenters raised concerns about the project's effects on Monroe Reservoir and the aquatic environment. The responses adequately address why the South Fork of Salt Creek is currently classified as impaired watershed and how the project would proceed with that classification in mind. They also discuss how herbicide is not likely to influence water quality based on the proposed use in the project.

Conclusion: Concerns regarding the impacts of the Houston South Project on erosion, sedimentation, runoff, flooding, and associated pollution to downstream Monroe Reservoir were sufficiently considered in the analysis.

Dave Simcox Issue 2

The Forest Service has not adequately considered the uncertainty of the environmental fate and human health impact by the herbicide glyphosate.

Analysis: The objector alleges that the description of the action of glyphosate is misstated. Federal agencies are directed to follow Federal Plain Language Guidelines including the Plain Writing Act of 2010 5 U.S.C. § 301 (Public Law 111-247), which is intended to enhance public participation and collaboration in the National Environmental Policy Act (NEPA) processes and improve public understanding of government communications. Specialists are directed under the Plain Writing Act to refrain from using excessively technical terms. Additionally, and for the same purpose, 40 CFR §1500.1 emphasizes that "NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail." While the objector is correct in his explanation for glyphosate, the statement in the EA referred to "herbicides used in forestry" (EA, p. 35) and did not specify glyphosate. The statement presented in the EA is a correct general description of herbicides used in forestry. The discussion on the shikimate pathway is true for glyphosate but may not be true for Imazapyr, another herbicide used in forestry that controls plant growth by preventing the synthesis of branched-chain amino acids (The Nature Conservancy 2004).

The objector states that the 2011 SERA assessment in the EA (p. 38) does not mention that glyphosate, when bound to soil particles, can be subsequently released under varied environmental conditions. The statement is true; however, page 38 does not exclude the possibility of glyphosate releasing from soil molecules. The statement is used to help frame risks and to support the need for mitigations proposed throughout the EA. Broadcast application is not proposed (EA, p. 62). Herbicides are proposed to be applied specifically to the trunks and stumps of targeted woody vegetation resulting in a relatively small area of application with little to no herbicide contacting the soil (EA, p. 12). The 2011 SERA assessment is referenced as a whole and is included in the project record (PR g67).

The objector feels that the argument that much more glyphosate is used in croplands, and therefore forestry use should not be of concern, is not a constructive one. Forestry use of glyphosate is not analogous to agricultural use for a variety of reasons. Agricultural use on crops is generally via broadcast method using aircraft and equipment. These methods are indiscriminate in their application within the boundary of the area being treated.

The objector cites a claim by Meyers et al. (2016) that glyphosate's half-life in water and soil is longer than had been previously understood. However, this claim is founded in agricultural applications mentioning "forestry" only briefly and in the context of areas of increasing use. Meyers et al. suggest that the half-life of glyphosate ranges from a few days to up to a year. The EA discloses the half-life of glyphosate as ranging from several weeks to years, but averaging two months (p. 38).

The volume of herbicide application in agricultural and forestry uses are vastly different between ounces and pounds to tons of produce. More important is the target. In agriculture, herbicide in many applications is applied in a significantly different manner to the food crop, a process that is central to the study the objector references. In forestry applications, the product is applied directly to the target plant as described in Nonnative Invasive Species Plant Control Program Analysis (USDA FS 2009a) which is referenced on page 49 of the EA.

The objector believes that the statement "much is still to be learned about the fate of glyphosate in soils" was made by the Forest Service. In fact, this statement and reference—Borggaard and Gimsing (2008), "Fate of Glyphosate in Soil and the Possibility of Leaching to Ground and Surface Waters: A Review," in *Pest Management Science*—were submitted by the objector during public comments.

Conclusion: The objector's allegations of inaccuracies in the EA are unfounded. The document was prepared within guidelines set forth under the Plain Writing Act and Council on Environmental Quality (CEQ) requirements. The document referenced by the objector provides information on glyphosate that is consistent with data considered in the analysis and provides direct support for the EA's analysis. Alternate uses of glyphosate are not relevant to this analysis and are beyond the scope of the project.

Dave Simcox Issue 3

The Forest Service has not considered the project's cumulative impact on climate change and is attempting to marginalize its contribution to carbon emissions. There is no debate that logging results in net carbon release in the short term. No level of carbon release by this project is justifiable. Pointing to other sources of carbon emissions as being more substantial does not relieve the Forest Service from its obligation to address cumulative effects as required by NEPA.

Analysis: The Forest does not marginalize the project's contribution to carbon emission. The EA and project record acknowledge that the project will create an influx of carbon to the atmosphere, but also that this result would be short lived and of a negligible amount. In the Houston South Carbon Effect document, it reads:

> *Mineral soil is an important consideration for long-term carbon storage capacity in soils in most ecosystems. Timber harvesting generally results in a negligible amount of carbon loss from the mineral soils typically found in the United States, particularly when operations are designed in a way that minimizes soil disturbance (Nave et al. 2010, McKinley et al. 2011). Although timber harvest and prescribed fire can also affect the carbon stored in the understory and forest floor organic layer consisting of debris in*

> *various stages of decomposition, the carbon loss would be negligible given it is not stable or long-lived and would be replaced within months to a few years.* (p. 2)

The Forest believes that this small contribution would be justified due to positive effects of the project such as increased resistance to insects, disease, wildfire, or a combination of factors that can reduce carbon storage (EA, p. 56). Carbon emission would be balanced and potentially eliminated by the remaining and newly established trees, which have higher rates of growth and carbon storage. Furthermore, harvesting trees would not result in the immediate release of much of the carbon stored in those trees to the atmosphere. While carbon is being removed from the forest system, wood products can retain the carbon for a variable amount of time (EA, p. 57).

If the project were to not take place, stands will reach a slower growth stage, which may cause the rate of carbon accumulation to slow or decline. As forests age, the rate of carbon uptake and sequestration decreases (Carbon Assessment, p. 18). If the trees are not removed, the forest may eventually transition to become a source a carbon (EA, p. 60).

Some studies suggest that climate change may affect U.S. forests' composition and productivity in ways that prevent them from fully recovering from severe disturbances. This would reduce their ability to take up and store carbon as well as impact their ecosystem functions and services. One goal of the Houston South Project is to reduce stand density, which is a method to increase forest resiliency to climate change. According to the EA, "This project is consistent with options proposed by the IPCC for minimizing the impacts of climate change on forests, thus meeting objectives for both adapting to climate change and mitigating greenhouse gas (GHG) emissions (McKinley et al. 2011)" (EA, p. 57).

The wood and fiber removed during this project would serve a variety of purposes, including energy, and may replace the use of other products that release more GHGs. The IPCC recognizes wood and fiber as renewable resources that can provide lasting climate-related mitigation benefits, which can be increased over time with active management (EA, p. 57).

Conclusion: The Forest has thoroughly analyzed the project's contribution to carbon emissions and climate change and found that its impact would be negligible. Some of the proposed actions would actually help to defend against climate change, balancing the small effects that may stem from the project.

Dave Simcox Issue 4

By issuing an EA and not an Environmental Impact Statement (EIS), the Forest Service is willing to accept risks to a municipal surface drinking water watershed, further threatening the sole source of drinking water for the entire population of Bloomington and much of its suburbs

in Monroe County. The Forest Service should have considered alternate locations that do not threaten a community's drinking water supply and published their analysis. The 2006 EIS did not appear to include this threat to the Lake Monroe watershed.

Analysis: The objector questions the validity of the 2006 Forest Plan in driving the management decision to analyze the Houston South Project area boundary.

The project area boundary was established based on identified needs for treatment discussed in the Preliminary Project Proposal (PR a03) as compared between on-the-ground conditions and desired conditions stated in the Forest Plan (pp. 3-28). The Preliminary Project Proposal (PR a02) provides detailed information behind the rationale for selecting the Houston South Project area. The purpose and need for action are described beginning on page 4 of that document and reference forest-wide guidance that by extension is supported by referenced documents located in the Forest Plan (pp. 72-79).

The Forest Plan EIS analyzed suitable land uses forest-wide and established a range of multiple uses, including standards and guidelines and desired conditions. The Forest Plan is consistent with the National Forest Management Act of 1976 and the Multiple-Use Sustainable-Yield Act. The Forest Plan provides guidance and direction related to forest activities. In doing so, the Forest Plan relies on studies, scientific documents, and other peer-reviewed articles (Forest Plan, pp. 72-79) to support its direction.

The objector believes that the Forest Service should have prepared a full EIS versus an EA to consider alternative locations. Preparation of an EIS is determined by significance rather than project size. The FONSI for the Houston South Project (PR f3.1) describes in detail the rationale of the Responsible Official for not preparing an EIS.

Alternatives to a proposed activity must meet the need for the proposal. In the case of the Houston South EA, the need included treatments to improve forest health by restoring a mosaic of forest conditions and reestablishing a historic fire regime that led to suppression of oak-hickory seedlings by a shade-tolerant midstory. The proposed action also includes reduction and removal of nonnative pines planted between 1940 and 1970. Originally planted for soil retention on abandoned agricultural ground, the pines encroached and closed the canopy to the point that native plant species, important to native wildlife, were unable to grow due to a lack of direct sunlight (EA, pp. 7-8). Many publicly proposed alternatives included project elements such as recreation and watershed protection measures that were included in the proposed action. Other alternatives such as relocating the project did not meet the need for the proposal identified by specialists in the Preliminary Planning Proposal (PR a03).

The EA shall briefly describe the proposed action and alternative(s) that meet the need for action. No specific number of alternatives is required or prescribed (36 CFR § 220.7(b)(2)). The need for the proposal (EA, p. 3) is forest health as described under the current conditions heading. The proposed action (action alternative) responds completely to that need.

The objector believes that by issuing an EA and not an EIS, the Forest Service is willing to accept risks to a municipal surface drinking water watershed. By issuing an EA, the Forest Service does not believe that the proposed project will have significant effects to the environment (DDN/FONSI). Significance as it relates to NEPA is measured in context and intensity of 10 factors of significance that are addressed in the EA.

According to 40 CFR §1508.27, "context" means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. "Intensity" refers to the severity of impact.

With regard to context, the effects of the Houston South Project would lie within the area potentially affected by an activity. Using herbicide as an example, the effects would be the distance that residue could reasonably travel before breaking down to its constituent components. The intensity of the effect would include the volume and toxicity of residual amounts of the herbicide at a given range from the activity.

The application of herbicide proposed in the EA is regulated and closely managed by a range of state and federal laws, regulation, and policy. Section 1.1 a (Laws and Policy Direction, found on page 4 of the NNIS Plant Control Program Analysis) outlines the laws specific to herbicide use.

Unregulated, the context would rely on the intensity, as the range of effects would increase with the amount of herbicide applied and where it was applied. Aerial application and most broadcast applications common to agricultural use are indiscriminate in the amount of herbicide applied to target species. The unknowns associated with aerial and broadcast application methods drive these alternatives beyond Forest Plan consistency (Forest Plan, Appendix F), which states that "application of pesticides would occur in ways that minimize the dose rate, vapor loss, and drift with the lowest toxicity necessary." Therefore, broadcast application of any sort, including aerial application, is not proposed for the Houston South Project.

The target species are primarily woody vegetation (EA, p. 12). The application methods are described briefly in the EA on page 35 and described in detail in Kochenderfer (2012) (PR g40).

Using the prescribed methods, herbicide is applied directly to vegetation with an unmeasurably small amount of herbicide missing the target species. In terms of significance, the context of this activity is limited to the entire area receiving treatment, with the intensity being nearly zero since no measurable amount of herbicide enters the soil.

Overall, by all current estimates, herbicides break down relatively quickly (Kochenderfer 2012; EA, p. 38; Borggaard and Gimsing 2008). Given the preciseness of application and distance to surface water when considering product type and established 100-foot buffers (EA, p. 80), the probability of any herbicide being retained in soil more than two years (Kochenderfer 2012; Borggaard and Gimsing 2008) or ultimately arriving as an intact compound and contacting surface water is very small.

The objector claims that the Forest Service has provided no evidence that locations other than Houston South were seriously considered. In fact, the Schedule of Proposed Actions (SOPA) and Forest Project webpage for the Hoosier National Forest provide abundant examples of similar projects outside of the Lake Monroe watershed. The SOPA is an ongoing record of projects and proposals that is regularly updated for public review. The Hoosier National Forest's SOPA was most recently updated in January 2020. Older projects can be found on the Hoosier National Forest project webpage.

Conclusion: The Houston South EA and supporting documents adequately analyze and disclose the effects of the proposed activity and selection of the project area boundary. The Houston South Finding of No Significance clearly states the rationale behind the decision to not prepare an EIS. There are many examples of similar projects that have been implemented recently on the Hoosier National Forest outside of the Lake Monroe watershed.

Dave Simcox Issue 5

The Forest Service prioritizes timber management over the form of outdoor recreation provided by long-distance footpaths. There is no need displace these trails for years in order to "manage" the woods. It is simple enough to create a buffer zone along the Knobstone Trail that would keep the trail from being closed and provide a visual barrier for aesthetics.

Analysis: See the response to Indiana Forest Alliance Issue 3 for more information regarding actions on trails and the effects. Additionally, buffers are not warranted as the Hickory Ridge trails are in the "modification" category of visual quality objectives, per the Forest Plan.

Conclusion: Timber management is necessary to reach desired conditions stated in the Forest Plan. Access to trails would be limited intermittently and temporarily. Recreationists would still

have access to some trails during times of closures. Some trails would even be enhanced by the end of the project.

Karen Smith Issue 1

Given the two-decade span of the project and the many uncertainties reflected in Forest Carbon Assessment for the Hoosier National Forest, the conclusion (FONSI, Intensity #4) that "the anticipated effects of the project are reasonably predictable and therefore the effects are not highly controversial" cannot be defended.

Analysis: See the response to David Simcox Issue 3 above.

Conclusion: The proposed action is expected to contribute negligible amounts of carbon to the atmosphere, resulting in overall negligible contribution to the climate crisis. Actions built into the proposal would help reduce impacts of climate change locally through habitat and ecosystem protection as well as globally by ensuring that the Hoosier National Forest continues to be an active carbon sink.

Karen Smith Issue 2

If glyphosate-based herbicides are used in the project, there are unknowns regarding potential negative impacts on the health of workers exposed to these herbicides.

These issues were not raised by the objector during the opportunities to comment, and therefore are not eligible issues per 36 CFR 218.10 (4). However, herbicide applications are overseen by state licensed applicators with the use of all necessary and required Personal Protective Equipment (PPE). Herbicides would be applied by following the policies and regulations of the Office of the Indiana State Chemist (OISC), and per the direction of Forest Service Manual 2150.3 (2), which directs that "Forest Service pesticide-use activities [will be] in full compliance with applicable Federal laws, regulations, and other authorities including, but not limited to, the Federal Insecticide, Fungicide, and Rodenticide Act, the National Environmental Policy Act, and the Endangered Species Act.

Karen Smith Issue 3

Noise connected with forest management and equipment should be treated as a serious issue and limited wherever possible to avoid negative consequences for wildlife.

Analysis: The EA and supporting documentation acknowledge that there will be negative effects to wildlife from various aspects of the Houston South Project (pp. 39-47, 67-71; PR e12 and

e13). The EA and supporting specialist reports reviewed the proposed effects on Federal listed species and Regional Forester Sensitive Species and determined a range of effects that may occur to these species. These analyses anticipate short-term negative effects while noting that implementation would also benefit many species of concern. For instance, ruffed grouse requires early successional forest conditions as sustaining habitat (EA, pp. 39-47, 67-71) and is a species of special concern in Indiana with its precipitous population decline in the state and the Hoosier National Forest. The project would improve habitat by creating early successional habitat from timber harvest and subsequent forest regeneration. As with all wildlife, there is a trade-off between short-term displacements during project implementation with longer-term gains from the outcome. The EA's purpose and need (pp. 5-11) describe the loss of this habitat from maturation of the current forest condition and the recovery that would result from project implementation.

Further, the EA (p. 40) notes that the current change of forest types from oak/hickory to maple/beech will negatively impact native wildlife such as Lepidoptera (butterflies) and migratory birds. Hence, although some individuals or species may be negatively impacted during implementation, the resulting outcome is expected to improve habitat in the long term for these and other native wildlife species. Design criteria would be implemented for wildlife via the Forest Plan's implementation guidance as well as EA design measures (pp. 80-83). Although not every design measure is specific to wildlife, implementing them would help reduce or prevent negative effects to wildlife.

The RTC (69-4, p. 106) noted that noise from timber and other associated disturbances would be of short duration and temporary. Further, the Forest Plan (pp. 3-306) acknowledges that noise is common across the Hoosier National Forest from an array of sources and is most concentrated near public roadways and developed areas. Hence, wildlife is already exposed to anthropogenic-derived noise from human activities and has either adapted to it or has relocated to areas with tolerable levels (RTC 69-4, p. 106).

Conclusion: The EA and supporting record acknowledge that some of the Houston South Project's actions may cause short-term disturbance to wildlife. However, these negative effects would be mitigated with design measures, and the long-term outcome would benefit wildlife by improving habitat and forest conditions for species of concern or native species.

Karen Smith Issue 4

If best management practices (BMPs) aren't properly implemented or aren't effective, and if BMP monitoring happens only once a year, a great deal of irreversible damage may be done to Lake Monroe water quality before forest staff are aware of the problem.

Analysis: The EA addresses the concern under Issues 2, 3, and 4 pertaining to soil erosion, sedimentation and nutrient loading from trails and roads used for timber management. The FEA acknowledges that road construction/reconstruction, stream/drain crossings, and log landings have the potential to impact soil erosion and water quality (PR, f2, FEA pages19-28). The project further discusses the use of design features such as timing restrictions, Best Management Practices (BMP's) for water quality, sediment capture basins and other measures to prevent soil erosion and water quality (PR, f2. FEIS pages 19-28 and 81 to 83). The Houston South Soil and Water Report, Silviculture Report and Aquatics report all evaluated this issue (PR, e 03, 07,10, and 11) and concluded with proper monitoring and use of design features/BMP's there would be limited effects to water quality from this project. These reports and FEA are bolstered by reviewing results from BMP and Water Quality monitoring research found in the supporting documents (PR, g 05, 31, 36 and 47). All these reference materials show that silviculture is not likely to have any significant influence on Monroe Reservoir, but using BMP's and design features ensures such.

To ensure that the BMP's, design measures and Forest Plan Guidance is carried out as preventive and mitigation measures proposed in the Houston South Project, the Hoosier National Forest has a staff of Timber Sale Administrators and Harvest Inspectors that oversee implementation of timber activities (PR, bb78_30d Response to Comments,69-8 and 29-5 page34 and 111). They inspect activities to ensure that requirements of the site(s) are being implemented and maintained during active operation. This staff visits the site on a frequent basis to ensure compliance so monitoring is more frequent than once a year as suggested by the Commenter.

Conclusion: Concerns regarding the impacts of to Lake Monroe Water quality and lack of monitoring are addressed in the project record. Use of BMPs, design measures and Forest Plan guidance is addressed and monitoring will occur by Timber Sale Administration and other Forest Staff on a more frequent basis than noted by the Commenter.

Tom Zeller Issue 1

The project will certainly increase erosion of sediment into Monroe Reservoir and the EA does not provide meaningful estimate of how much sediment will result. Nor is there a plan of action if indeed the four water monitoring sites show a significant increase in stage, discharge, or turbidity.

Analysis: The EA further addresses the concern under Issues 2, 3, and 4 pertaining to soil erosion, sedimentation, and nutrient-loading from trails and roads used for timber management. The EA acknowledges that road construction/reconstruction, stream/drain crossings, and log landings have the potential to impact soil erosion and water quality (pp. 19-28). The project further discusses the use of design features such as timing restrictions, Best Management

Practices (BMPs) for water quality, sediment capture basins, and other measures to prevent soil erosion and water quality (pp. 19-28, 81-83). The Houston South Soil and Water Report, Silviculture Report, and Aquatics Report all evaluated this issue (PR, e03, e07, e10, and e11). These analyses concluded that with proper monitoring and use of design features/BMPs, this project would have limited effects on water quality. These reports and the EA are bolstered by reviewing results from BMP and Water Quality monitoring research found in the supporting documents (PR g05, g31, g36, and g47). All these reference materials show that silviculture is not likely to have any significant influence on Monroe Reservoir and that using BMPs and design features ensures such.

To ensure that BMPs, design measures, and Forest Plan guidance are carried out as proposed, the Hoosier National Forest has a staff of timber sale administrators and harvest inspectors that oversee implementation of timber and associated activities (RTC 69-8 and 29-5, pp. 34 and 111). They inspect activities to ensure that contract requirements of the active site(s) are implemented and maintained during active operation. This staff visits the site frequently to ensure compliance.

Conclusion: The project record addresses concerns regarding impacts to Lake Monroe water quality and lack of monitoring. Use of BMPs, design measures, and Forest Plan guidance is discussed, and monitoring by timber sale administration and other Forest staff will take place on a frequent basis.

Tom Zeller Issue 2

The Forest Service's response that the proposed action is consistent with the 2006 Forest Plan does not directly address the agency's continued bias toward and its invention of new narratives to support timber harvest.

Analysis: Management of timber stands is an important tool to ensure that the Forest will continue to provide resources for all species and forest users.

Consistency with the Forest Plan includes recognizing the interdependency of ecological resources. The need for the Houston South Project directly connects long-term projections and trends outlined in the Forest Plan (p. B-9) and supported by analysis prepared for its Environmental Impact Statement (EIS, pp. 2-39). Peer-reviewed documents and studies supporting this strategy are listed in Chapter 7 of the EIS.

Forest Plan direction provides management goals, desired conditions, objectives, standards and guidelines, and an overview of management practices expected to be used to move resources toward the desired condition (EIS, pp. 1-4). The Houston South EA describes a desired

condition for the project area (p. 6) that is consistent with the desired conditions in the Forest Plan (pp. 3-28) and that is further supported by Chapter 3 of the EIS (pp. 3-81). The purpose of timber harvest, as described in the EA, includes management of vegetative communities to maintain current vegetative species diversity, which in turn supports native wildlife and other resources.

Conclusion: The EA is consistent with the Forest Plan, and there is no new or otherwise created information not described or supported in the Forest Plan.

Tom Zeller Issue 3

The Forest Service fails to recognize the negative effects on some of the ecosystem's inhabitants such as amphibians, small mammals, insects, and ground-nesting birds. The Forest Service maintains that the existing oak-hickory forest is the result of near-constant and nearly complete fire-based management by Native Americans. While certainly some natural fires must have occurred, there is little or no strong evidence that such comprehensive management by Native Americans occurred with such regularity and on a scale that would essentially create the modern Hoosier National Forest, and frankly I find this narrative to be unlikely.

Analysis: The EA addressed this concern about negative effects on some of the ecosystem's inhabitants such as amphibians, small mammals, insects, and ground-nesting birds. On page 7, the EA discusses the need to open up the forest condition and remove the nonnative pine to improve habitat for early successional wildlife species such as the ruffed grouse and the American woodcock. Both are species of special conservation concern and ground-nesting birds. On page 13, the EA notes that implementing Aquatic Organism Passage (AOP) projects would improve 14 miles of stream habitat and enhance capacity for amphibians and other aquatic resources to move within the stream system. On page 15, the EA addresses prescribed fire effects on the forest floor habitat conditions, noting that low-intensity/low-severity fire would limit the loss of forest floor habitat.

Additionally, some of the specific species discussed in the project record include the following: Issue 9 (EA, pp. 39-40) recognizes that over 534 species of Lepidoptera (moths and butterflies) rely on the oak forest for food and shelter, which is being lost to smooth bark species such as sugar maple and beech. This is supported by reference material in the project record (g 09). The EA documents that the Allegheny wood rat is not present in the project area and would not be affected. Henslow sparrow does not currently have suitable habitat in the project area, and burning would have no effect. Cerulean warbler may exist within the project area but has ample adjacent habitat for refugia from project activities. Timber rattlesnake is not known in the project area but burn timing would be used during hibernation to avoid any possible effects (EA, p. 44). Issue 9 notes that the green salamander and four-toed salamander do not exist within the

project area due to lack of habitat and isolated populations. However, the AOP and vernal pool project aspects would improve conditions for these species (EA, p. 45). West Virginia white and monarch butterflies may both exist in the project area (EA, pp. 45-46). While there could be some short-term negative effects from the project, they are not expected to significantly impact either species due to the amount of habitat affected at any given time. No karst habitat species exist in the project are and therefore would not be affected (EA, p. 46). Further, the EA addresses the effects to Federally listed threatened and endangered species (pp. 67-71).

The EA's analysis is supported by references in the project record pertaining to the need for action and resulting potential effects to wildlife (PR g06, 08, 09, 14b, and 47).

The issue of fire frequency and Native Americans' role is addressed across the project record. The Forest Plan EIS addresses the historical context in multiple places, including the role of Native Americans, bison, passenger pigeon, and European settlers in creating the current landscape (pp. 3-74–3-77, 3-232–3-235). The EA acknowledges the loss of oak-hickory forest from lack of disturbance and the need for action (pp. 3 and 7). The project record includes numerous references on the role of disturbance, including the historical role of Native Americans (PR g01, 02, 14, 19, 22, 23, 36, 38, 44, and 57). These reference materials include clear scientific evidence that fire and Native Americans played a significant role in sustaining oak-hickory forests on what is now the Hoosier National Forest and Houston South Project Area.

Conclusion: Concerns regarding this project's negative effects to wildlife have been sufficiently addressed. The EA acknowledges there may be some short-term negative effects from timber management and prescribed fire. However, many species are either not present in the project area or would potentially gain long-term benefits from the project.

Further, the project record, Forest Plan EIS, and Houston South EA provide ample evidence of the role of Native Americans in sustaining the Hoosier National Forest's oak-hickory forests (including in the project area).

Tom Zeller Issue 4

The amount of carbon held in storage out of the atmosphere matters most. Consideration of longer-term benefits of the new forest are irrelevant as carbon emissions must be substantially curbed in the next two decades to avert a worldwide crisis.

Analysis: See responses to Monroe County Council Issue 3 and David Simcox Issue 3 above.
Conclusion: The carbon initially released into the atmosphere due to this project would be of a negligible amount and short-lived. Carbon would continue to be absorbed by the trees

remaining, and new trees would eventually take the place of those lost and would absorb carbon at higher rates.

Tom Zeller Issue 5

The Forest Service's definition of fragmentation as meaning forest surrounded by areas of development misses the point of the argument. Cow birds looking to parasitize a neo-tropical warbler's nest are looking for access to canopied forest via its edge. That edge is created by timbering, whether the newly harvested areas that surround the canopied old forest are developed or left to grow a new forest. The end result is a remarkably high parasitization of the neotropical warbler's nest and resulting reduction in reproduction success.

Analysis: The Forest Plan EIS, to which this project is tiered, addresses habitat fragmentation in Forest Plan Alternatives. It recognizes that forest fragmentation can both positively and negatively affect songbirds (including neotropical migrants). Negative effects are caused by nest parasitism and predation, while management action can help create new habitat conditions resulting in positive effects. It also notes that fragmentation from forest management is not likely to influence species richness but may alter abundance and distribution as birds move to more suitable surrounding habitat (EIS, pp. 3-89–3-90, 3-95, and 3-98).

The Houston South Project reviewed the effects to birds of conservation concern (state listed, or special concern) that reside or have habitat in the current project area and concluded that cerulean warbler (a mature forest bird species) could be impacted by the project (PR, e12 RFSS.doc). The EA addresses disturbance to wildlife in Issue 9 (pp. 42-44). Interesting to note is that the brown-headed cowbird, the major nest-parasitizing species, has declined in abundance in recent years (PR e12, p. 8). A review of recent bird surveys (2018) in recently timber-harvested areas on the Hoosier National Forest does not mention the detection of brown-headed cowbird (PR, g16b, p. 7) as the objector suggests. A letter from the American Bird Conservancy for the Houston South Project indicates that the project will benefit both cerulean warbler and prairie warbler (PR, bb_32, ABC RTC) and provides no mention of concerns for nest parasitism or loss/reduced reproductive success for birds. In the RTC, the Forest pointed to a study finding that such concerns are not often associated with extensively forested areas but rather with residential or other more intense development areas (PR, bb78_30day N & C. 46-12). Hence, while acknowledging that fragmentation can be detrimental to nest success and reproduction, the Forest found that effects would range from limited negative impacts on habitat to potential benefits for some bird species of concern.

Conclusion: Concerns regarding the Houston South Project's impact on nest parasitism and reproduction for neotropical warblers have been adequately considered.

Tom Zeller Issue 6

The Forest Service refuses to recognize that an unmanaged forest could possibly be a healthy and self-sustaining forest.

Analysis: The Houston South Project would help to guide forest management to accomplish the Forest Plan goal of maintaining and restoring sustainable ecosystems. In the project area, there are no stands in the 0-9-year age class. The Forest Plan goal of 4-12% of early successional forest habitat is not being met. There is a lack of oak regeneration. The canopy is dominated by oaks, but their inability to compete with shade-tolerant species raises concern regarding the sustainability of the oak ecosystem (EA, p. 6). The Forest Plan also states that without silvicultural treatments, the forest will suffer from oak decline (EA, p. 3-4).

There are about 500 acres of nonnative pine in the project area. The pines do not provide as suitable an environment as native species and support less biodiversity (EA, p. 4). Management Area 2.8, where most of the project would take place, is primarily managed for plant and animal diversity. Timber harvest is a management tool used for this (EA, p. 6).

Conclusion: While it is possible for an unmanaged forest to be healthy and self-sustaining, in this case the proposed actions and the project as a whole are justified because management is needed to move the project area toward the Forest Plan's desired conditions. Additionally, failure to implement this project would not lead a forest landscape that in unmanaged or not impacted by human activity. A legacy of historic land use; the loss of historic native species from the landscape; climate change; multiple invasive species; a landscape fragmented by roads, trails, houses and agricultural fields; significant levels of recreation uses; and other human pressures have and will continue to impact the forest. Implementation of this project would help our forests be more resilient to these many stressors. In fact, for various reasons, management actions of the types proposed in the EA and DDN only occur on a limited portion of the National Forest, with much of the Forest going "unmanaged" from this standpoint.

Conclusion

As specified at 36 CFR 218.11 (b), I must provide a written response to objections; however, this response need not be point-by-point. This letter satisfies the requirements of 36 CFR 218.11, Resolution of Objections.

I have reviewed the project in light of the objection issues and find the responsible official has considered and, where needed, documented responses to these comments. These are all in the project record. I do not find the need for instructions.

In conclusion, I have reviewed your assertions that the project violates various environmental laws, regulations, policies, and the Forest Plan. My review finds that the project is in compliance with all applicable laws, regulations and policies, and with the Forest Plan. My review constitutes the final administrative determination of the Department of Agriculture; no further review from any other Forest Service or Department of Agriculture official of my written response to your objection is available (36 CFR 218.11(b)(2)). The responsible official may sign the Decision Notice for this project.

Sincerely,

MICHAEL CHAVEAS
Forest Supervisor