
LAKE SHELBYVILLE MASTER PLAN

**KASKASKIA RIVER WATERSHED
SHELBYVILLE ILLINOIS**

APPENDIX A – ENVIRONMENTAL ASSESSMENT



**US Army Corps
of Engineers**
St. Louis District

ENVIRONMENTAL ASSESSMENT WITH DRAFT FINDING OF NO SIGNIFICANT IMPACT

**Lake Shelbyville, Shelby and Moultrie Counties, Illinois,
Timber Stand Improvement Management Strategies and
Land-Use Classification Changes,
Master Plan Update 2016**

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Summary

The St. Louis District of the U.S. Army Corps of Engineers (Corps) is proposing to implement timber stand improvement management (TSI) strategies and a land-use classification changes at Lake Shelbyville, Shelby and Moultrie Counties, Illinois. These actions are proposed as part of the 2016 Lake Shelbyville Master Plan Update. The TSI work would be conducted over the next 20 years and would include approximately 8,900 acres spread over 50 compartments. The TSI is intended to insure the long range protection of the forest environment and support the practice of uneven aged forest management and diversification of species within the compartments, establishing a more stable biotic community. The lack of past management/manipulation has led to a degraded overall forest component in even-aged stands, diseased and dying trees, open forest habitats, loss of nesting habitat, loss of filtering capabilities and undesirable tree species regeneration. The fundamental timber management program goals are to improve the reservoir watershed habitats through best management practices that reduce erosion, regenerate and promote forest tree and shrub species that benefit wildlife. Land Classification changes, which include the change at Compartment 50 and addition of Environmentally Sensitive Areas (approximately 50 acres), are included in the Master Plan and this environmental assessment (EA). Land classification changes are considered major federal actions due to the fact that classifications allow or disallow various actions and/or activities. The District will use changes in land classifications to guide management decisions in order to strengthen resource protection. Many of the land classification designations aim to protect and improve land and water resources. Sensitive area classifications, and multiple habitat management, and continued coordination with Federal, State, and local agencies and municipalities will have positive impacts on natural resources on and around Lake Shelbyville.

The Corps has prepared this document in compliance with the National Environmental Policy Act and other relevant federal and state laws and regulations. This EA describes and analyzes the direct, indirect, and cumulative effects for the timber stand improvement and land use classification changes at the project. In addition to the Tentatively Selected Plan (Alternative 2), the Corps also evaluated a No Action alternative. Under the No Action alternative, current management strategies under the 2004 Lake Shelbyville Master Plan would continue to guide management of the project area. No further activities would be implemented to accomplish project goals.

This EA describes and summarizes the anticipated physical, biological, and social impacts of the proposed alternative management measures on the environment. Topics of discussion include, among others, (1) federally threatened and endangered species, (2) existing and anticipated impacts to vegetation, water, and wildlife resources, (3) cultural and socioeconomic components, (5) compliance with relevant laws and regulations, and (6) inter-agency coordination.

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1 Introduction

1.1 Document Structure

The St. Louis District of the U.S. Army Corps of Engineers (Corps) has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the No Action Alternative and the Tentatively Selected Plan. The document is organized into five chapters:

Chapter 1. Purpose and Need for Action:

The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the Corps proposal for achieving that purpose and need. This section also details how the Corps informed the public of the proposal and how the public responded.

Chapter 2. Alternatives, including the Proposed Action:

This chapter provides a more detailed description of the Corps proposed action as well as the No Action alternative. These alternatives were developed based on issues raised by the interdisciplinary team, public and other agencies. This section also provides a summary table of the environmental consequences associated with each alternative.

Chapter 3. Affected Environment and Environmental Consequences:

This chapter describes the environmental effects of implementing the Tentatively Selected Plan and the No Action alternative. This analysis consists of biological, physical, and social resources.

Chapter 4. Consultation and Coordination:

This chapter provides a list of preparers and agencies consulted during the development of the environmental assessment.

1.2 Project Area/Location

Lake Shelbyville is located in Shelby and Moultrie Counties of east-central Illinois. The dam site is located on the Kaskaskia River about one-half mile east of Shelbyville, Illinois. The lake lies approximately 113 miles northeast of St. Louis, Missouri and 54 miles southeast of Springfield, Illinois. Highways providing direct access to the project area include: Illinois Route 16 running east-west on the south side of the project; Illinois Route 121 running generally east-west on the north side of the project; Illinois Route 128 running north-south on the west side of the project; and Illinois Route 32 running north-south on the east side of the project. The location of the lake and adjacent lands along with the regional highway network are presented in Figure 1.

The lake is confined by relatively abrupt slopes and has many timbered arms. The abrupt slopes and the erodible soils have resulted in a shoreline erosion problem impacting project facilities, although this is not impacting pool storage as this erosion was considered during the project design. The maximum relief at the dam site area is

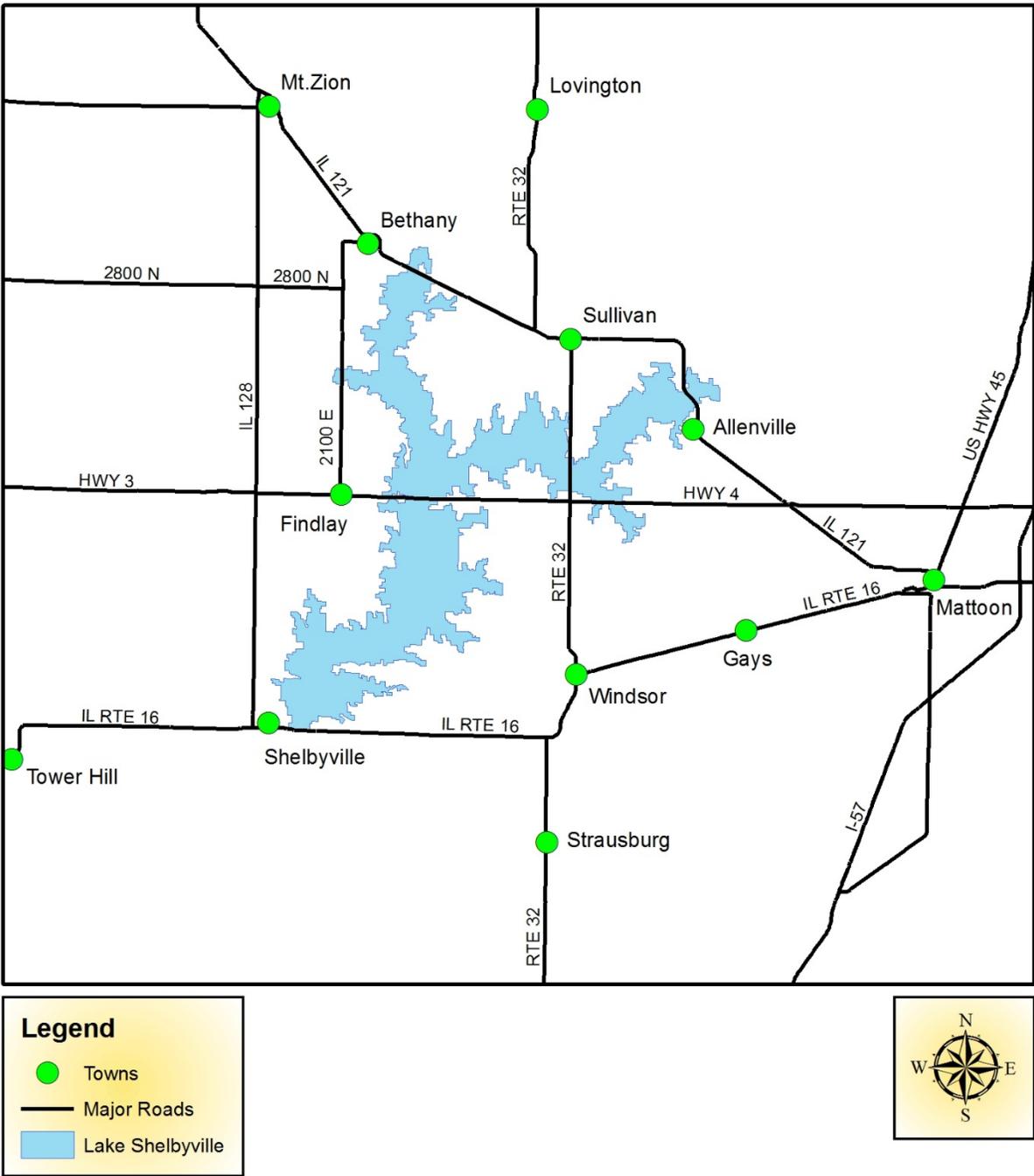


Figure 1. Major road network surrounding Lake Shelbyville

approximately 125 feet. The topography changes from a streambed elevation of about 535 feet National Geodetic vertical Datum (NGVD) to an elevation of 650 to 660 feet NGVD at the bordering uplands. Many small tributaries enter the river above the dam site, and the resulting ravines and valleys form a very irregular shoreline. Most of the valley slopes are covered with some virgin, but primarily second growth forest. The lake has a water surface area of 11,100 acres at joint-use pool elevation 599.7 feet NGVD. The pool at this elevation extends upstream from the dam approximately 20 miles and varies in width at this elevation from 0.25 to 1.0 mile. The depth of water from the valley floor at the dam to joint-use pool elevation is about 53 feet.

Two rivers, the West Okaw and the Kaskaskia, drain into Lake Shelbyville. The watershed is primarily agricultural. The Kaskaskia River begins its journey in Champaign County, while the West Okaw drains farmland from Piatt County.

1.3 Proposed Action

The Corps is proposing to implement land use classification changes (LUCC) and timber stand improvement (TSI) management strategies throughout the project area at Lake Shelbyville (Figures 2 and 3). The TSI work would be conducted over the next 20 years and would include approximately 8,900 acres in 50 separate compartments. The LUCC would take effect at the time the Master Plan is approved. This work is being proposed for the Lake Shelbyville 2016 Master Plan Update and is the Tentatively Selected Plan.

A land use classification change is proposed for Compartment 50 (Figure 3) In addition, three Environmentally Sensitive Areas (Figure 4) are proposed to be added to the Master Plan which are listed on the Illinois Department of Natural Resource's Illinois Natural Area Inventory (INAI). These sites are significant in their biological diversity with unusual concentrations of flora and fauna or being a high quality natural community. Natural areas in the inventory show us what the biological landscape looked like before settlement. These remnant snapshots in time reveal the diversity of the Illinois wilderness. The three areas are:

- Coneflower Hill Prairie - a five-acre parcel within Kaskaskia Unit, State Fish & Wildlife Management Area
- West Okaw Biologically Significant Stream - part of West Okaw River is located within West Okaw Unit, State Fish & Wildlife Management Area, and north of Rte. 121 to the wildlife area boundary.
- Capel Hill Prairie - a two-acre hill prairie patch within Wolf Creek State Park.

1.4 Purpose and Need

Master Plans are periodically updated to ensure focus on three primary components: regional and ecosystem needs, project resource capabilities and sustainability, and expressed public interests and desires. Management of the Lake Shelbyville forest is for

the purpose of protecting, conserving and otherwise improving forest land to be utilized as a recreation, wildlife, watershed, and scenic resource. Forest management techniques insure the long range protection of the forest environment and support the practice of uneven aged forest management and diversification of species within the compartments, establishing a more stable biotic community. Land use classification is for the purpose of revising land use policies based on changes in public use patterns, the need to identify Environmentally Sensitive Areas and other requests on recreational facilities on the project area. Through the implementation of updated Master Plans, project managers can provide responsible and timely protection, conservation, and enhancement of project resources. With the proposed Master Plan Update, this EA is being completed to evaluate existing conditions and potential impacts of proposed changes.

The fundamental timber management program goals are to improve the reservoir watershed habitats through best management practices (BMP's) that reduce erosion, regenerate and promote forest tree and shrub species that benefit wildlife. Special attention would be made to identify and protect cultural/historical resources, water quality, endangered species, sensitive areas, and removing invasive or undesirable species. Each stand would be managed according to a forest inventory, stand prescription and land classification. A 60-70% basal area component is targeted with removal and/or girdling of over-mature trees, inferior trees, and undesirable/off-site tree species. In most cases timber harvests are not feasible due to limited access to the stands and girdling with chainsaws would be utilized to kill the target trees in the canopy. These trees would be left standing.

The Lake Shelbyville Project has a variety of forest cover types ranging from upland hardwood forest to bottomland hardwood forest. These forests provide food and shelter for a variety of game and non-game species. Proper forest stocking, adequate understory growth and herbaceous plants provide excellent watershed filters. This filtering of silt and contaminants helps maintain water quality for fish and other aquatic life. Proper forest management techniques and ecosystem management principles would be used to improve forest and wildlife habitats while minimizing environmental damage. Management activities would be accomplished to meet the Corps objective of total ecosystem management by following specific forest and wildlife management prescriptions developed for individual stands within each compartment. Treatments and activities scheduled for Lake Shelbyville are found in the Project Operations Management Plan (USACE 2016).

1.5 Objectives

TSI

Forest management shall be administered to meet the following long-range objectives: To incorporate a total ecosystem management philosophy.

- To provide for optimum watershed and erosion protection.
- To maintain and improve the native wildlife habitat and healthy indigenous trees for forest cover necessary for the recreational resources.

- To keep the forest in a healthy, vigorous growing condition, free from large outbreaks of insects and diseases.
- To avoid deterioration of the forest resource.
- To assure fully adequate and dependable future resources of readily available timber through sustained yield programs, reforestation, and accepted conservation practices, and to increase the value of such areas for conservation, recreation, and wildlife diversity.
- To provide habitat for the Indiana bat.

LUCC

The proposed land-use classification changes have as their primary objectives:

- To provide a quality outdoor recreation experience which includes an accessible, safe and healthful environment for a diverse population,
- To identify and protect environmentally significant areas on Lake Shelbyville for future generations,
- To provide outdoor recreation opportunities on Corps administered land and water on a sustained basis, and
- To optimize the use of leveraged resources to maintain and provide quality public experiences at Corps water resources projects.

Scoping and Issues

Scoping is an early and open process for identifying the significant issues related to a proposed action. An initial scoping letter was sent to agencies and other stakeholders (see Appendix B of the Master Plan) on 5 November 2015 to invite comment on changes to the Lake Shelbyville Master Plan. In addition, public meetings were held on 17 November 2015 in Sullivan, IL, 18 November at the Lake Shelbyville Visitor Center, and 8 December 2015 at the Americas Best Value Inn, Vandalia, IL. Two additional agencies participated in scoping NEPA requirements for this project including the Illinois Department of Natural Resources (IDNR) and the Natural Resources Conservation Service (NRCS).

As a result, this EA analyzes and summarizes the physical, biological, and social impacts of the proposed TSI management measures and land-use classifications on the environment. In accordance with laws and regulations, relevant resources potentially impacted by the action are addressed.

- Issue 1. Forest Management.**
- Issue 2. Land-Use Classification Change.**
- Issue 2. Indiana Bat Habitat.**
- Issue 3. Wildlife Habitat Quality.**
- Issue 4. Fuel Loading.**

2 Alternatives Including the Proposed Action

This chapter describes the No Action alternative and one action alternative, or Tentatively Selected Plan, for achieving the project's purpose and need, and compares the alternatives in term of their environmental impacts and their achievement of objectives.

2.1 Alternatives dropped from further consideration

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Two alternatives that were analyzed but not carried forward was the City of Shelbyville's request to develop an approximate 2 acre parcel of property for a Recreation Day Use Area. The City of Shelbyville also submitted a request to change the land use classification from low density to high density recreation. There is no public access currently. The Corps utilized five criteria to evaluate these requests.

- (a) **Comply with Headquarters, Division and District policies/regulations** - Phases 2 and 3 of the City's proposal included additional slips for overnight moorage, suggesting private, exclusive use for an adjacent proposed subdivision. This project does not comply with current authority (ER 1130-2-406 SHORELINE MANAGEMENT AT CIVIL WORKS PROJECTS), the St. Louis District Shoreline Management Policy – dated 12 July 1990, and the Mississippi Valley Division Regional Plan.
- (b) **Consistent with project purpose** - The planned pier is inconsistent with the Corps definition of a day use area in a high density recreation area, which states the area as "providing recreation facilities for more than one day use activity." As there is a lack of suitable land for other day use activities, it appears there would be only one day use activity, a courtesy dock for transient boater access. The City's proposal includes future plans for overnight moorage, which is inconsistent with a day use area definition.
- (c) **The topography in the proposed area is steep.** Access to the shoreline is not ADA compliant.
- (d) **Access to the proposed day use area would be through private property.** There is no parking lot or potential for a lot on Corps owned lands in this area.
- (e) **Reasonable connection to the project's natural and other resources** – The development does not provide a reasonable connection to the project's natural and other resources. The topography has ¼ acre of flat ground at the water's edge leading to a steep grass and wooded incline susceptible to erosion from high water. There is not enough land for amenities required for a day use area.

- (f) **Consistent with land use classification** - The proposed area is not compatible as a high density recreation area as previously mentioned. The overall plans do not meet the definition of a day use area, nor is there room to provide those facilities in the future.
- (g) **Demonstrate public interest** - There is no public demand for an additional day use area on Lake Shelbyville. There are three boat ramps within 10 minutes of the area, high density recreation areas, and established marinas under Corps lease that have available slips. Many public comments expressed a desire for the lake to preserve the natural shoreline as much as possible.

To summarize, the proposal does not meet criteria to become a day use area under City of Shelbyville lease. Environmental features including steep topography, small land base, lack of public access, and a narrow cove preclude the area from being suitable. Other factors against the proposal include access not being ADA compliant, close proximity of three other boat access points, public opposition and not complying with Division and District shoreline management policy. In addition, a requirement to determining whether or not the property is available for lease is a “finding that the grant will not interfere with...activities as shown in an approved Master Plan...” (ER405-1-12 paragraph 8-69.b). Because there are currently three marina facilities in operation on the lake, all operating at a capacity of less than 100%, leasing additional property which will eventually provide direct competition to existing facilities, directly contradicts regulation. Therefore, at this time approving another dock facility at the lake is not feasible.

Public scoping and agency coordination did not result in any additional changes to the Master Plan other than the LUCC at Compartment 50, the LUCC of Environmentally Sensitive Areas, and designation of the TSI work proposed across the project area (the Tentatively Selected Plan). Additional changes to the Master Plan did not rise to the level necessary to be in this EA, that is, they are categorically excluded (ER 200-2-2 [9a], dated March 1988). Therefore, only the No Action and Tentatively Selected Plan are considered further.

2.2 Alternative 1: No Action

NEPA requires that in analyzing alternatives to a proposed action a federal agency consider an alternative of “No Action.” This alternative provides a baseline or reference against which to describe environmental effects of the action alternative. Routine maintenance of the existing roads/trails and open land management would continue. Selection of this alternative would not exclude the option for future management in this area.

TSI

No TSI would be conducted on the forested lands of Lake Shelbyville. The No Action alternative would continue to support a degrading forest ecosystem and further diminish watershed filtering capabilities that a more diverse uneven-aged ecosystem would provide. Under this alternative some of the consequences would include: 1) persistence

of undesirable even-aged stands; 2) increased potential for insect and disease infestation in adjacent woodland; 3) continued undesirable tree species regeneration; 4) increased numbers of diseased and dying timber; 5) loss of economic value of salvageable wood products; 5) continued closed-canopy and non-vegetated forest floor; 6) continued lack of diverse wildlife habitat, including browsing and nesting areas.

A No Action alternative decreases overall forest health and habitat quality. Failure to allow sunlight to the forest floor extinguishes the ability for desired tree regeneration and decreases diversity of early succession vegetation that is extremely important for watershed protection. Open forest floors allow for increased runoff by disallowing a roughness factor that removes impurities, accelerates erosion, minimizes nutrient uptake, and increases the speed at which water enters tributaries.

LUCC

Under the No Action alternative, Compartment 50 would remain classified as a Low Density Recreation area and the Environmentally Sensitive Areas would not be protected from various actions and/or activities such as easement requests or future development, nor the conservation of these resources. These lands have minimal development or infrastructure that support passive public recreational use (e.g., fishing, hunting, trails, wildlife viewing, etc.). No future developmental plans for the area would be considered and no timber clearing would be permitted.

2.3 Alternative 2: Full Implementation of Proposed Master Plan Update

With full implementation of the proposed Master Plan Update, two primary actions would be incorporated: 1) project wide Timber Stand Improvements, and 2) Land-Use Classification Changes.

Timber Stand Improvement

TSI in administratively designated natural areas is authorized within the Lake Shelbyville Master Plan, Section 7, Environmental Stewardship and section 8-02, Forest Resources. As described above, the work would be conducted over the next 20 years and would include approximately 8,900 acres in 50 compartments consisting of numerous separate stands (see Figure 2 of this EA for compartment locations).

Implementing TSI is imperative to moving a degraded forest system to a healthy and sustainable system. Present forest conditions and failure to implement management strategies would result in loss of habitat and economic value as listed in the aforementioned no action alternative. TSI activities within this option would 1) increase air flow and light to ground contact for pollination and forest regeneration; 2) create multi-aged or uneven aged timber stands for overall wildlife habitat while increasing watershed protection through enhancement of annual, perennial and woody growth; and 3) create early succession patchwork openings for nesting, escape and thermal cover. More specifically, TSI activities would be conducted using the following guidelines to determine management techniques and treatments within or among stands:

- (a) Forest inventories would be updated to collect data and include stand delineation, species composition, diameter and age class distribution, slope, aspect, current wildlife habitat conditions and presence of unique habitat types.
- (b) Stand Prescriptions would detail specific treatments within each stand to improve habitat conditions including TSI, snag creation, edge feathering, prescribed fire and other habitat manipulation activities. In some cases, due to young stands, old fields, high exotic component in the understory, etc., the prescription may be to take no action at this time. All forested acres in these 50 compartments are covered but it is unlikely that all 8,900 acres would receive TSI.
- (c) Best Management Practices would consist of accepted and designed government and private forest management practices. In the case a timber harvest is warranted, the harvest would be conducted between October 31 and April 1 to avoid any conflict with Indiana bats. These would include directional skidding, using existing road systems to reduce erosion, creation of water bars, and seeding of all haul roads and landings. Skid trails and stream management zones would be delineated prior to logging activities to buffer harvest from drainages, streams, and wetlands. Harvesting would be limited to dry weather and/or frozen conditions only and no digging, excavation, or other subsurface soil alteration would be required or permitted.
- (d) Monitoring regeneration through species dominance would be conducted annually. Desired tree species release practices would be implemented where overstocking of undesirable species occurs. All harvesting activities would be monitored and recorded by Lake Shelbyville Project personnel.
- (e) Emerald Ash Borer (EAB) an invasive forest pest, is currently known in at least 60 counties in IL and include Shelby and Moultrie counties. In 2015, Illinois lifted its quarantine on the movement of cut non-coniferous wood within the state due to the high rate of infestation across the state. No further efforts to monitor and control the pest would be implemented.
- (f) Indiana Bat and Northern Long-Eared Bat Habitat Enhancement would be an integral part of the Tentatively Selected Plan. The use of TSI would improve foraging and roosting habitat and is considered by the U.S. Fish and Wildlife Service (FWS) to be an acceptable practice for improving Indiana bat habitat. Thinning activities would increase travel and allow sunlight to potential roost trees. All wolf trees, dead trees, split trees, trees that have cavities, and trees with exfoliating bark would be favored for retention. If areas are found that have roosts, the areas would be delineated and avoided.

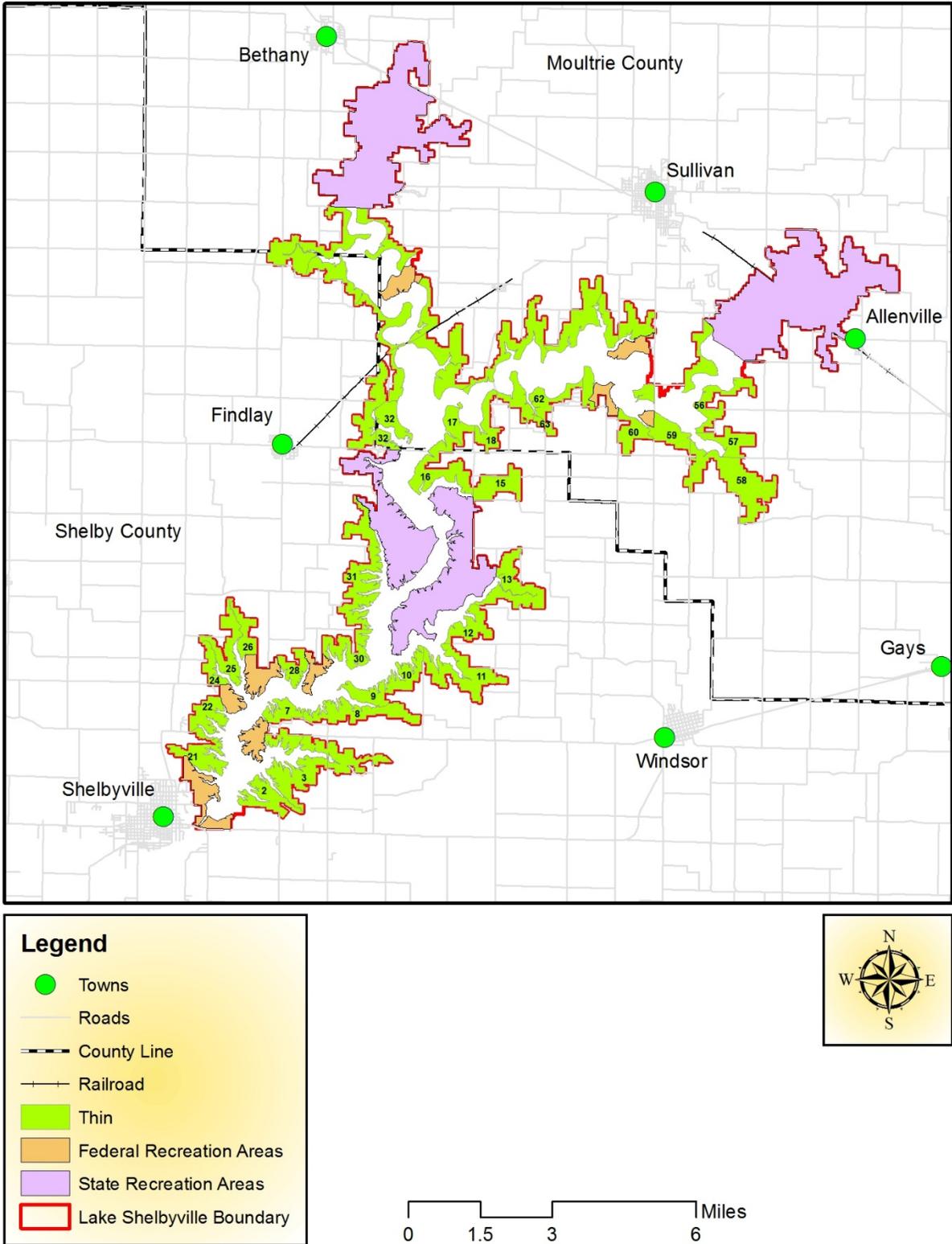


Figure 2. Compartments to be thinned.

Table 1. Compartment treatment schedule by stand.

FY	Compartment	Acres	Prescription
17	2,3	448	Basal Area Reduction
18	7,8	471	Basal Area Reduction
19	9,10,12	402	Basal Area Reduction
20	11	401	Basal Area Reduction
21	5,13	404	Basal Area Reduction
22	15,16	428	Basal Area Reduction
23	17,19,25	478	Basal Area Reduction
24	18,21	466	Basal Area Reduction
25	24,26,28	423	Basal Area Reduction
26	30,32	450	Basal Area Reduction
27	31	583	Basal Area Reduction
28	33,35	442	Basal Area Reduction
29	34,36,37	444	Basal Area Reduction
30	38,40,42,44	473	Basal Area Reduction
31	43,47,48,50	451	Basal Area Reduction
32	45,52	469	Basal Area Reduction
33	46,56	440	Basal Area Reduction
34	4,55,59	451	Basal Area Reduction
35	22,57,58,60	415	Basal Area Reduction
36	61,62,63	298	Basal Area Reduction
Total		8,837	

*Note: all basal area reduction would be evaluated for TSI practices after 10 years.

General Management Techniques

The following management techniques are proposed for the project area:

- (a) All forests would be managed on an uneven-aged, multiple-use, sustained yield and ecosystem management system. Treatments would be based on specific requirements for improvement of forest and wildlife habitats.
- (b) Single Tree Selection is the selective removal of low quality, cull, diseased, over-mature or undesirable trees from a stand to achieve target stocking and wildlife habitat objectives. This technique is a tool used in uneven-aged management to encourage wider distribution of tree diameters, dominant species, age class and enhancement of forest reproduction. Because single tree selection promotes denser stands, frequent re-assessments or inventories are required. These re-assessments allow managers the ability to closely monitor compartments, therefore maintaining healthy forest and wildlife habitats.
- (c) Group selection is a silvicultural technique requiring removal of large groups of trees to enhance regeneration and provide openings for wildlife. Generally, group selections range in size from one-fourth acre to five acres. Group selections on

Lake Shelbyville would not exceed three acres unless adequate justification is provided.

- (d) Stand composition would be based on site-species relationships. Most of the upland forests on Lake Shelbyville contain an oak/hickory component; therefore, these species would be targeted for propagation. Efforts would be made to prevent monocultures, or single species stands.
- (e) Prescribed burning would be used as a tool to help re-establish natural vegetative communities, including open oak/hickory woodlands and accomplish and maintain wildlife habitat. Prescribed fire would also be utilized for vegetation modification and control where these benefits would promote diversity for wildlife habitats. Burn frequency would be dependent on the requirements of the wildlife species, successional stage and fuel loads.
- (f) When wildfire, disease, insects, floods or storms damage extensive acres of quality hardwoods, every attempt would be made to remove these trees by salvage sale. Salvage operations would be performed as soon as practicable after the event to prevent deterioration of wood quality.

Treatments

Specific treatments for each stand within a compartment would be addressed in a prescription. It is essential to note that treatment and its extent would depend on each particular stand and its intended use. Other governing factors include: accessibility, influence zones, economics, weather, development timetable, etc. However, the following priorities generally apply:

- (a) Establishment of suitable forest cover on recreation areas. There is a need for vegetative cover to serve as shade, screening, buffers, erosion control, and wildlife cover. Stands would be thinned as needed to maintain vigor and encourage the propagation of suitable wildlife species.
- (b) Select open areas for reforestation and plant with desirable species.
- (c) Protect steep banks from erosion.
- (d) Develop and maintain populations of desirable wildlife.
- (e) Protect heavy-use areas from degradation.
- (f) Re-establish suitable vegetative cover on areas denuded by overuse and high water.

All treatment of vegetative cover on public land must be guided by the Land Use Classification for each compartment. An understanding of the requirements of a plant community and the limitations set upon it by the soil, water, insects, disease, and

people are essential to any successful change or manipulation. All treatments are to be naturally feasible and not forced through continued maintenance. Potential effects of the TSI are summarized in Table 2.

Table 2. Summary of effects of the proposed TSI by alternative.

Resource	No Action	Tentatively Selected Plan - TSP
Threatened and Endangered Species	Some suitable bat habitat. Would fulfill obligation to USFWS	Improved Indiana and northern long-eared bat habitats. Fulfills obligation to USFWS.
Vegetation	Persistent even-aged stands. Undesirable species composition and non-vegetated forest floor.	Diverse multi-age forest with improved nesting and filtering capabilities.
Water Resources	Continued run-off/sedimentation	Improved filtering, stabilization and roughness characteristics
Wildlife	Low habitat diversity in even-aged stand.	Increased forest diversity would lead to wildlife benefits
Invasive Species Management	Spread of invasive forest pests.	Control spread of invasive forest pests.
Recreation	Safety concerns, increased presence of dead snags.	Improve habitat for quality outdoor experiences.
Soils	Unstable soils creating erosion.	Root mass regeneration promotes soil stabilization.
Noise and Air Quality	No impacts.	Temporary impacts during TSI/harvest and prescribed burns and exotic treatments.
Socioeconomic	Impacts due to loss of important resource.	Stimulation through managed use of renewable resources.

2.4 Land Use Classification Changes

Compartment 50 (Figure 3) - is currently classified as “Low Density Recreation,” which is defined as, “Lands with minimal development or infrastructure that support passive public recreational use (e.g. fishing, hunting, trails, wildlife viewing, etc.). The proposed re-classification of Compartment 50 as “High Density Recreation” is defined as, “Lands developed for intensive recreational activities for the visiting public including day use areas and/or campgrounds. These could include areas for commercial concessions (marinas, comprehensive resorts, etc.), and quasi-public development. Currently, the

northern 24 acres of Compartment 50 is high quality and has been tagged as a potential candidate for inclusion into IDNR's Illinois Natural Area Inventory. The western portion of the compartment and south of the northeast running draw were farmed/pastured in the past and are highly degraded. Any development that takes place in this compartment would be encouraged in these already degraded areas. However, presently there are no plans or proposals for any type of development in Compartment 50, therefore, effects of the classification change on the environment cannot be quantified at this time. If warranted, any future development in Compartment 50 would elicit the need for a supplemental environmental assessment.

Coneflower Hill Prairie and West Okaw Biologically Significant Stream are currently classified as Multiple Resource Management Area/Wildlife Management areas. Capel Hill Prairie is currently classified as High Density Recreation. As mentioned above, these sites are significant in their biological diversity with unusual concentrations of flora and fauna, or being a high quality natural community, which emphasizes the need for re-designation as Environmentally Sensitive Areas. These LUCCs are considered major federal actions because land classifications in the project area allow or disallow various actions and/or activities such as easement requests or future development. Many land classification designations aim to improve land and water resources. Further, these new classified areas would be targeted specifically for protection, conservation and preservation.



Figure 3. Location of Compartment 50.

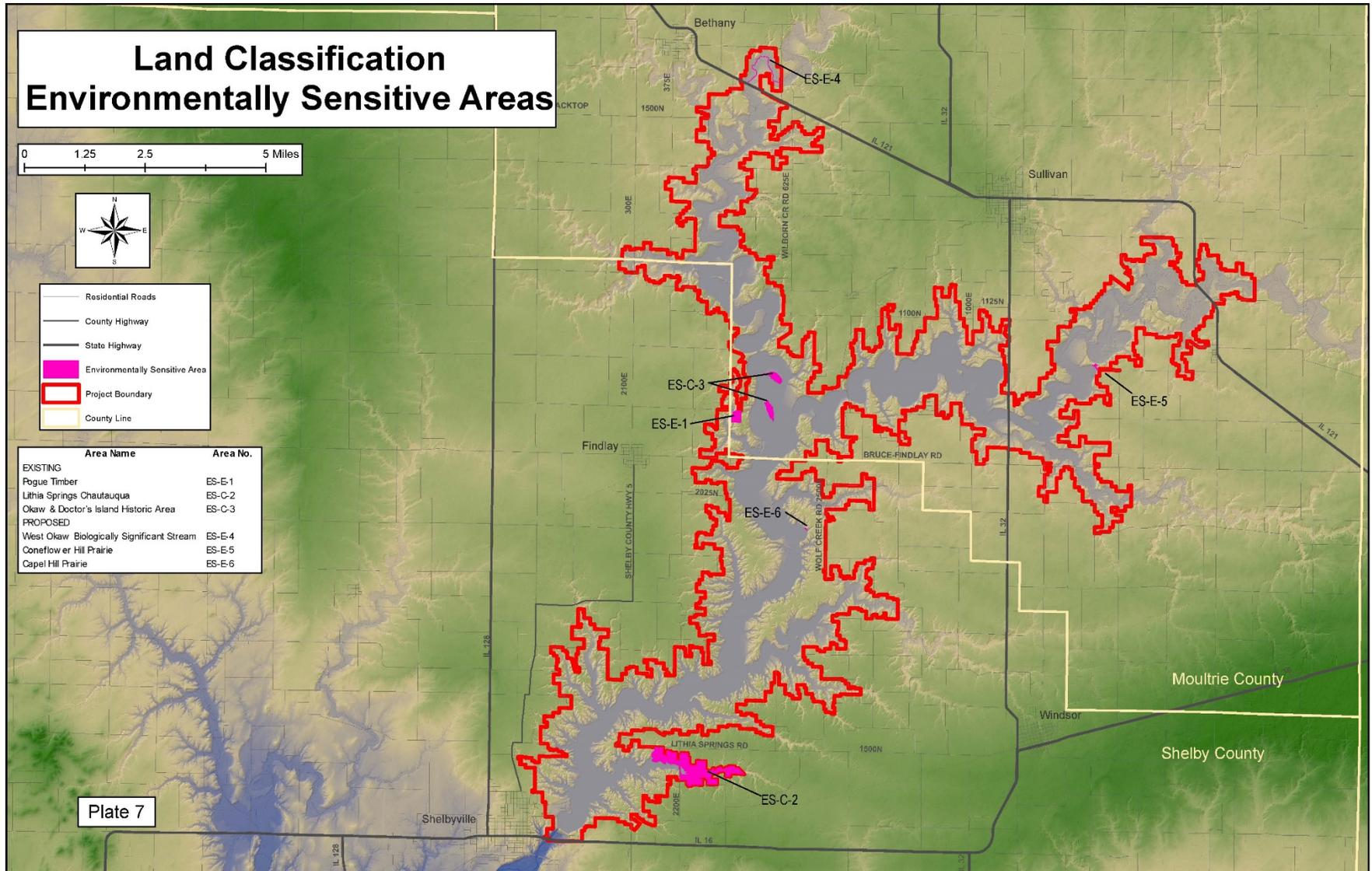


Figure 4. Proposed Environmentally Sensitive Areas

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3 Affected Environment and Environmental Consequences

This chapter summarizes the biological, physical, and social environments of the affected project area relative to the alternatives under consideration. Relevant resources are addressed in terms of their present condition, their projected condition under the No Action alternative and the expected effects of the Tentatively Selected Plan.

General

The forests of Lake Shelbyville are typical of unmanaged woodlands in central Illinois. In the higher quality sites, species composition consists primarily of closed canopy native oak/hickory overstory, sugar maple midstory and a general lack of herbaceous layer or desirable regeneration in the understory with the occasional non-native Amur honeysuckle. Old agricultural fields and/or pastures species composition consists of native shingle oak, honey locust, ash species and black walnut with a typically heavy non-native autumn olive and/or Amur honeysuckle component. Bottomlands consist primarily of native oak species and black walnut on the lower slopes, and American sycamore, cottonwood and willow in the bottoms with limited regeneration due to frequent flooding with long periods of inundation. The frequent flooding keeps these areas relatively Amur honeysuckle free, however, non-native garlic mustard is an issue in most stands. Bottomlands that are inundated for long periods are primarily limited to the odd cottonwood, common buttonbush and willows.

Many benefits are obtainable from the forest at Lake Shelbyville. Among these products are forested watersheds, erosion control, wildlife recreational opportunities, aesthetic beauty, and timber stands. The production of timber is not the ultimate objective at Lake Shelbyville, and as a result, very little timber has been harvested. Personal conversations with prior managers indicate only two firewood sales have taken place since the inception of the lake.

The Forest Cover Act (PL 86-717) approved 6 September 1960, declared it to be the policy of the United States to provide that reservoir areas of projects for flood control, navigation, hydroelectric power development, and other related purposes, owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers, shall be developed and maintained so as to encourage, promote and assure fully adequate and dependable future resources of readily available timber through sustained yield programs, reforestation, and accepted conservation practices, and to increase the value of such areas for conservation, recreation and other beneficial uses; provided, that such development and management shall be accomplished to the extent practicable and compatible with other uses of the project. The law further provides that in order to carry out the above national policy, the Chief of Engineers, under the supervision of the Secretary of the Army, shall provide for the protection and development of forest or other vegetative cover and the establishment and maintenance of other conservation measures on reservoir areas under the Chief of Engineers' jurisdiction, so as to yield the maximum benefit and otherwise improve such areas.

3.1 Threatened and Endangered Species

This section considers any possible effects of TSI activities and LUCC on federally threatened and endangered species.

Existing

In compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, USACE Environmental Compliance Section personnel consulted the U.S. Fish and Wildlife listing of federally threatened or endangered species, currently classified or proposed for classification that may occur in the vicinity of the proposed project (Shelby and Moultrie counties, IL). This list of species was acquired from USFWS website on 1 June 2016 <http://www.fws.gov/midwest/endangered/lists/illinois-spp.html> There is no federally designated critical habitat in the proposed project area. The Biological Assessment (BA) below addresses the federally listed species specific to this proposed project.

Table 3. Federally threatened, endangered, candidate, or proposed species potentially occurring in the Lake Shelbyville project area, Shelby and Moultrie counties, Illinois.

Species	Status	General Habitat
Indiana bat <i>(Myotis sodalis)</i>	Endangered	Roost in trees with loose bark; Hibernacula in caves and mines; Maternity and foraging habitat = small stream corridors with well-developed riparian woods; upland forests
Northern long-eared bat <i>(Myotis septentrionalis)</i>	Threatened	Hibernates in caves and mines – swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests and woods.
Piping plover <i>(Charadrius melodus)</i>	Endangered	May be present in Moultrie County during migration.
Eastern prairie fringed orchid <i>(Platanthera leucophaea)</i>	Threatened	Mesic to wet prairies

Indiana bat - Indiana bats roost in living, injured (e.g., split trunks and broken limbs from lightning strikes or wind), dead or dying trees. Maintaining quality maternity colony roost trees (those trees used by female Indiana bats and their young) is essential to reproductive success and long term recovery goals for this endangered species. Indiana bat roost trees tend to be greater than 3 inches diameter at breast height (DBH; optimally greater than 20 inches DBH) with loose or exfoliating bark. Most important are structural characteristics that provide adequate space for bats to roost. Preferred roost sites are located in forest openings, at the forest edge, or where the overstory canopy allows some sunlight exposure to the roost tree, which is usually within 0.6 miles of water. Indiana bats forage for flying insects (particularly moths) in and around the tree canopy of floodplain, riparian, and upland forests.

Indiana bats are known to use forested and riparian areas for foraging and roosting. Summer habitat requirements for the species are not well defined but the following are considered important: 1) dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas; 2) live trees (such as shagbark hickory and oaks) that have exfoliating bark; 3) stream corridors, riparian areas, and upland woodlots which provide foraging habitat.

Because Indiana bats tend to prefer canopy and mid- and under-stories that are relatively open, forest management practices, such as thinning, are being incorporated into habitat restoration plans for Indiana bats. These more typical forestry practices can be combined with habitat manipulations that are specific to Indiana bats and beneficial to other forest wildlife, such as selection of preferred roost tree species, retention/creation of snags, creation of foraging corridors, and goals for basal area that are more conducive to foraging and increase sun exposure to potential roost trees. Compartment stand prescriptions could easily be tailored to include Indiana bat specific measures.

Northern long-eared bat - The northern long-eared bat is federally listed as a threatened species with a 4(d) rule as of May 2, 2015 (Federal Register/Vol. 81, No. 9/Thursday, January 14, 2016/Rules and Regulations, pgs. 1900-1922). This bat is found across much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. Northern long-eared bats spend winter hibernating in large caves and mines. During summer, this species roosts singly or in colonies underneath bark, in cavities and in crevices of both live and dead trees. Northern long-eared bats seem to be flexible in selecting roosts with bark remaining, cavities, or crevices. Foraging occurs in the interior understory of forests. Forest fragmentation, logging and forest conversion are major threats to the species. One of the primary threats to the northern long-eared bat is the fungal disease, white-nose syndrome, which has killed an estimated 5.5 million cave-hibernating bats in the Northeast, Southeast, Midwest and Canada.

Piping plover - The female lays four eggs in its small, shallow nest lined with pebbles or broken shells. Both parents care for the eggs and chicks. When the chicks hatch, they are able to run about and feed themselves within hours. Piping plovers are migratory birds and occasionally are seen on Illinois shorelines or wetlands. In the spring and summer they breed in northern United States and Canada. There are three locations where piping plovers nest in North America: the shorelines of the Great Lakes, the shores of rivers and lakes in the Northern Great Plains and along the Atlantic Coast. In the fall, plovers migrate south and winter along the coast of the Gulf of Mexico or other southern locations. Piping plovers are listed as endangered due to habitat loss or degradation, nest disturbance, and predation.

Eastern prairie fringed orchid - The eastern prairie fringed orchid occurs in a wide variety of habitats, from mesic prairie to wetlands such as sedge meadows, marsh edges, and even bogs. It requires full sun for optimum growth and flowering and a grassy habitat with little or no woody encroachment. A symbiotic relationship between

the seed and soil fungi, called mycorrhizae, is necessary for seedlings to become established. This fungi helps the seeds assimilate nutrients in the soil.

Blossoms of the orchid often rise just above the height of the surrounding grasses and sedges. The more exposed flower clusters are more likely to be visited by the hawk moth pollinators, though they are also at greater risk of being eaten by white-tailed deer. Seed capsules mature over the growing season and are dispersed by the wind from late August through September. Early decline was due to the loss of habitat, mainly conversion of natural habitats to cropland and pasture. Current decline is mainly due to the loss of habitat from the drainage and development of wetlands. Other reasons for the current decline include succession to woody vegetation, competition from non-native species and over-collection.

Alternative 1: No Action

Many parts of the areas would remain as unsuitable bat habitat. No additional foraging corridors would be created and canopies would remain closed, diminishing restoration of suitable habitat. None of the species are known to occur in the proposed TSI or Environmentally Sensitive Areas.

Alternative 2: Tentatively Selected Plan

Indiana bat –TSI management actions would provide habitat improvements for the Indiana bat. Indiana bat habitat enhancement would be favored where possible through timber thinning (girdling) to create open canopy for travel and bugging areas for a diversity of bat species. Thinning activities would increase travel and allow sunlight to reach potential roost trees. All wolf trees, dead trees, split trees, trees that have cavities and trees with exfoliating bark would be favored for retention. Snags would be created as dictated by habitat type conditions to protect/provide a specific habitat for Indiana bats. Any TSI activities that would occur outside the winter timeframe would utilize chainsaws to girdle the overstory trees in potential Indiana bat habitats to avoid any adverse impacts to bats that may be roosting in the target trees. Currently, no known roosts are located in the Lake Shelbyville area, however, any future areas that are found would be delineated and avoided. Reclassification of sites to Environmentally Sensitive Areas would have no adverse effects on the Indiana bat. Because no trees will be cleared (felled) under the Tentatively Selected Plan, the St. Louis District has determined that the proposed project “*may affect, but is not likely to adversely affect the Indiana bat*”.

Northern long-eared bat - TSI improvements would likely benefit the northern long-eared bat as well. TSI activities would incorporate appropriate avoidance measures, as described above for the Indiana bat. The proposed project would not affect any caves. Reclassification of sites to Environmentally Sensitive Areas would not adversely affect the northern long-eared bat. Thus, the St. Louis District has determined that the proposed project “*may affect, but is not likely to adversely affect the northern long-eared bat*”.

Piping plover and the prairie fringed orchid - The St. Louis District has determined the proposed project would have “*no effect*” on the piping plover or the prairie fringed orchid since neither species are known to occur in the proposed TSI areas or areas proposed to be reclassified as Environmentally Sensitive Areas.

3.2 Vegetation

Existing

Prior to construction, the lower elevations of the basin, generally the portion inundated to form the lake, were dominated by an overstory of pin oak, cottonwood, sycamore and soft maple. The understory was composed of a variety of shrubs and minor associations of grasses.

Remnants of this vegetative association can still be found along uncleared stream channels in the upper reaches of the lake, along the sub-impoundments, and on some lower elevation shoreline slopes. The upland sites are predominately a mixed oak-hickory forest cover type. Typical dominant species found in the overstory are white oak, black oak, northern red oak, post oak, and hickory species. Other species occurring in the overstory are white ash, black walnut, black cherry and sugar maple. The understory is comprised of sugar maple, elm and the occasional flowering dogwood.

Generally, the forests on upland sites are in fair condition. The stands vary in rotational maturity and range from fully to over-stocked with sawtimber size trees.

- (a) The upper slopes of the hillsides above the lake have an oak/hickory association. White oak, northern red oak, black oak, post oak, pignut hickory, shagbark hickory, white ash, and elm are the major species present in the overstory. The understory consists primarily of sugar maple and hickory seedlings and saplings with minor occurrences of shrubs and grasses where sufficient light is available through canopy openings. Oak seedlings are almost nonexistent in these closed canopy stands.
- (b) Numerous old field sites occur along the perimeter of Corps fee lands and on high points of land existing between tributary streams feeding into the lake. These old fields are in various stages of succession. Plant associations vary from weedy growth of grasses and forbs to early successional tree growth of elms, ash, black walnut, Osage-orange, shingle oak, and honey locust on open areas with later successional species of oaks and hickories encroaching from the forested edges. Vegetative management practices vary from tree planting in recreation areas and some old field sites to succession control of other sites by mowing or burning to create wildlife openings. The objective of the wildlife management activities is to achieve and maintain as natural a setting as possible through minimal cultural practices on existing woodlands and by planting tree and shrub species which are beneficial in promoting wildlife populations and encouraging recreational activities

Alternative 1: No Action**TSI**

Under the No Action alternative, no TSI activities would take place in the project compartments; thus, there would be no adverse impacts associated with new management activities. However, consequences of no action include, among others, 1) persistence of undesirable even-aged stands; 2) increased potential and vulnerability for insect and disease infestation in adjacent woodland; 3) continued undesirable tree species regeneration; 4) increased numbers of diseased and dying timber; 5) loss of economic value of salvageable wood products, and 6) continued negative local public perceptions about Corps land management practices

LUCC

Under the No Action alternative, no development would take place in Compartment 50 or the newly classified Environmentally Sensitive Areas; potentially, these areas could be affected from easements or development, impacting the existing vegetation.

Alternative 2: Tentatively Selected Plan**TSI**

The principal objective in conducting TSI activities is to move treated stands toward the desired condition and maintain in a healthy, vigorous condition to meet resource management objectives. Timber harvests shall be performed when feasible to promote accepted wildlife and forest management goals and objectives. As mentioned, harvesting of forest products would not be the normal practice due to access issues over much of the lake. Any harvesting activities would be performed in a manner that minimizes damage to residual trees, reproduction, and soils and would require restrictions on equipment and the time of year harvesting would be scheduled. Typical TSI would utilize chainsaws for midstory control and girdling of undesirable overstory trees. These girdled trees would be left standing and allowed to deteriorate over time further providing snags for use by wildlife. Because TSI is targeted to change forest dynamics, frequent re-assessments or inventories are required. These re-assessments allow managers the ability to closely monitor compartments, therefore maintaining healthy forest and wildlife habitats. Potential negative impacts to the forest from TSI activities are anticipated to be short-term and negligible.

With the proposed activities, wood fiber would be utilized in some instances, forest health/pathogen outbreak potential would be of minimal concern, and hazardous fuels would be diminished over time through the use of prescribed fire. The proposed post treatment activities would create young and vigorous stands capable of long term sustainability. Over time, the proposed activities would also contribute to a mosaic of varied age stands across the landscape.

In addition, the tentatively selected plan would implement management practices that increase watershed protection and flood damage reduction with multi-aged forest and ground cover through regeneration. As communities within the Lake Shelbyville watershed expand in industry and housing, previously wooded areas have been cleared, flattened and replaced with hard surfaces that provide no filtering, retention or

roughness characteristics that slow the speed at which water enters the Kaskaskia River and its tributaries. This expansion and accelerated water movement makes a healthy sustainable forest crucial to watershed management. Regeneration and multi-aged forest increase stocking rates and roughness that diminishes soil erosion and slows the flow of water, minimizing flooding and allowing uptake and nutrient displacement. Though oak-hickory regeneration is targeted through TSI activities; byproducts of exposing the forest floor to sunlight is growth of forbs and other herbaceous species. This habitat is particularly important for browsing, nesting and escape cover for a variety of wildlife species.

LUCC

The principle objective of changing the LUCC is to encourage people to experience the outdoors in some areas that remain relatively undisturbed since human settlement. By potentially developing a portion of Compartment 50 with self-guided trails, only minimal adverse effects are anticipated on the existing vegetation. Further, if development were restricted to the southeast portion of this compartment, there would be little negative impact on the vegetation since the area has been highly disturbed from agricultural use. The northern portion could be restricted in its development of trails to minimize impacts. Environmentally Sensitive Areas would not be developed and protection measures would be put in place to minimize impacts to the existing vegetation.

3.3 Invasive/Undesirable Species Management

Existing

Insects

Oak stands are vulnerable to insect and disease attacks. Dying and damaged trees, for example, are susceptible for infestation by red oak borers. The red oak borer is a forest insect pest species that permanently damages the wood of living oak trees, such as black oaks. The loss in grade can amount to 40 percent of the current tree value for factory grade lumber in terms of reduced quality caused by larval tunnels (Hay 1972).

Most oaks in eastern North America are attacked by the borer. The common hosts are northern red oak, black oak, and Scarlet oak. Wood-inhabiting insects such as carpenter worms, timber worms, and carpenter ants use red oak borer tunnels to gain entry into oak trees. These and other pests extend and increase the damage begun by the red oak borer. Decay organisms also gain entry into oak heartwood through borer tunnels.

Woodpeckers are the most important recognized natural control agents of the red oak borer. Predation by formicid ants also provides some degree of natural control. However, the effectiveness of these natural predators is limited at best (Hay 1972). Research has shown that control of the red oak borer is best achieved by removing infested trees from timber stands by salvage harvest. Population reductions of 95 percent of red oak borer were achieved over a 5-year period using this approach. Salvage harvest treatments reduce the chances of subsequent borer attack in residual trees (Donley 1974).

Emerald Ash borer (EAB) is a small, metallic-green beetle native to Asia. As an adult it eats the leaves of ash trees and causes little damage to the trees. However, the EAB larvae burrow into the ash trees to feed on the inner bark (phloem), leaving meandering tunnels that disrupt the transport of water and nutrients and usually causes mortality of the tree within 3-4 years. The EAB was discovered in Illinois in 2002 and has since spread to over 60 counties.

Non-Native Invasive Plants

The spread of non-native invasive plant (NNIP) species directly threatens the health of native ecosystems. These plants have characteristics that permit them to rapidly invade and dominate in new areas, often out-competing native plants for light, moisture, and nutrients. Some NNIP in the project area include isolated areas with tree of heaven, and numerous areas with Amur honeysuckle in the woodland edges and old fields. *Sericea lespedeza* (Chinese bushclover) is found along the shoreline and road sides and in old fields as is autumn olive. Garlic mustard is becoming prevalent in the wetter areas of the project.

Alternative 1: No Action

TSI

Past projects to control invasive insects and plants on the forest have been authorized as small portions of larger vegetation management projects. Those limited actions have not been able to keep pace with the extent in which several invasive species spread and encroach into new areas. No action would further allow these plants to colonize.

LUCC

While high quality timber is present on the north-northeast half of Compartment 50 (Figure 3), the remaining south-southwest woodlands are severely degraded with offsite species and NNIP such as autumn olive, garlic mustard and Amur Honeysuckle. No action would allow these NNIP to increase in density.

Alternative 2: Tentatively Selected Plan

TSI

One of the purposes of this project is to protect and restore naturally-functioning native ecosystems on the Forest by controlling current and future threats of insect and NNIP infestations to the project area managed by the Corps of Engineers. Control means, as appropriate include, eradicating, suppressing, reducing, or managing insect and NNIP populations, preventing spread of insect and NNIP from areas where they are present, and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasions (Executive Order 13112 invasive species).

Infested areas in any of these locations would be selectively treated with an approved herbicide and/or prescribed fire to control non-native competing plant species, such as fescue, *Sericea lespedeza*, multiflora rose, Amur honeysuckle, autumn olive and garlic mustard as funding allows. Herbicide application would be at or below the manufacturer's recommended application rate.

Contract provisions would be used as a guide for any timber sale purchasers to prevent the possible introduction and spread of invasive species during timber sale activities. This provision is part of a larger forest-wide program to identify areas of invasive species on sale area maps and require cleaning of equipment if it is being moved from a known area of infestation, or if the prior location of equipment cannot be identified, it would be assumed to be infested with seeds of invasive species of concern.

LUCC

NNIP control would be initiated to control unwanted plants. Additionally, by adding trails and increasing utilization of the area, interpretive opportunities would be there to teach the visiting public about the dangers of introducing NNIP to an area.

3.4 Water Resources

The major source of ground water in the area is within the sand and gravel deposits of the alluvial valleys and the sand bodies contained in the glacial drift. Alluvial aquifers are primarily limited to areas within the flood plain of the Kaskaskia River. The glacial drift aquifers fill buried bedrock valleys created by the advances and retreats of the Pleistocene ice sheets. The City of Shelbyville withdraws its water supply from wells in the Kaskaskia River alluvium. These wells produce from 200 to over 500 gallons per minute (gpm). The City of Sullivan, near Bo Wood Recreation Area, draws its water from wells that tap sands and gravels of the glacially deposited Glasford Formation. These wells individually produce from 150 to over 600 gpm.

EROSION

Existing

Stream banks of tributaries to the Kaskaskia and Okaw Rivers currently have excessive erosion, although protection of the stream banks is variable by stream. Streams throughout the project area have adequate riparian corridors that were established when the property was purchased for flood control. Streams outside Corps administered lands have differing levels of protection; some are forested while others have been channelized and manipulated or have unlimited access from livestock. These areas are experiencing accelerated erosion.

Due to increased frequencies of high water events, much of the shoreline around Lake Shelbyville is seriously degraded. The highly erodible clay soils become saturated during high water events and the weight of the saturated soil sloughs off large portions as the water recedes. Also, many forest floors are non-vegetated and have limited erosion diminishing characteristics further adding to the erosion. Limited early succession vegetation allows accelerated runoff and increases the speed at which water enters tributaries.

Alternative 1: No Action**TSI**

Forest floors would remain open without filtering and soil stabilizing functions. This would increase overall erosion, adding sediment to tributaries and streams. Continued sedimentation added to streambeds would adversely impact most aquatic resources including fish, invertebrates, and plants; especially in terms of certain life history requirements.

LUCC

No changes to current erosion levels would be anticipated.

Alternative 2: Tentatively Selected Plan**TSI**

Mature tree and midstory removal of sugar maple would allow sunlight to the forest floor allowing regeneration of oak/hickory forest along with many other types of vegetation which would increase “total stems per acre” or vegetative density. Increased stems equal increased ground stabilization and roughness, slowing water movement thus slowing erosion. TSI conducted utilizing chainsaws to girdle overstory trees and drop midstory trees would decrease erosion almost immediately by increasing sunlight to the forest floor and stimulating plant growth in the understory. In any case where a harvest could be utilized, forestry BMP’s – especially pre- and post-construction of access roads - would be in place prior to any timber harvesting to protect the chemical, physical and biological characteristics of streams in the project area. Native vegetation would be re-established as soon as possible on any stream banks and riparian corridors denuded of vegetation. Harvesting would be limited to single tree selection in stream management zones.

The Tentatively Selected Plan implements management practices that increase watershed protection and flood damage reduction with multi-aged forest and ground cover through regeneration. Regeneration and multi-aged forest increase stocking rates and roughness that diminishes soil erosion and slows the flow of water, minimizing flooding and allowing uptake and nutrient displacement.

LUCC

Along with TSI practices, LUCC would complement management practices to control soil erosion.

QUALITY**Existing**

A water quality monitoring program is conducted (when funding is available) three times during the months of March through October. Samples are collected at three lake sites, two tributary sites and one downstream site in the outlet channel in accordance with Engineering Regulation 1110-2-8154 Water Quality & Environmental Management for Corps Civil Works Projects, and Engineer Technical Letter 1110-2-362 Environmental Engineering Initiatives for Water Management. This would include updating the water quality management priorities for the district’s projects to ensure water quality meets the

state and federal regulations for protection of human health and the environment, and for the safety and economic welfare of those at Corps projects. Ongoing goals include ensuring that downstream water quality meets all state and federal regulations, that the water is suitable for aquatic and human life, and continuing to evaluate trend analysis in relation to baseline conditions at all projects.

The Illinois Environmental Protection Agency in Title 35, Subtitle, C, classifies water quality criteria based on end usage. Subpart B contains regulations for general use water, while subparts C and D delineate those for public and food processing water and secondary contact and indigenous aquatic life standards, respectively. These standards are used to determine the water quality of the lake. The water quality sampling conducted reflects the minimal parameters needed to indicate if the water is able to sustain adequate plant and animal growth and to ensure safety for human recreation. The combination of sampling sites effectively represents the incoming contaminants and their effects on the lake. Monitoring includes parameters such as pH, dissolved oxygen, Redox, temperature, and conductivity taken at 1 meter intervals at all the lake sites. Analytical samples are taken at all sites and near the bottom at the site in front of the dam and are analyzed for the following parameters: total organic carbon (TOC), iron, manganese, ammonia-nitrogen, nitrate-nitrogen, ortho-phosphate, total phosphate, total suspended solids (TSS), total volatile suspended solids (TVSS), and E. coli bacteria. Trend analysis of this data is performed every five years.

During the summer months, lakes can experience abnormal layers of dissolved oxygen levels that causes anoxic conditions below the main dam during periods of low releases. Monitoring equipment was installed to allow lake personnel, water control personnel, and water quality personnel, to remotely monitor oxygen and temperature levels below the dam to avoid fish kills. This monitoring equipment is monitored on a daily basis.

In addition to water samples, sediment samples are taken once every 5 years or when funds are available. This data provides supplemental information as to the relative amounts of contaminants transported by sediments versus contaminants dissolved in the water column. The parameters analyzed include: fourteen priority pollutant metals, total phosphate (TPO₄), Kjeldahl nitrogen, nitrate -N(NO₃), total solids, total organic carbon (TOC), chlorinated pesticides and PCBs.

Continued monitoring of the lake and its tributaries is vital in assisting the future assessment of the lake's possible impairments. The water quality monitoring program represents the single metric that encompasses the overall health of the watershed as it is a direct measure of how well the environmental stewardship programs are working. A water quality status report is provided to the lake each year.

Alternative 1: No Action

TSI

Water quality would likely remain the same with potential increases in sediment due to lack of filtering capabilities expressed in mature timber stands.

LUCC

No changes in current water quality would be expected.

Alternative 2: Tentatively Selected Plan**TSI**

Once TSI activities have been implemented, increased understory growth would occur - stabilizing soils.

LUCC

For Compartment 50, the effects of any development and associated runoff would be offset by placement of well-placed storm drains and through the armoring of any slopes that were in danger of sloughing off into the lake. Environmentally Sensitive Areas would continue to provide natural filtering of precipitation and run-off, thereby improving water quality in the watershed.

3.5 Fish and Wildlife**HABITAT****Existing**

As described above, there is an overall lack of timber age class diversity within the project. Various species of wildlife need different age classed timber to support sustainable populations.

Located within the Lake Shelbyville Area are numerous species of wildlife native to this area of Illinois, including numerous types of rodents, small game birds and mammals, waterfowl, shore birds, song birds, furbearers, white-tailed deer, wild turkey, and predatory mammals and birds. Wildlife management procedures on the lake lands have benefited the species present. The flooded timber area provides nest trees for woodpeckers and wood ducks. In addition, the number and diversity of shore birds and waterfowl using this area has steadily increased. Water management complements utilization by waterfowl and other species of wildlife. Except during a period when water level is critical for flooding, it is a fish management goal to maintain a consistent lake level between 15 May and 15 June. This lake level management technique creates a more productive environment for the spring fish spawning period. The lake project office relays fish spawning information to the pertinent agencies. While not always possible to maintain a constant level, it is strived for every year.

Non-recreation areas are being managed to provide quality wildlife habitat. Vegetation, including trees and native prairies, are being planted to provide cover and a certain amount of food. These plantings are in contrast to the "clean farm" agricultural practices on adjacent lands and are planned to maintain existing edge. Together, the private farms and public wildlife areas provide a more balanced relationship of food and cover for wildlife over much of the project.

Agricultural subleases are managed to provide the same relationship in addition to furnishing a food supply for wildlife as well as waterfowl in sub-impoundment areas.

Alternative 1: No Action**TSI**

Timber resources and habitat diversity is expected to decline as shade tolerant trees such as sugar maple replace hard mast producing trees. Browsing, nesting and escape cover habitats would not be restored and erosion would continue to increase. It is anticipated that wildlife species diversity would remain low, or below its biotic potential.

LUCC

Without designation of the Environmentally Sensitive Areas, wildlife diversity could potentially decline because of impacts from development or other stressors.

Alternative 2: Tentatively Selected Plan**TSI**

Where conditions are favorable, TSI activities would transition mature forests to more uneven aged forest that offer a diverse ecosystem that is conducive to a wide variety of wildlife species and increases overall forest health for sustainability. For example, utilizing overstory girdling and midstory removal to achieve healthy forests and a range of vegetative age classes meets certain wildlife habitat objectives for the forest. A good way to produce more grassland wildlife habitat in forestland is to create temporary forest openings. Though oak-hickory regeneration is targeted through TSI activities; byproducts of exposing the forest floor to sunlight is essential for growth of forbs and other herbaceous species. This habitat is particularly important for browsing, nesting and escape cover for a variety of wildlife species.

In addition, where possible, TSI activities would be implemented to produce edge effect that is lacking in present landscape. Edge habitat is an important component to many ground nesting birds as well as small mammals. Where quality edge habitat exists on project lands, there are increases in wildlife sightings. Plant and animal communities established in mature timber or rare occurrences of unique habitat would be delineated during stand inventories and avoided. In order to provide a mature forest component for aesthetics and specific habitat, Sullivan Woods (known as Pogue Timber locally) located northeast of the Village of Findlay, would be managed as an old growth forest without TSI treatments.

In general, the management of lands would be oriented toward the improvement of the habitat. The forest is managed to supply the habitat diversity required by forest and edge wildlife species. The key to successful forest and wildlife management is to keep a healthy, vigorous, balanced forest.

LUCC

Development on a limited scale in parts of Compartment 50, while having an adverse impact on wildlife directly in the footprint, could benefit wildlife through public outreach programs and education – the outdoor experience. Environmentally Sensitive Areas would continue to provide “quality” habitat for native wildlife species.

3.6 Recreation

Existing

The fluctuations of Lake Shelbyville, particularly during the intensive recreation season, June through September, are favorable for recreational use.

The recreational developments at Lake Shelbyville are varied. Major activities of the visiting public consist of sightseeing, fishing, boating, water skiing, camping, picnicking, swimming, hiking, and hunting. Park and recreation areas have been developed which provide both extended-use and day-use opportunities. Included in these recreation areas are campsites, picnic sites, boat launching ramps, beaches, interpretive facilities, and hiking and nature trails. In addition, lands have been allocated for wildlife management. These wildlife areas are available for non-consumptive as well as consumptive recreational use.

Alternative 1: No Action

TSI

Lack of TSI management would affect recreation through the loss of aesthetics in diseased and dying timber, low quality wildlife habitat for viewing and consumptive purposes, and loss of valuable resources to the economy. Diseased and dying timber alongside trails pose overhead threats in falling limbs and windblown timber closes trails and interior access to visitors.

LUCC

It is anticipated that recreational use of the project area would remain the same.

Alternative 2: Tentatively Selected Plan

TSI

Management guidelines for forest lands provide the general procedures for treatments necessary to increase the value of lands for present and future outdoor recreational use. All management must be objectively planned in order to obtain optimum public benefits that insure the conservation and improvement of all resources. These resources would be treated as an integrated whole with continuing concern for environmental quality. All treatments must be coordinated with other areas of reservoir management. Management requirements of public lands are unique as compared to other forest lands of the area, because of intensive recreation use and the quality level of watershed protection. Due to increased water quality and wildlife populations realized through sound woodland management, recreation for hunters, fishers and non-consumptive uses like bird watching would likely increase.

LUCC

It is anticipated that there would be an increase in visitation to parts of Compartment 50 if hiking trails were developed. Currently, Compartment 50 receives very little visitation; however, the area could be tied into the General Dacey Trail, becoming a part of the trail system that will ultimately circumnavigate the lake. Environmentally Sensitive Areas would be guarded from overuse by visitors by implementing protective management strategies that conserve the natural heritage of the areas.

3.7 Soils

Existing

The surficial soils in the immediate project area consist of alluvial deposits in the valleys and floodplains of the major streams and Wisconsinan age glacial tills in the uplands. Sandy and gravelly clay tills are the predominant soil types in the uplands and silt and lean clays in the bottomlands.

Bedrock in the area consists of Pennsylvanian age strata that occur in sequences of sandstones and shale. Mineral resources consist of oil, coal, sand, and gravel. There are a few oil wells in the vicinity of Lake Shelbyville.

The local coal workings extracted the Shelbyville Coal, a 2-foot thick coal seam that was mined by the room and pillar method. Access to the coal was obtained through vertical shafts or through stopes driven in the valley walls. The abandoned mine workings located in the dam and spillway foundations were thoroughly explored and sealed by cement grouting. Since these and the surrounding coal workings were already old and abandoned at the time of dam construction, the extent of the mines in the reservoir area is not known. Although abandoned, the existence of these workings underlying areas of reservoir lands creates the potential for future ground subsidence.

Alternative 1: No Action

TSI

No new management activities would take place, nor any activities associated with the Tentatively Selected Plan. Therefore, no management-related appreciable changes in productivity of the land would occur. Soils would be impacted by regular maintenance and use of roads as well as any other planned and ongoing natural resource management activities. In the absence of wildfire, current runoff and erosion pattern would be maintained with no appreciable increases expected. This alternative is considered to have no effect on the soil resources in the area, since no activities are proposed with this alternative.

In general, forest areas would remain normally functioning, and soils would remain in good condition unless they are disturbed in areas where the terrain is hilly or steep. Mostly natural conditions would continue. Organic matter would continue to increase, with expected dead, beetle-killed, and blown-down trees contributing to the overall organic matter collecting on the ground.

LUCC

In general, Compartment 50 and the proposed Environmentally Sensitive Areas soil conditions and trends would remain as they are.

Alternative 2: Tentatively Selected Plan

TSI

This alternative has the potential to impact soil resources as a result of any harvest activities. The effects of these activities on soil resources in the project area can be described in terms of short and long term effects on the productivity of the soils. Short

term effects are those considered lasting three years or less and are associated with the recovery period in which disturbed soils become reestablished with vegetative cover. In contrast, long term effects are associated with activities which displace the upper portions of the soil profile (topsoil). Many years are needed for the soil to recover its original productivity when the surface layers are removed. Severe compaction associated with rutting (created by heavy equipment operating when soils are too wet) is considered a long term impact. Wet soils would be avoided in project planning, and rutting would be smoothed during timber sale closure to reduce impacts from rutting. In conventional harvesting operations, the impacts of unbladed primary skid trails and unbladed log landings are considered to be short term impacts to soil productivity.

Important factors considered in evaluating effects to soil resources from this project are: the extent of the activity area and the extent of the activity area where long term soil productivity has been reduced. Effects to the soils from this project are considered not significant when 85 percent of the activity area retains its original long term soil productivity (Forest Service Handbook, R9, 2509.18, Soil Quality Monitoring).

General timber harvest areas are expected to recover quickly. Research has shown that the upper few inches of soil recovers quickly from compaction. This is primarily due to organic matter additions from logging debris, soil biota activity, freezing and thawing and plant root growth from existing and new vegetation. Recovery from compaction is slower in the 8 to 12 inch depth zone, but compaction is not expected at these depths unless equipment operates in wet conditions, which would not be allowed.

Soil compaction would occur on the log landings and primary skid trails as a result of heavy equipment use with Alternative 2. Areas of concentrated use, such as log landings are most affected. This compaction would increase the bulk density and result in decreased pore space, infiltration rate, and water holding capacity. These effects are considered detrimental to plant growth. The degree and depth of compaction depends on the number of passes made by the equipment, and the moisture content of the soil at the time the passes are made. Changes in pore space do not normally occur on well drained soils, such as those that occur over most of the project area, until three or more passes have occurred. Compacted areas would be ripped and seeded to help mitigate the effects of compaction and promote re-vegetation.

Rutting would occur if equipment operates on wet soils as well; therefore wet soils would be avoided in logging plans. Seasonal soil wetness is difficult to predict, but when soils are prone to high seasonal water tables, dry season or logging on frozen soils is preferred. When rutting occurs in the general harvest area, it is considered a long term effect. Literature shows that the effects of the severe compaction that rutting produces can reduce plant growth for many decades. Soil movement (erosion) can occur on long unimpeded slopes, where mineral soil material is exposed to raindrop impact and overland water flow. Soils on upper slopes can lose productive topsoil as it moves down slope with water. Soil erosion may occur where bare soil is exposed on a slope as a result of equipment tracking difficulties (spinning wheels), bladed skid roads and landings, or where logs are dragged across the soil repeatedly. The placement of the

landings on gentle topography prevents long unimpeded runs. The presence of vegetative soil cover, and logging debris; which is commonly found on harvested areas, would prevent long unimpeded runs.

LUCC

Soils in parts of Compartment 50 would experience short-term impacts if trails are constructed. Soils in the Environmentally Sensitive Areas would be unaffected by the Tentatively Selected Plan since no development would occur in these areas.

3.8 Air Quality

Existing

Consistent with the intent of the Environmental Protection Act of the State of Illinois, Illinois has adopted ambient air quality and episode standards that specify maximum permissible short-term and long-term concentrations of various contaminants in the atmosphere. Ambient air quality and episode standards are limits on atmospheric concentrations of air contaminants established for the purpose of protecting the public health and welfare. The Shelbyville Lake region (Shelby and Moultrie counties, IL) is currently designated as in compliance with the six criteria pollutants (those for which air quality standards have been developed - particulate matter (PM10 and PM2.5), ozone (1-hour and 8-hour), sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead) (<https://www3.epa.gov/airquality/greenbk/ancl.html> accessed 8 June 2016).

No Action

TSI

Under this alternative large, possibly uncontrollable wildland fires could occur since there would be no management treatment to reduce growing fuel accumulations. Many years of fire suppression actions have reduced the amount of acres burned naturally, thus increasing the amount of available fuels for a wildland fire.

Smoke from uncontrolled wildfires has potential to affect an area for several days. This situation may occur during multiple events (i.e. more than one uncontrolled wildland fire). An uncontrolled wildland fire also has potential to spread from or into areas outside of the project area. Under this alternative, only after a wildland fire is reported and determined that the associated smoke is or may cause health and/or safety concerns, can Standards and Guidelines and other mitigation measures be identified and implemented. The severity of these potential air quality impacts resulting from wildfires can be mitigated through the resource management activities (i.e., thinning and prescribed burning) proposed in the Tentatively Selected Plan.

LUCC

As above, under the Tentatively Selected Plan, wildland fires may occur that would temporarily affect local air quality. Also, campfires, gas powered vehicle emissions from lawn mowers, personal vehicles, etc. could have localized negative impact on air quality but are likely negligible in scope.

Tentatively Selected Plan

TSI

The following effects are likely to occur over short periods of time (less than a ½ day following the treatment):

- (a) Increased localized particulate matter and carbon monoxide concentrations for short periods of time (< a half day)
- (b) Eye, nose and throat irritations
- (c) Decreased visibility along travel ways
- (d) Odor/nuisance of smoke
- (e) Slash created from thinning activities may increase smoke intensities if the first burns are conducted shortly after treatment has occurred. After the first post-treatment burn, most fine fuels created from the downed midstory or slash would be consumed. Medium to large diameter fuels (greater than ¼") may take several burns to reduce.

General potential air quality impacts that may be associated with TSI in the project area are anticipated to be short-term and temporary. TSI activities would cause dust and exhaust fumes from harvesting operations or minimal exhaust fumes if chainsaws are utilized for girdling. These impacts are considered short term. Equipment operation, activities, or processes performed by the contractor shall be in accordance with all federal and state air emission and performance laws and standards. The contractor shall keep construction activities under surveillance, management and control to minimize pollution of air resources. All activities, equipment, processes, and work operated or performed by the contractor in accomplishing the specified harvest activities shall be in strict accordance with the laws of the State in which the work is being performed and all federal emission and performance laws and standards. In the event that air pollution occurs due to harvest activities, the contractor shall take all necessary steps to rectify the situation to the satisfaction of the contracting officer. Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to federal, state, and/or local allowable limits at all times.

LUCC

As above, under the Tentatively Selected Plan, wildland fires may occur that would temporarily affect local air quality. Campfires, gas powered vehicle emissions from lawn mowers, personal vehicles, etc. could have a negative impact on air quality but are likely negligible in scope. Fuel accumulation management strategies would be developed for Compartment 50 and the proposed Environmentally Sensitive Areas.

3.9 Socio-economic

Shelby and Moultrie Counties are rural and have struggled in the past with employment losses in the manufacturing and services sectors. While there is a small timber industry, most of the timber resources on the lake are inaccessible without the consent of an adjacent landowner to provide access, which is unlikely in most cases. TSI contracts may supply a contractor with a few hundred acres to girdle a year but would not be a strong economic driver in the community. However, the improvement of the forest habitats would encourage consumptive users of wildlife, such as hunters, trappers,

fishermen; as well as non-consumptive users such as bird watching, camping, hiking, cycling to utilize the project. These users would infuse capital into local communities through the sale of fuel, motels, camping fees, sales taxes, dining, and groceries.

3.10 Hazardous, Toxic, and Radioactive Waste

TSI and LUCC

An Environmental Condition of Property is not required in accordance with ER200-2-3 for this action.

3.11 Cultural

TSI and LUCC

A review of existing records indicate that many of the areas have not been formally surveyed as provided for in the National Historic Preservation Act of 1966, as amended (NHPA). Any stands that would be commercially harvested would be required to have an archaeological survey completed to determine if any cultural resources exist prior to any harvest activities. If any exist, each resource would require evaluation as an historic property as defined by the NHPA. Based upon the identification and evaluation of each resource, the USACE would establish buffers around historic properties to prohibit disturbance of the properties. Illinois State Historic Preservation Office (ILSHPO) would be consulted throughout this process and any determinations of significance and eligibility for nomination to the National Register of Historic Places would be fully coordinated with ILSHPO through the execution of a Memorandum of Agreement stipulating the specific procedures to be followed. The identification and evaluation process would be conducted on an annual basis as each stand is scheduled for cutting. In the event that a cultural resource is discovered during the actual timber girdling operation, work in the immediate area would be stopped until consultation with ILSHPO and evaluation of the resource is completed. In all cases, avoiding disturbance to cultural resources would be the primary means of preserving historic properties. At this time, TSI utilizing chainsaws for simply girdling the overstory trees would not require archaeological surveys as there would be no ground disturbing activities involved.

There are two recorded sites on the shoreline of Compartment 50, 11MT88 and 11MT105. Both of these sites require testing to determine if they are eligible for the National Register of Historic Places. Additionally, only the shoreline of Compartment 50 has been previously surveyed. An intensive pedestrian survey would be required before any developments within the Compartment are approved. If any archaeological sites are identified they must be considered in the planning process so as not to adversely impact the site(s).

3.12 Cumulative Effects

Cumulative impacts to the environment result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts may result from individually minor but collectively significant actions taking place over a period of time 40 CFR Part 1508. Cumulative

impacts are studied to enable the public, decision-makers, and project proponents to consider the “big picture” effects of a project on the community and the environment. In a broad sense, all impacts on affected resources are probably cumulative; however, the role of the analyst is to narrow the focus of the cumulative effects analysis to important issues of national, regional, or local significance (CEQ, 1997).

The Council on Environmental Quality (CEQ) issued a manual entitled Considering Cumulative Effects Under the National Environmental Policy Act (1997). This manual presents an 11 step procedure for addressing cumulative impact analysis. The cumulative effects analysis for the Proposed Action followed these 11 steps, shown in Table 11. The following subsections address scoping, the affected environment, and environmental consequences for the Proposed Action.

Table 14 CEQ’s 11-Step Approach for Assessing Cumulative Impacts	
Component	Steps
Scoping	1. Identify resources
	2. Define the study area for each
	3. Define time frame for analysis
	4. Identify other actions affecting the
Describing the Affected Environment	5. Characterize resource in terms of its
	6. Characterize stresses in relation to
	7. Define baseline conditions
Determining the Environmental Consequences	8. Identify cause-and-effect relationships
	9. Determine magnitude and significance
	10. Assess the need for mitigation of
	11. Monitor and adapt management

1. Scoping

Past, present, and reasonably foreseeable future actions have and continue to contribute to the cumulative impacts of activities in and around Lake Shelbyville. Past actions include the construction and operation of the reservoir, the recreation sites surrounding the reservoir, as well as residential, commercial, agricultural, and industrial facilities throughout the region. All of these developments have had varying levels of adverse impacts on the physical and natural resources in the region. Many of these developments, however, have had beneficial impacts on the region’s socioeconomic resources. In addition, many of the historic impacts have been offset throughout the years by the resource stewardship efforts of the Corps, Illinois DNR, and other management partners.

The most significant past action was the construction and development of the Lake Shelbyville Reservoir. This change created new natural and physical conditions, which, through careful management by the Corps, Illinois DNR, and other management partners, have created new and successful habitats and other natural resource conditions. The construction of the project also had an impact on cultural resources.

Impacts to cultural resources were coordinated with the Illinois SHPO. In addition, the Corps and the other management partners have also brought a wide variety of high-quality recreational opportunities to the reservoir.

3.13 Describing the Affected Environment

Existing and future actions also contribute to the cumulative impacts in and around the reservoir. Existing and future actions include the operation of project facilities, upgrades and maintenance of recreation sites, as well as residential, commercial, agricultural, and industrial development throughout the region that benefit from the lake project.

Continued project operations would result in the sustained maintenance and development of recreational facilities. These facilities would enhance the recreational offerings made by the Corps and other management partners. Such improvements would result in varying levels of impacts to the surrounding resources. Similarly, surrounding residential, commercial, agricultural, and industrial development could result in varying levels of adverse impacts to many resources.

3.14 Determining the Environmental Consequences

Within the project boundary, adverse impacts would be offset through resource stewardship efforts. The programmatic approach to project management included in this EA would allow for future development plans and mitigation responses to be adapted to address many adverse actions. This would allow the Corps and other management partners at Lake Shelbyville to continue to reduce the contribution of its activities to regional detrimental cumulative impacts to the environment through proactive actions and adaptive resource management strategies.

4 Relevant Laws and Regulations, Compliance

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)

Executive Order 12898 requires “to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report of the National Performance Review, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its program, policies and activities on minority population and low-income populations...” This project would not have any adverse impacts on minority and low-income populations.

Also included with environmental justice are concerns pursuant to EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children under the age of 18. These risks are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or ingest.” This work has been reviewed for compliance with these orders and it has been determined that the proposed action would not adversely affect or have significant impacts on the health or environment of children.

Bald and Golden Eagle Protection Act of 1940

On August 9, 2007 the bald eagle was removed from the federal list of threatened and endangered species. It remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The Bald and Golden Eagle Protection Act prohibits unregulated take of bald eagles. The Fish and Wildlife Service recently finalized a rule defining “take” that includes “disturb.” “Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (USFWS 2007).

Three bald eagle nests are known to exist on Lake Shelbyville (compartments 16, 36, 61). These nests are monitored by Corps personnel annually to determine activity. The period January 1 to March 1 is important for initiating nesting activity and March 1 to May 15 is the most critical time for incubation and rearing of young. The USFWS has recommended that to fully assess the potential impacts of the project on bald eagles, refer to the National Bald Eagle Management Guidelines: (<http://www.fws.gov/pacific/eagle/NationalBaldEagleManagementGuidelines.pdf>), which include recommendations to avoid effects to eagles. Project construction timing and activities would be consistent with the recommendations outlined in the guidelines.

Clean Water Act (Sections 401 and 404)

No jurisdictional wetlands, waterways or other Waters of the United States would be affected by the proposed access, repair, and construction methods associated with this proposed project. As such, the St. Louis District, Regulatory Branch determined that no Section 404 Clean Water Acts permits would be required to complete the project as proposed.

4.1 Environmental Regulatory Constraints

The EA is subject to compliance review with all applicable environmental regulations and guidelines. The National Environmental Policy Act is considered in partial compliance until a NEPA decision document is signed. The National Historic Preservation Act would be considered in partial compliance until there is concurrence from the State Historic Preservation Officer on the District's EA conclusions.

Federal Policies	Compliance
Clean Air Act, 42 USC 7401-7542	Full
Clean Water Act, 33 USC 1251-1375	Full
Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC 9601-9675	Full
Endangered Species Act, 16 USC 1531-1543	Partial 1
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds	Full
Executive Order 11990, as amended (Protection of Wetlands)	Full
Farmland Protection Policy Act, 7 USC 4201-4208	Full
Fish and Wildlife Coordination Act, 16 USC 661-666c	Partial 1
Food Security Act of 1985, 16 USC 3801	Full
Migratory Bird Treaty Act of 1918, 16 USC 703, et seq.	Full
Land and Water Conservation Fund Act of 1965, 16 USC 4604601-4, et seq.	Full
National Environmental Policy Act, 42 USC 4321- 4347	Partial 2
National Historic Preservation Act, 54 USC 300101, et seq.	Partial 3
Noise Control Act of 1972, 42 USC 4901, et seq.	Full
Resource, Conservation, and Rehabilitation Act, 42 USC 6901-6987	Full
Rivers and Harbors Appropriation Act of 1899, 33 USC 401-413	Full
Floodplain Management (EO 11988 as amended)	Full
Prevention, Control, and Abatement of Air and Water Pollution at Federal Facilities (EO 11282 as amended by EO's 11288 and 11507)	Full
Protection and Enhancement of Environmental Quality (EO 11991)	Full
Protection and Enhancement of the Cultural Environment (EO 11593)	Full
Protection of Wetlands (EO 11990 as amended)	Full

Full compliance: having met all requirements of the statute for the current stage of planning

¹Full compliance will be attained upon completion of coordination with the U.S. Fish and Wildlife Service

² Full compliance will be attained upon completion and signing of NEPA documents.

³ Full compliance will be achieved completion of coordination with the State Historic Preservation Officer.

4.2 Relationship between Short-Term Use and Long-Term Productivity

The local short-term impacts of the recommended action and the use of resources for it are consistent with the maintenance and enhancement of long-term productivity for the local area, region, and nation. Implementation of the project would support growth and development of employment and population in the region.

5 Coordination

Cooperation with state and federal agencies presently exists in several aspects of forest management. Portions of project boundary adjoin lands leased or licensed to the state of Illinois. Therefore, continued coordination and cooperation is imperative in such areas as fire control, forest insects and disease detection, encroachments, etc. Also, an exchange of information is highly beneficial. Cooperating agencies include: U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Natural Resources Conservation Service, Illinois Environmental Protection Agency, Illinois Department of Natural Resources, Illinois Department of Agriculture, University of Illinois, Southern Illinois University and University of Illinois Springfield.

ENVIRONMENTAL ASSESSMENT PREPARERS

Name	Role
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Ken Cook	Biologist, St. Louis District Corps
Lara Anderson	Archaeologist, St. Louis District Corps
Rick Archeski	Hazardous, Toxic, Radioactive Waste Specialist, St. Louis District Corps
Matt Mangan	US Fish and Wildlife Service, Carterville, IL

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FINDING OF NO SIGNIFICANT IMPACT
Lake Shelbyville, Shelby and Moultrie counties, Illinois,
Timber Stand Improvement Management Strategies
And Land-Use Classification Changes

- I. I have reviewed and evaluated this document concerning the proposed implementation of timber stand improvement (TSI) management strategies and land use re-classification of Compartment 50 and three Environmentally Sensitive Areas at Lake Shelbyville, Shelby and Moultrie counties, Illinois as part of the 2016 update of the Lake Shelbyville Master Plan. The timber stand improvement work would be conducted over the next 20 years and would include approximately 8,900 acres spread over 50 compartments. The Corps has prepared this document in compliance with the National Environmental Policy Act and other relevant federal and state laws and regulations. This Environmental Assessment describes and analyzes the direct, indirect, and cumulative effects for the timber stand improvement and land use classification change to Compartment 50.
- II. As part of this evaluation, I have considered:
 - (a) Existing Resources and Future without the Authorized Plan - (No Action) Alternative.
 - (b) Impacts to Existing and Future Resources under the Tentatively Selected Plan.
- III. These alternatives have been studied for physical, biological, cultural, social and economic effects. Issues evaluated as part of my review included the impacts of the TSI activities and re-classification of Compartment 50 on quality forest management, Indiana bat, fish and wildlife habitat quality, and fuel loading. No significant impacts were identified. In addition:
 - (a) Federally listed endangered and threatened species will not be adversely impacted.
 - (b) There would be no appreciable degradation to the physical environment (e.g., soils, air quality, and water quality).
 - (c) There would be no significant impacts to the biological components of the project (e.g., vegetation, wildlife, aquatic organisms).
 - (d) No significant impacts from invasive/undesirably species management or fuels management are anticipated.
 - (e) No adverse impacts to historic properties are anticipated.
 - (f) The "no action" alternative was evaluated and determined to be unacceptable because it did not address the purpose and need for updated management issues at Lake Shelbyville.
 - (g) No significant cumulative impacts are anticipated.
- IV. Based on the disclosure of the Tentatively Selected Plan's impacts contained within the Environmental Assessment, no significant impacts to the environment are anticipated. The proposed action has been coordinated with the appropriate resource agencies, and there are no significant unresolved issues. Therefore, an

Environmental Impact Statement will not be prepared prior to proceeding with the proposed changes to the Lake Shelbyville Master Plan as identified in the Environmental Assessment.

Date _____

Anthony P. Mitchell
Colonel, U.S. Army
District Engineer

DRAFT