LAKE SHELBYVILLE MASTER PLAN

KASKASKIA RIVER WATERSHED SHELBYVILLE ILLLINOIS

CHAPTER 2 – PROJECT SETTING & FACTORS INFLUENCING MANAGEMENT & DEVELOPMENT

2.1. DESCRIPTION OF RESERVOIR

Lake and Shoreline

The lake is confined by relatively abrupt slopes and has many timbered arms. The abrupt slopes and the erodible soils have resulted in shoreline erosion impacting project facilities. The maximum relief at the dam site area is approximately 125 feet. The topography changes from a streambed elevation of about 535 feet 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 timber, 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.

Project Structures

Main Dam and Spillway

The main dam consists of a compacted earthen embankment extending across the main valley floor and a gated concrete spillway founded on rock in the right abutment, with a concrete chute leading to a stilling basin in the flood plain. A gravity outlet structure, extending through the concrete section, discharges into the spillway stilling basin. The crest of the embankment is at elevation 643.0, approximately 108 feet above the riverbed. The total length of the dam and spillway is approximately 3,025 feet.

Remedial Works and Relocation

The reservoir necessitated relocations and remedial measures to railroads, highways, and utilities. These consisted of the following:

- Raising the Illinois Central Railroad at West Okaw and Kaskaskia River crossings, including two new bridges and approximately 6,800 feet of track and embankment.

- Protection of existing embankment of the Chicago & Eastern Illinois Railway at West Okaw River crossing.
- On State Route No. 121, constructing three bridges and placing approximately 7,300 feet of concrete pavement.
- On State Route No. 32, constructing one bridge and placing approximately 3,600 feet of concrete pavement.
- On FAS Highway Route 642, (Shelby County Highway 3, Moultrie County Highway 4) constructing one bridge 3,174 feet long and 1,326 linear feet of macadam road.
- Construction of approximately 10 miles of new secondary roads and removal of 26 county road bridges.
- Relocating 56.2 miles of power lines and approximately 45.5 miles of telephone lines.
- Minor alterations to cemeteries.
- Relocations and alterations to approximately 17,000 linear feet of affected gas and oil pipelines.

2.2. HYDROLOGY

The plan of project operations provides for flood risk management, water supply, water quality control, navigation, low-water flow, recreation and fish and wildlife conservation. 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. Glacial drift aquifers fill buried bedrock valleys created by the advances and retreats of the Pleistocene ice sheets. The City of Shelbyville draws its water supply from wells founded in the Kaskaskia River alluvium. These wells produce from 200 to over 500 gallons per minute (gpm). The City of Sullivan, near Forrest W. “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.

2.3. SEDIMENTATION AND SHORELINE EROSION

At normal pool, Lake Shelbyville’s 172 miles of shoreline is quite irregular and broken by many deep inlets and coves. The configuration of the shoreline does not vary much with the level of the pool as the lake is confined by relatively abrupt slopes and many timbered arms. In most places the land is not readily flooded, as the banks are relatively high. These abrupt slopes and the erodible soils have impacted project facilities.

Shoreline erosion at Lake Shelbyville is caused by a combination of factors: fluctuating lake level, waves created by wind and boat actions, and the soil surrounding Lake Shelbyville being predominately glacial sandy clay with little resistance to erosion.

The Final Letter Report, Lake Shelbyville Shoreline Erosion Management Plan, 29 January 1993, was prepared to recommend the facilities needing protection, consolidation, removal, or replacement because of predicted shoreline erosion over the next 30 years (baseline 1990). A summary from the Shoreline Erosion Management Plan is described in Chapter 6.

Erosion was considered during project design to have minimal impact on pool storage in early years. However, because the last full sedimentation survey was conducted in 1984, there is no way of knowing exactly what that impact is today. The 1984 survey concluded that although the lake was estimated to lose 6.8% of its storage capacity in 50 years (by 2034), that rate of deposition was 2.5 times higher than original estimates. A bathymetric survey of Lake Shelbyville boat ramps was conducted in 2002, but this information is only a small part of the total view of sedimentation ranges. A sedimentation survey coupled with a revised shoreline erosion plan are needed to get a clearer picture of future needs.

2.4. WATER QUALITY

Water quality monitoring provides early warning signs of possible future degradation within the lake area. According to the 2014 Shelbyville Lake Water Quality Report, issued by the Hydrologic and Hydraulics Branch, Environmental Quality Section, St. Louis District, Corps of Engineers - in general, the lake and downstream river channel maintains good water quality. The exception is Total Suspended Solids and aquatic plants listed by the Illinois Environmental Protection Agency (IEPA). The sources for these impairments are runoff, crop production, shore modifications, and recreational pollution. *(2014 Shelbyville Lake Water Quality Report, 2014)*

Water quality data is shared with the IEPA to be used in their Illinois Integrated Water Quality Report, required every two years by the Clean Water Act Sections 303(d) and 305(b). IEPA does not test Lake Shelbyville waters, so this data is important to their meeting their requirements.

The Kaskaskia Watershed Association (KWA) is working with State and Federal government agencies to encourage landowners along the Kaskaskia River to reduce silt runoff into the river through participation in government sponsored programs, such as USDA's Regional Conservation Partnership Program, Environmental Quality Incentives Program (EQIP), and National Water Quality Initiative.

Another group, the Upper Kaskaskia Ecosystem Partnership evolved from an organized group of landowners representing the five county Farm Bureaus and Soil and Water Conservation Districts in the Lake Shelbyville watershed. Since 1995, the group has sought to promote nitrogen management, filter strips, no-till, and other best

management practices. The history, goals, and plan of action for the Upper Kaskaskia River Ecosystem Partnership is explained in Chapter 6 and the Lake Shelbyville Operational Management Plan (OMP).

2.5. PROJECT ACCESS

Lake Shelbyville is located in Shelby and Moultrie Counties of east-central Illinois. The dam site is located on the Kaskaskia River and about one-half mile east of Shelbyville, Illinois. The lake lies approximately 113 miles northeast of St. Louis, Missouri and 60 miles southeast of Springfield, Illinois. Lake Shelbyville is served by four state highways: Illinois 32 on the east, Illinois 16 to the south, Illinois 121 at the north, and Illinois 128 to the west. The location of the lake, adjacent lands and highway network are shown on Plate 1.

These major roads provide access to township and county roads, which in turn connect to project roads. Regional access to the project is by Interstate Highway 57, the north-south interstate route, for those visitors from east-central Illinois, north-east and southern Illinois. St. Louis area and Terre Haute visitors use Interstate Highway 70, the east-west interstate route, as access to the project. Consistent, adequate signage directing visitors to Lake Shelbyville as well as surrounding communities is important to regional success.

The following is a descriptive listing of the road network. All of the primary and secondary roads and part of the tertiary roads are shown and indexed on Plate 1.

Primary Roads

Illinois Route 128 north from Shelbyville to Macon County.
Western primary access road for Dam West, Opossum Creek, Coon Creek, and Lone Point Recreation Areas, Eagle Creek State Park, and Findlay Marina.

Illinois Route 121 from Bethany to Sullivan and Allenville.
Northern primary access road for Wilborn Creek Recreation Area. Highway bisects both West Okaw and Kaskaskia Wildlife Management Areas.

Illinois Route 32 from north of Sullivan to Windsor and Illinois Route 16.
Eastern primary access road for Whitley Creek, Sullivan Beach, and Forest W. "Bo" Wood Recreation Areas, Sullivan Marina and Campground, and Wolf Creek State Park.

Illinois Route 16 from Shelbyville to Windsor.
Southern primary access to Dam East, Dam West, Spillway, and Lithia Springs Recreation Areas and Lithia Springs Chautauqua Area. This is also the primary access for the operation lands that includes the Main Dam, Administration and Maintenance complexes, and Visitor Center.

Secondary, Tertiary and Access Roads

County and township roads connect the project recreation areas with the major roads. These minor roads are maintained by local, county, and township road districts. Generally, the conditions of these roads are good relative to their surface condition and width.

Secondary road from Shelbyville to Findlay, Shelby County Highway 5.
Provides access to Opossum Creek, Coon Creek, and Lone Point Recreation Areas, and Eagle Creek State Park.

Secondary road from Findlay to Bethany, Shelby County Highway 2 (2100 E), Moultrie County Highway 13.
Provides access to West Okaw Wildlife Management Area.

Secondary road from Illinois Route 128 crosses Illinois Route 32 to Illinois Route 121, Shelby County Highway 3/ Moultrie County Highway 4, (Shelby County 2100 North).
This road is commonly known as the Bruce-Findlay Road. Provides access to Coon Creek, Lone Point, and Whitley Creek Recreation Areas, Eagle and Wolf Creek State Parks, and Findlay Marina.

Secondary road from Illinois Route 121, County Road 625 East.
Provides access to Wilborn Creek Recreation Area and Coal Shaft Bridge.

Secondary road from Illinois Route 32, 1125 North to County Rd 1000 East to 1100 North.
Provides access to Camp Camfield Environmental Study Area.

Secondary road from Shelby County Highway 3 (2100 North), 2500 East. Provides access to Wolf Creek State Park.

Secondary road from Illinois Route 32 to Lithia Springs Recreation Area, Shelby County Highway 4 (1500 North).
Provides access to Lithia Springs Recreation Area and northern access to Lithia Springs Chautauqua Area.

Secondary road from Illinois Route 16, 2200 East. Provides access to Lithia Springs Recreation Area.

2.6. CLIMATE

The Lake Shelbyville area is situated in the humid continental climatic region, which comprises the largest climatic region in Illinois. This broad region, extending southward from the northern cool-summer region to the ridges of southern Illinois, provides a moderate climate.

Temperature

The temperature in the Lake Shelbyville area is quite variable. Air masses of polar origin meet with warm masses from tropical regions that produce frontal activities resulting in a variety of water types. The average annual temperature in this area is about 55º F and the average monthly temperature ranges from 78º F during July to 30º F in January. The winters are usually short and moderate, although temperatures below zero are occasionally experienced. The coldest recorded temperature of -36º F occurred on January 5, 1999 in Congerville, IL. Occasional temperatures of 100º F or higher, have been experienced. The maximum observed temperature of 117º F occurred to the southwest at East St. Louis on July 14, 1954.

Wind Movement

Winds in the project area average 5-15 miles per hour with no set pattern of wind direction. The migration of air masses over this relatively flat area is the determining factor. Available data indicates that a larger percentage of wind movements come from a south-southwesterly direction.

Humidity

The mean relative humidity varies from about 59 to 86 percent in the winter, and from 51 to 89 percent during the other seasons of the year.

Precipitation

The average annual precipitation over the drainage area is 39.3 inches, of which about 22 percent falls in May and June. Rainstorms are frequent in the spring. Local snowfall is usually limited to the period from November through March and seldom covers the ground for more than a few days at a time. The average snowfall amounts to about 20 inches per year. According to the National Oceanic & Atmospheric Administration's (NOAA) National Centers for Environmental Information, the average precipitation over a 10-year period has increased from 32.09 inches (1895-1905) to 39.3 inches (2005-2015). *(NOAA National Centers for Environmental Information, 2016)* This increase in precipitation is may be reflected in four of Lake Shelbyville's top ten highest pool elevations occurring since 2005, including January 2016.

Figure 1 - Shelbyville Climate Data

Lake Shelbyville area weather averages – 1981 - 2010

High Temp: 63.5 F
Mean Temp: 53.4 F
Low Temp: 43.3 F
Cooling DD: 1200
Heating DD: 5420

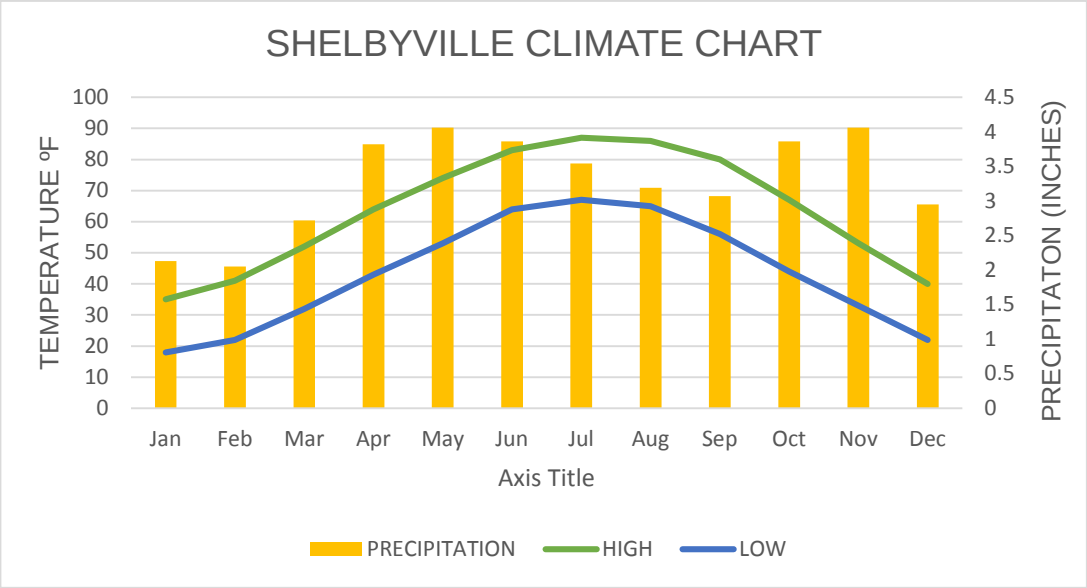
Days above 90: 23.5
Days above 100: 0.4
Days below 0: 5.2
Days below 32: 112.2

DD: Degree Days
Source: Illinois State Water Survey Prairie Research Institute

Shelbyville IL Climate Averages - 1981-2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	35	41	52	64	74	83	87	86	80	67	53	40
Average low in °F:	18	22	32	43	53	64	67	65	56	44	33	22
Average precipitation in inches:	2.13	2.05	2.72	3.82	4.06	3.86	3.54	3.19	3.07	3.86	4.06	2.95

Climate data for Shelbyville dam, Longitude: -88.774, Latitude: 39.4067



Source: www.usclimatedata.com

2.7. TOPOGRAPHY, GEOLOGY AND SOILS

Topography

The flood plain in the upper reaches of the Kaskaskia River is fairly narrow varying in width from one-quarter mile to approximately one mile. The drainage basin is long and narrow. The river is a slow, turbid, meandering stream that has an average fall of less than one foot per mile. Tributaries are few and small, and the uplands are mainly undissected. Remnants of terrace deposits, which are very similar in composition to the recent alluvium, are scattered along the valley. Glacial drift of Illinoisan and Wisconsinan age blankets most of the uplands and forms the drift hills that consist of an intimate mixture of clay with pebbles and a few small rocks. Boulders larger than one-half cubic foot are rarely found in the area. Underlying the glacial drift is Pennsylvanian deposits of shale and sandstone.

The present area topography is largely a result of the past glacial deposition and subsequent stream erosion. The vertical change in relief is quite extensive in this portion of the Kaskaskia Valley. Here narrow, deep valleys have been submerged by the formation of Lake Shelbyville. Shoreline erosion has occurred since the creation of the lake, primarily during periods of sustained high pool levels. These high water levels plus wave action caused erosion especially along the lakeshores' steeper slopes.

Geology

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. As 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 in underlying areas of reservoir lands creates the potential for future ground subsidence.

The major geologic resources present in the reservoir area consist of the soils and ground water. The potential for future ground subsidence and subsequent reparations exists due to collapse of abandoned mines. Special programs for protection beyond the basic management procedures of controlling soil erosion and ensuring wellhead protection are not warranted.

Soils

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.

Groundwater

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 founded in the Kaskaskia River alluvium. These wells produce from 200 to over 500 gallons per minute (gpm). The City of Sullivan, near Forrest W. “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.

2.8. RESOURCE ANALYSIS

The objective of the Corps of Engineers’ natural resource management program is to improve and sustain the health of the ecosystem in order provide both game and non-game wildlife for the benefit of the public. Non-consumptive uses of wildlife, such as sightseeing and photography, will receive equal consideration with that of consumptive uses, such as hunting. Vegetative and water level manipulation will be the principal methods of fish and wildlife habitat management, and will be consistent with other joint uses and basic physical limitations at Lake Shelbyville. Accepted wildlife management techniques such as prescribed fire, timber stand improvements, succession mowing, exotic control, etc. will be utilized to improve/manage the habitat to benefit many plants and animals.

2.8.1. Fish & Wildlife Resources

The fish population of Lake Shelbyville and its tailwater is typical of Midwestern waters. Major sport and forage species are white crappie and black crappie, bluegill, green sunfish, longear sunfish, warmouth, muskellunge, white bass, walleye, yellow and black bullhead, channel and flathead catfish, largemouth bass, freshwater drum, carp, sauger, smallmouth bass, yellow bass, numerous species of buffalo fishes, bowfin, gizzard shad, brook silversides, and many species of minnows, shiners, and darters. There are approximately 50 species of fish found in this area. The waters of the lake and tailwater support a diversity of forms of phytoplankton, zooplankton, aquatic insects, crustaceans, and mollusks indicating the health of the food chain supporting the lake fisheries.

The Corps of Engineers and the Illinois Department of Natural Resources (IDNR) work together to manage twenty-one fishing ponds ranging from one-quarter acre to 30 acres in size. A joint fish habitat day with IDNR and volunteers is held each year to place discarded Christmas trees and artificial structures in the lake to help provide fish habitat. The Fin and Feathers Nursery Pond is used annually to produce walleye, sauger and occasionally largemouth bass fingerlings for supplemental stocking into Lake Shelbyville.

Numerous species of wildlife, such as rodents, small gamebirds and mammals, waterfowl, shorebirds, songbirds, furbearers, white-tailed deer, wild turkey, and predatory mammals and birds, are native to this area. A diverse habitat ensures the success of these native animals. Flooded timber areas provide nest trees for woodpeckers and wood ducks. Other wildlife management practices such as prairie and woodland burns have also benefited wildlife species. In addition, the number and diversity of shorebirds and waterfowl using this area has steadily

increased, in part due to the creation of Okaw Bluff Wetlands Complex and waterfowl areas managed by IDNR.

Much of the land is relatively dense forest with a moderate amount of openings. In the existing openings, edge is maintained/developed through succession control and/or plantings. Maintaining edge effect can be very beneficial for many wildlife species, however, it can be detrimental to others such as Neotropical migrants. Other than reclaiming old fields taken over by exotic species, no new openings will be created for this reason.

2.8.2. Vegetative Resources

The plant resources at Lake Shelbyville include a diverse forested area ranging from light seeded species which usually populate stream valleys prone to seasonal flooding to the complex association on the upper slopes classified by the generic oak-hickory forest type. About half of Lake Shelbyville's fee land is above the 10-year flood pool. Consequently, these lands are not subject to frequent inundation. When floods do occur, the production of wildlife within the low areas is jeopardized. However, since this occurs infrequently, it does not greatly affect vegetative planting and manipulation techniques or nesting habitat.

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 midstory consists primarily of eastern hophornbeam, sugar maple and hickory species. Due to the closed canopy in the overstory, mostly only shade tolerant species such as sugar maple and hickories are present in the understory. Amur honeysuckle, a non-native shrub, is also prevalent in much of the woodland understory. 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. The species in these areas are typically, elm, ash, black walnut and shingle oak with a heavy exotic understory component of multi-flora rose, Amur honeysuckle and autumn olive.

Lake Shelbyville habitats range from high quality to poor. Oak-hickory woodlands, exotic-choked old fields, re-established prairies, and leased agricultural fields account for much of the variety. Wildlife habitat improvement practices will seek to increase the value of the present habitat for native plant and animal species.

Exotic species causing considerable problems are Amur honeysuckle and multiflora rose to woodlands, autumn olive to prairies and old fields and common carp to aquatic plants. Efforts will be made to control exotics as much as possible, while enhancing good quality habitat.

Non-recreation areas are being managed to provide quality wildlife habitat. Vegetation, including trees, is 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 on state property are managed to provide the same relationship in addition to furnishing a food supply for waterfowl in the two subimpoundment areas.

Occasional sightings of tall grass prairie species is a reminder that these persistent plants once populated the flat prairie adjacent to the forested river valley. In sharp contrast to the surrounding farmland, the vegetative resources and qualities of the project land is an aesthetic change of pace.

Vegetative management practices vary from tree planting in recreation areas and old field sites to succession control of other sites by succession mowing or prescribed burning to discourage unwanted species and set back succession.

Land management on lower elevations will be left primarily to flooding to control succession. Typically, every two to three years these low lying areas are inundated long enough to reset succession. The only exceptions to this will be for waterfowl management areas within the Okaw Wetlands, which is managed primarily for waterfowl.

Prairie Habitat Enhancement

Prior to westward expansion, large portions of Illinois were covered with native grasses and other plants. The Prairie Habitat Enhancement Program helps reestablish some of those grasses and plants. Currently, 151 acres of prairie is being actively managed on Lake Shelbyville with more planned each year to include areas within recreation areas for demonstration purposes. Approximately two-thirds of these acres have been established since 2007.

Environmental Study and Demonstration Area

Approximately 226 acres of the 443 acres in the Camp Camfield Multiple Resource Area has been designated as the Camp Camfield Environmental Study Area. This area contains 11 acres of prairie demonstration plots that are part of the prairie habitat enhancement program. An oak-hickory timber association is present throughout the area in various successional stages. Lowe Pond is located in this area and is visited by fishermen. This area also includes a trail system, vault comfort station, picnic shelter, picnic area, stage area, and two fire rings.

2.8.3. Threatened & Endangered Species

At the present time Lake Shelbyville has no known endangered species of plants or animals. The Lake Shelbyville area may provide seasonal non-critical habitat for the federally endangered Indiana bat, and piping plover and critical habitat for

the eastern prairie fringed orchid, although there are no known records for any of these species. Funding is requested during every budget cycle to sample for Indiana bat, however, funding has never been approved.

In an effort to conserve the northern long-eared bat (Myotis septentrionalis), the U.S. Fish and Wildlife Service implemented a final rule under section 4(d) of the Endangered Species Act (ESA) on January 14, 2016 to tailor protections to areas affected by white-nose syndrome (WNS) during the bat's most sensitive life stages. Lake Shelbyville falls within the range of this species and may provide seasonal non-critical habitat. The rule is designed to protect the bat while minimizing regulatory requirements for landowners, land managers, government agencies and others within the species' range. A more detailed description of the issue and implications at Lake Shelbyville are described in the OMP.

Additionally, potential habitat exists for the federally listed species of concern, the loggerhead shrike, but there has been no documented sightings at Lake Shelbyville. Bald eagles have been completely delisted and are considered a recovery success story. There were three known active nests found on the lake as of the spring of 2015.

The Lake Shelbyville project and vicinity provides habitat for one state threatened plant species known to be found on the lake, False Hellebore.

TABLE 1
FEDERAL AND STATE THREATENED AND ENDANGERED SPECIES
THAT OCCUR OR MAY OCCUR IN THE LAKE SHELBYVILLE AREA

Federal List Species	Status	Scientific Name

Indiana Bat *	Endangered	Myotis sodalis
Piping Plover*	Endangered	Charadrius melodus
Eastern Prairie Fringed Orchid**	Threatened	Platanthera leucophaea
Northern Long-Eared Bat	Threatened	Myotis septentrionalis
Loggerhead Shrike	Species of Concern	Lanius ludovivianus
State List Species	**Status**	**Scientific Name**
Western Sand Darter	Endangered	Ammocrypta clarum
Smooth Softshell	Endangered	Apalone mutica
Upland Sandpiper	Endangered	Bartramia longicauda
American Bittern	Endangered	Botaurus lentiginosus
Fibrous-rooted Sedge	Threatened	Carex communis
Kirtland's Snake	Threatened	Clonophis kirlandi
Violet Collinsia	Endangered	Collinsia violacea
Spike	Threatened	Elliptio dilatata
Bigeye Chub	Endangered	Hybopsis amblops
Least Bittern	Threatened	Ixobrychus exilis
Loggerhead Shrike	Endangered	Lanius ludovicianus
Black Sandshell	Threatened	Ligumia recta
Bigeye Shiner	Endangered	Notropis boops
Black-crowned Night-Heron	Endangered	Nycticorax nycticorax
Osprey	Endangered	Pandion haliaetus
Tube Beard Tongue	Endangered	Penstemon tubaeflorus
Wilson's Phalarope	Endangered	Phalaropus tricolor
Sheepnose	Endangered	Plethobasus cyphyus
King Rail	Endangered	Rallus elegans
Ornate Box Turtle	Threatened	Terrapene ornata
Buffalo Clover	Threatened	Trifolium reflexum
Barn Owl	Endangered	Tyto alba
False Hellebore**	Threatened	Veratrum woodii

Federal Species: *(Environmental Conservation Online System County Report, 2016)*
State Species: *(Illinois Threatened and Endangered Species By County, 2015)*

*Although habitat exists at Lake Shelbyville, there are no documented sightings of the Indiana Bat.

** The False Hellebore has been sighted in the following areas at Lake Shelbyville, Coneflower Hill Prairie, Pogue Timber (also known as Sullivan Woods), and Great Blue Heron Rookery. Coneflower Hill Prairie and Pogue Timber (Sullivan Woods) are Illinois Natural Area Inventory (INAI) Sites.

2.8.4. Invasive Species

Exotic species are becoming more and more of an issue throughout the project. From non-native fishes such as common carp to insects, animals and plants,

these non-native species are causing considerable problems for our native species. There are a number of invasive plant species that suppress regeneration in the Oak/Hickory forests around Lake Shelbyville. They do this by out-competing the native vegetation for water, sunlight, nutrients, and space. Invasive and/or weedy species of special concern are listed below:

- Amur honeysuckle
- Autumn olive
- Black locust
- Garlic mustard
- Multiflora rose
- Phragmites
- Reed canary grass

A more detailed description of these invasive species and control measures is outlined in the OMP.

Monitoring sites have been established in all campgrounds for the emerald ash borer. While none have been found on the project, they have been found on lands immediately adjacent to the project and in all likelihood are present. Monitoring stations for zebra mussels were placed around the lake in the mid 1990's. Although no evidence of zebra mussels has been found in Lake Shelbyville to date, scaled back monitoring efforts continue.

2.8.5. Ecological Setting

The Kaskaskia and Okaw River Valleys in the vicinity of Lake Shelbyville have been shaped by water erosion creating a deep valley with steep banks. Many small tributaries enter the major valley system above the dam site creating an irregular shoreline dissected by a system of valleys and ravines. Most of the valley slopes above the lake are covered with second growth predominately oak-hickory forest. These steep wooded slopes and ravines provide the camper, boater, naturalist, and the casual visitor with aesthetically pleasing views of wooded vistas in this largely agricultural section of Central Illinois. The body of the lake now occupying the valley bottom is confined by the steep slopes and timbered arms. Developed lookout points take advantage of the excellent scenic qualities along the lake edge. Scenic views can also be seen from some off project roads as the wooded project lands provide stark contrast to the adjacent flat agricultural lands.

The lands at Lake Shelbyville provide opportunities for land- and water-based recreation, wildlife management, and forest management and for historic, cultural and ecologic study and interpretation. These activities are for the most part complementary to varied scenic qualities of the area. Specific tracts of land have been developed, re-vegetated, or succession controlled to provide the maximum recreational value to the public while preserving and increasing the scenic diversity and wildlife management opportunities. The zoning of the land and water resources is discussed in Chapter 4.

The lake itself is the largest, strongest visual element in this geographic area. The steep valley carved by an ancient river system provides an abrupt topographic change in the surrounding glaciated prairie. The steep wooded slopes of the valley, dissected by tributary streams provide a shoreline with unusual visual contrast. These visual qualities add a unique aesthetic experience to recreational activities at Lake Shelbyville.

2.8.6. Wetlands

Most of the lake shoreline is rather steep, with few true wetlands. Areas such as the Okaw Bluff Wetlands Complex were created to improve the diversity and quality of this important habitat.

The 57-acre complex, used by numerous waterfowl and shore birds, is part of the Illinois Watchable Wildlife Program. Facilities that enhance this area include a nature trail, information boards, observation and hunting blinds, and an observation platform.

The seven-acre Fin & Feathers Fish Nursery Pond, constructed in 1993, is located northwest of Woods Lake. Managed in cooperation with the IDNR, the pond is designed to raise two crops of fish a year. Walleye and sauger are the primary species raised in the pond. Largemouth bass have been reared as well but adequate reproduction in the lake of this species has shifted the focus to walleye and sauger.

Two new fish nursery ponds are proposed for the Dam West Recreation Area and Whitley Creek Bottoms Multiple Resource Area. There is also a proposal to convert the decommissioned Whitley Creek wastewater treatment facility to a nursery pond. The addition of these ponds is necessary to maintain adequate fish populations in Lake Shelbyville, which is experiencing declining fish habitat for production and rearing. The IDNR has suggested that 30 to 40 surface acres of nursery ponds would be ideal to supplement the Lake Shelbyville fishery program. That need would be met with the existing nursery pond northwest of Woods Lake and with the addition of the new nursery ponds. See Chapter 5 for more detailed descriptions of the proposed projects.

2.9. BORROW AREAS, RAILROAD, ROADS, AND UTILITIES

2.9.1. Borrow Areas
One large borrow area, part of Dam West Recreation Area, was re-vegetated and transformed into a recreation area. Several other unsightly borrow areas on project land used for road construction were also re-vegetated.

2.9.2. Railroads
Construction and operation of the lake necessitated raising the Illinois Central Gulf Railroad tracks at West Okaw and Kaskaskia River crossings. This included two new bridges and approximately 6,800 feet of track and embankment. Remedial measures were necessary for the protection of the existing embankment of the Chicago and Eastern Illinois Railway at the West Okaw Crossings.

2.9.3. Highways and Roads
Three bridges and approximately 7,300 feet of concrete pavement were constructed on Illinois Route 121. On Illinois Route 32, one bridge and about 3,600 feet of concrete pavement were constructed. One bridge and 1,326 feet of asphalt pavement were constructed on FAS Route 642 (Shelby Co. Hwy 3/Moultrie Co. Hwy 4). Initial project operation necessitated construction of approximately 10 miles of new secondary roads and removal of 26 county road bridges.

2.9.4. Utilities and Pipelines
Fifty-six miles of local power lines and forty-five miles of telephone lines required relocation.

Prior to project operation, approximately 17,000 feet of gas and oil pipelines were either relocated or altered.

2.10. MINERAL AND TIMBER RESOURCES

2.10.1. Minerals
Mineral resources consist of oil, sand, gravel and coal. There are a few oil wells in the vicinity of Lake Shelbyville. Coal mining activities have long been abandoned. None of these mineral resources has a large impact on the local economy or a great impact on resources management operations at Lake Shelbyville. Ground subsidence caused by collapse of underlying abandoned coal mines could affect reservoir facilities such as comfort stations, parking lots, roadways and other structures surrounding the lake.
Mineral rights were retained by the original owners and assigned heirs on the Walter Welsh property located in Section 16 of T13NR5E, Moultrie County, Illinois. Approximately 20 to 30 loads (300 – 400 tons) of low-grade gravel are removed from the surface pit annually. If these mineral rights become available to be purchased it might be in the best interest of the government to purchase them.

Recent research has shown there may be other parcels of Corps land where the previous landowners retained mineral rights. The extent of this ownership will need to be researched further and a plan of action developed should owners decide to pursue operations.

2.10.2. Timber Resources

The topography of the woodlands at Lake Shelbyville graduates from steep to relatively progressing from south to north and the quality of the timber corresponds with this graduation. The southern 2/3's of the lake was for the most part not suitable for agricultural production while much of the northern 1/3 of the uplands was used for production. Because of this, the vast majority of quality oak/hickory woodlands occurs on the southern 2/3's of the property with the northern 1/3 of the lake's woodlands consisting of highly degraded stands consisting of ash, honey locust, osage-orange and shingle oak with a high exotic component in the understory with small pockets of quality oak/hickory. Only one known location of old growth timber remains, Pogue Timber, a 40-acre site located northeast of the Village of Findlay, listed on the Illinois Natural Area Inventory (INAI), and listed as an Environmentally Sensitive Area in this Master Plan.

Prior to construction of the lake, 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 silver maple. The understory was composed of a variety of shrubs and minor associations of grasses. Remnants of this vegetative association can still be found in the southern portion of the lake at the very back of coves, along uncleared stream channels in the upper reaches of the lake and along the waterfowl sub-impoundments in areas not inundated for long periods. However, much of these bottomland hardwoods were lost due to long periods of inundation and have been replaced by willow and non-native reed canary grass.

Timber value, while not a main priority, is taken into consideration when planning prescribed burns and timber stand improvements (TSI). Forest management priorities consider the current health of the timber stand and the desired outcome. These priorities vary with the inventory, land classification and stand prescription. Timber stand improvement measures transform a degraded forest into a healthy, diverse system. A healthy system provides food and shelter to a number of both game and non-game species, improves recreational enjoyment as well as protecting against erosion and insect/disease infestation. Typically, only high quality sites will receive treatment as highly degraded sites are simply too expensive to rehabilitate. Specific TSI measures are outlined in the OMP.

2.11. CULTURAL RESOURCES

Archaeological Studies

Two important management documents prepared in the late 1980's guide compliance and summarize our current knowledge of historic properties at the lake. Together they provide the basic references for managing the lake's archaeological resources and should be the first sources consulted.

The St. Louis District Historic Properties Management Plan, Lake Shelbyville (HPMP), completed in 1986, is a guide to assist lake and other District personnel in meeting federal regulations concerning historic properties management at Lake Shelbyville. The HPMP includes chapters on organizational structure, compliance procedure, long term resources management, tasks and priorities (tied to the Operational Management Plan), training, staffing, and budget. This document is long overdue for an update and talks of a digital GIS based system are ongoing. However, there is no current timeframe for this to happen.

The second important management document, Historic Properties Data Synthesis: Compliance Document, Lake Shelbyville, Illinois was completed in 1989. This document summarizes the lake's archaeological background. It includes chapters on the lake environment, previous archaeological investigations, all historic properties identified at the lake and the lake's cultural history. The concluding chapter establishes priorities for future historic properties investigations at the lake.

Previous Archaeological Survey and Investigation Results

During the pre-impoundment investigations conducted by the National Park Service (NPS) from 1960 to 1965, much of the reservoir was surveyed. Surveys focused almost exclusively on prehistoric sites (no historic sites or standing buildings) in plowed fields (no shovel testing in woods). Surveys recorded 62 sites, of which one was tested and four were excavated. Sites ranged from the Middle Archaic (about 5000 B.C.) thru Mississippian periods and were most numerous adjacent to the Kaskaskia River.

Post-impoundment investigations began in 1978. Three shoreline surveys between 600 and 610 feet elevation were conducted in 1978, 1981, and 1983 respectively. Most of the lake shoreline below the Shelbyville State Fish & Wildlife Management Areas was surveyed. A small portion of the Kaskaskia Unit was surveyed. These surveys recorded 255 sites, and revisited numerous previously recorded sites. Many sites were tested and five sites (11Mt-5, -14, -53, -56, and 11Sy-64) were extensively excavated. Other post impoundment projects recorded 19 more new sites, revisited several known sites, tested 23 sites, and excavated portions of 10 sites.

The University of Illinois – Urbana (U of I) performed virtually all of these investigations except a 1985 excavation project conducted by the University of Missouri, St. Louis. As a result, two U of I doctoral dissertations were written on Shelbyville archaeology: "The Mississippian Occupation of the Upper Kaskaskia Valley: Problems in Culture History and Economic Organization" by Charles R. Moffat, P. McGowan, 1990 and "The Raspberry Mound Mortuary Site Shelbyville Reservoir, Illinois: An Analysis of Skeletal Material" by Anna Fernyhough, 1983. Projects on land outgranted for state parks to the Illinois Department of Conservation, now known as the Illinois Department of Natural

Resources (IDNR), including Eagle Creek Resort, were conducted by the Illinois State Museum and published in the annual cultural resources studies of the IDNR state parks and recreation areas.

In 1986, the St. Louis District began a five-year program of site revisiting and monitoring prescribed by the HPMP. By 1989, a total of almost 400 archaeological sites had been recorded, revealing the presence of human groups during every major cultural period, from the Paleo Indian to the historic. The most numerous components (occupation during a specific period, sites may have more than one component) are the Middle Woodland, Late Woodland and Mississippian; this may be related to the length of occupation, the presence of diagnostic pottery and the intensity of study. The high number of Late Archaic components is likely related to length of occupation also. Few components have been recorded as Early Woodland because there are few artifacts diagnostic of this period. There are relatively few Paleo Indian, Dalton, Early Archaic, and Middle Archaic components due to low occupation density. Protohistoric, Historic Indian and Historic Settlement components are under-represented because they were not systematically recorded until recently. The highest investigative priority is immediate recovery of exposed human skeletal remains, followed by periods for which there is little or no information: Paleo Indian, Dalton, Protohistoric and Historic Indian.

Current Archaeological Surveys and Investigations

In 1988 in response to 36 CFR 79, the St. Louis District developed a curation program to store all District artifacts from the State of Illinois at the Illinois State Museum, Springfield, Illinois. All Lake Shelbyville artifacts collections, including pre-impoundment items recovered by the NPS, post-impoundment collections from the U of I and elsewhere, and miscellaneous collections at the lake office were moved to the Illinois State Museum and are currently curated under a contract through the Illinois State Museum Society. Artifacts and associated documents (field notes, photographs, contract papers, etc.) were inventoried and re-boxed for long-term storage. Required Native American Graves Protection and Repatriation Act (NAGPRA) compliance was also conducted on the Shelbyville museum collection.

From 1989 – 1996 several in-house archaeological surveys were conducted prior to construction or maintenance projects. The Opossum Creek Land Treatment Plant surveys (1989, 1993) located two small upland prehistoric sites (ineligible). In 1992, the boundaries of eligible Late Woodland site 11Mt-151 were determined and the Bruce Wetland borrow area was moved to avoid the site. Also in 1992, sites 11Mt-5 (George Ward), 11Mt-14 (Neva Fultz), 11Mt-56 (Stop Sign) and one historic and archaeological site, Lithia Springs Chautauqua were investigated. In 1993, an eroding burial at Whitley Creek Recreation Area was removed under NAGPRA. In 1994, the proposed Whitley Creek Wastewater Land Treatment System location was surveyed; no sites, only isolated prehistoric chert flakes and worked chert were found. In 1995 at Coon Creek Campground, prehistoric upland site 11Sy-300 was investigated by a volunteer archaeologist assisted by the local Kaskaskia Archaeological Society.

In the winter of 1996, fieldwork for the Shelbyville Shoreline Erosion Project (SSEP), (construction of Phase I) began. The work was done in-house since these were small projects at eight recreation areas near the lake's south end. Five previously reported sites were revisited and two isolated finds were recorded. Of these sites, sites 11Sy-79, -85, -97, and the two isolated finds were determined ineligible; site 11Sy-98 had been destroyed, and 11Sy-183 was considered potentially eligible, but would not be impacted by the project.

In the summer of 1996, as part of SSEP (the construction of Phase II) Southwest Missouri State University archaeologists surveyed upland areas at Bo Wood and Lone Point Recreation Areas, where campground relocations were planned (total 120 acres). Two previously recorded sites at Lone Point (11Sy-159, -186) were revisited; 18 new sites and 9 isolated finds were recorded. Six sites were evaluated for eligibility: 11Sy-305 at Lone Point and 11Mt-203, -207, -208, -209, -211 at Bo Wood. Further testing at 11Mt-203, -207, and -209, revealed that only 11Mt-209 was eligible.

Cemeteries

Design Memorandum 8D, Cemetery Relocation Plan, identified three cemeteries to be relocated. Remains from these cemeteries were reinterred at Quigley Cemetery, located within Wolf Creek State Park, in 1966. As much as possible, descendants were notified of the move. Some were present during the relocation.

Hidden Cemetery, located in the Lone Point Recreation Area, was an inactive, unmaintained family cemetery. The remains of 14 unknown and one known burial were disinterred and reinterred as part of the original contract. The land on which the cemetery sat is cut off from land and becomes an island around the lake elevation of 603 feet above sea level. In 1987, human remains were discovered by fishermen at the base of the old cemetery. A total of three individuals were disinterred from the location and reinterred at Quigley Cemetery. A fourth individual was recovered in 1991, again discovered by a passing fisherman. This individual was also reinterred at Quigley.

Carpenter Cemetery, located approximately one mile northeast of Shelbyville was an inactive, unmaintained cemetery. One known burial and 14 unknown burials were disinterred and reinterred at Quigley Cemetery.

McDaniel Cemetery, located approximately one-half mile north of Bruce, was an unmarked, unmaintained, inactive family cemetery. The remains of one unknown and one known burial were disinterred and reinterred at Quigley Cemetery.

The only known historically significant property within the lake boundaries is the Lithia Springs Chautauqua Area. The Chautauqua, a Seneca (Iriquoian) word meaning possibly "one has taken out fish there," but an alternative suggested meaning is "raised body", was a national movement to bring culture, education, and religion to rural America. *(Meaning of Chautauqua, 2015)* Jasper Douthit, a self-taught Unitarian minister, built a religious and educational gathering place on his family land east of Shelbyville. The natural lithium springs were a focal point for the annual gatherings from 1890 to 1921.

Comfortable cabins and famous speakers including William Jennings Bryan, Carrie Nation, and Billie Sunday also attracted people from all over the state. The permanent facilities consisted of privately owned and rental cabins, dormitories, pavilions, a library, and chapel. No buildings remain, but many foundations lie buried, making this an important historic archaeological site. Today, Lithia Springs Chautauqua shows little trace of its former history, with the exception of the springs, which are still active. In 1992, the Chautauqua area was formally determined eligible for the National Historic Register, based on documentary and archaeological investigations conducted by American Resources Group, Ltd, Carbondale, Illinois. Plans to nominate the Chautauqua area to the National Register of Historic Places are in limbo as the National Registry has requested additional data on subsurface features that are currently unavailable. A plaque has been placed at the entrance that explains the historical significance of the area. Future plans include placing a shelter over the springs and establishing a self-guided interpretive trail.

2.12. DEMOGRAPHICS

Population Growth and Distribution

Moultrie and Shelby Counties are primarily agricultural, with approximately 79% of Shelby County acres (387,288) and 76% of Moultrie County acres (167,791) in farms according to the 2007 Census of Agriculture. Shelby County, with an area of 768 square miles, has a lower density of people per square mile (29.5) than Moultrie County (44.2), which has an area of 344 square miles. Approximately 58% of those living in Moultrie County and 54% of those living in Shelby County reside in cities or villages, rather than on farms. Table 3 shows that between 2000 and 2010, the population of Moultrie County increased (3.9%) while Shelby County decreased (-2.3%). There are various reasons for changes in directions and rates of population growth in rural areas. One reason may be tied to the number of job postings. Indeed.com, an Internet job search engine, reports the Shelbyville job market as weak with a decline in job postings over the past year of 37%. *(Shelbyville IL, 2016)* In contrast, Sullivan job postings by the same website have increased by 9%. *(Sullivan Jobs, 2016)* This can make a difference if an employee desires to live in the community where they work rather than commute. The lack of jobs in Shelby County could be a reason for population declines.

Another reason that may apply to the Lake Shelbyville area of influence is an individual's amenity preference. Both counties and communities have attracted residents due to their close proximity to urban areas and the amenities provided there. The cities of Decatur, Mattoon and Effingham support larger manufacturing, financial, and retail employment, however, individuals may choose to live in a rural area and commute to their urban work locations. This proximity to urban areas may help keep Shelby County population from declining further.

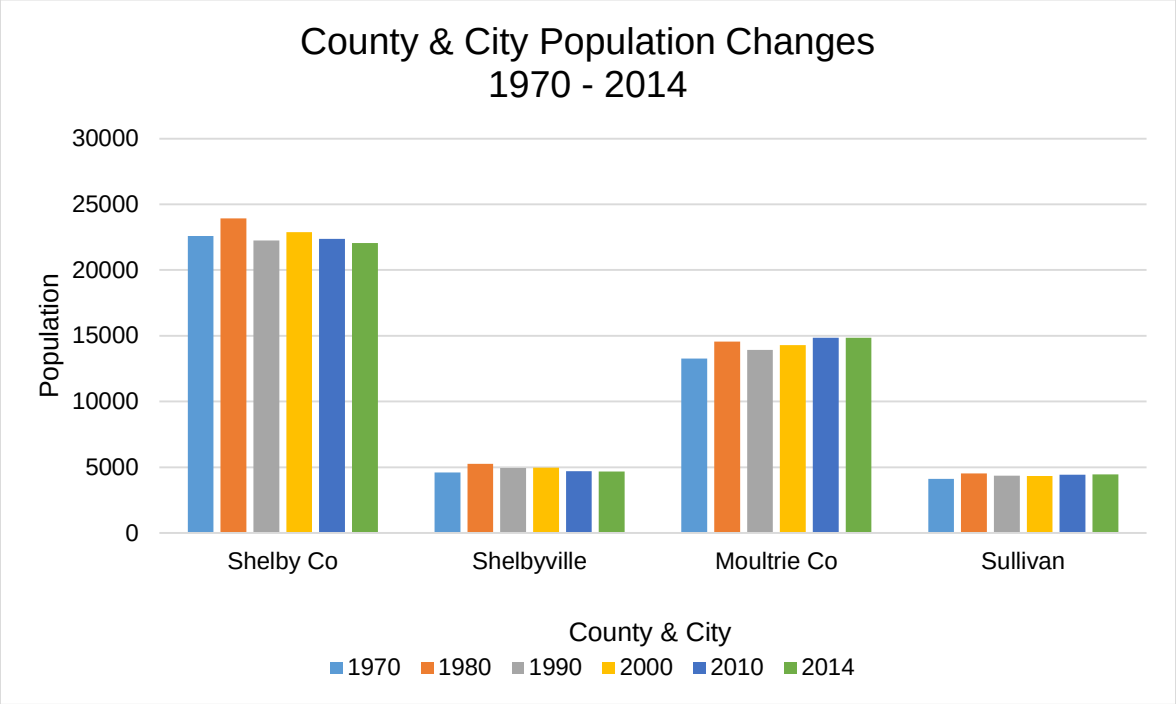
TABLE 2
POPULATION FOR MOULTRIE AND SHELBY COUNTIES AND OTHER SELECTED AREAS 1970 - 2010

PLACE	1970	1980	1990	2000	2010

Illinois					
Moultrie Co.	13,263	14,546	13,930	14,287	14,846
Sullivan	4,112	4,526	4,354	4,326	4,440
Shelby Co.	22,589	23,923	22,261	22,893	22,363
Shelbyville	4,597	5,259	4,943	4,971	4,700
Coles Co.	47,815	52,260	51,644	53,196	53,873
Mattoon	19,681	19,055	18,441	18,291	18,555
Macon Co.	125,010	131,375	117,206	114,706	110,768
Decatur	90,397	94,081	83,885	81,860	76,122
Vermilion Co.	97,047	95,222	88,257	83,919	81,625
Danville	42,570	39,019	33,828	33,904	33,027
McLean Co.	104,389	119,149	129,180	150,433	169,572
Champaign Co.	163,281	168,392	173,025	179,669	201,081
Springfield	91,753	99,637	105,227	111,454	116,250
Chicago Metro.			8,065,633	8,272,768	9,461,105
Missouri					
St. Louis Metro. (MO & IL)			2,444,099	2,603,607	2,787,701

SOURCE: US Census Bureau, Census 2010

Figure 2 – County & City Population Changes



Employment

Moultrie and Shelby Counties have experienced changes in their areas of employment, and subsequently their sources of income. Agricultural employment was the primary occupation for both counties until the late 1950's. Since then, agricultural employment has declined while manufacturing, wholesale and retail trade, and professional services have become the primary areas of employment. Recent years have experienced minimal fluctuations in employment characteristics. Table 4 shows the civilian labor force of each county while Table 5 displays the numeric and percentage breakdown by industry for civilian labor force employees of Moultrie and Shelby Counties.

TABLE 3
CIVILIAN LABOR FORCE STATUS
MOULTRIE AND SHELBY COUNTIES AND THE STATE OF ILLINOIS, 2013

	MOULTRIE	SHELBY	ILLINOIS
Population 16 Years and Over	11,630	17,976	10,124,119
Civilian Labor Force	7,137	10,788	6,698,936
Percent in Labor Force	61.4%	59.9%	66.2%
Percent Employed	58.0%	55.5%	59.2%
Percent Unemployed	3.4%	4.4%	6.9%

Source: US Census Bureau

Agriculture, however, remains a major factor in the economy of both Moultrie and Shelby Counties, as well as in the State of Illinois as a whole. Recent trends indicate a

continued increase in the size and value of farming units, and value of products sold, for both counties and the state.

TABLE 4
CIVILIAN EMPLOYMENT BY INDUSTRY, 2013

COUNTY	MOULTRIE		SHELBY	
Industry	Employed Persons	% of Labor Force	Employed Persons	% of Labor Force
Agriculture, Forestry, Fishing, Hunting & Mining*	270	4.0%	533	5.3%
Construction	505	7.5%	715	7.2%
Manufacturing	1,640	24.3%	1,990	19.9%
Wholesale Trade	228	3.4%	345	3.5%
Retail Trade	747	11.1%	1,160	11.6%
Transportation and warehousing, and utilities	271	4.0%	586	5.9%
Information	164	2.4%	233	2.3%
Finance and Insurance, and Real Estate and Rental & Leasing*	256	3.8%	423	4.2%
Professional, Scientific, & Management, and Administrative and Waste Management Services	310	4.6%	509	5.1%
Education Services and Health Care & Social Assistance*	1,510	22.4%	2,263	22.7%
Arts, Entertainment, & Recreation & Accommodation & Food Services	424	6.3%	391	3.9%
Other Services (except Public Administration)	210	3.1%	422	4.2%
Public Administration*	211	3.1%	411	4.1%
TOTAL	6,746		9,981	

* Denotes range average for these industries, actual numbers are not specified due to industry competition

SOURCE: US Census Bureau, Census 2010

Existing Land Use

In 1964, Shelby and Moultrie Counties were almost entirely agricultural with the exception of scattered incorporated areas. This pattern remained reasonably intact until the construction of Lake Shelbyville, which removed thousands of acres from

agricultural use. The most significant residential development has occurred since 1970, with the platting of 18 separate subdivisions adjacent to the federal lands around the lake. To date, all contain some dwelling units or improvements and all have been residentially zoned and range in size from 4 to 170 lots. The subdivision represents a major change in the development pattern with residential construction being oriented toward the lake, rather than the surrounding towns. This development influences use patterns on adjacent Corps lands as hunters and other visitors are limited in their access to some areas. Although populations may be declining (Shelby County) or slowly growing (Moultrie County) development around the lake has increased as more people desire to live close to the lake.

TABLE 5
MEDIAN INCOMES FOR SELECTED AREAS, 2009-2013

	FAMILY	HOUSEHOLD
Moultrie County	$54,837	$46,622
Sullivan	$49,327	$35,100
Shelby County	$56,074	$47,188
Shelbyville	$49,730	$42,461
Vermilion County	$51,322	$41,400
Danville	$46,062	$34,426
Macon County	$59,682	$46,559
Decatur	$49,975	$39,514
Coles County	$54,489	$37,040
Mattoon	$48,296	$35,836
Cook County	$65,842	$54,548
Chicago	$54,077	$47,270
Illinois	$66,806	$56,797

SOURCE: US Census Bureau, 2009-2013 Median Values

Commercial construction since 1970 has also resulted in some changes in land use to allow for recreation-oriented commercial activities. The principal businesses are bait shops, marinas, and storage sheds for recreational vehicles. There has also been some new public and industrial construction in the towns around the lake, particularly Shelbyville and Sullivan, but land use changes in these categories have not been significant in terms of size during the period 2000-2010.

TABLE 6
GENERAL HOUSING CHARACTERISTICS

MOULTRIE COUNTY	2000	2010
NUMBER OF HOUSING UNITS	5,743	6,260
PERCENT OCCUPIED	94.1	92.0
PERCENT OWNER OCCUPIED	78.5	77.1
PERCENT RENTER OCCUPIED	21.5	22.9
PERCENT VACANT	5.9	8.0
CITY OF SULLIVAN	**2000**	**2010**
NUMBER OF HOUSING UNITS	3,002	3,476
PERCENT OCCUPIED	93.5	91.7
PERCENT OWNER OCCUPIED	78.5	75.9
PERCENT RENTER OCCUPIED	21.5	24.1
PERCENT VACANT	6.5	8.3
SHELBY COUNTY	**2000**	**2010**
NUMBER OF HOUSING UNITS	10,060	10,396
PERCENT OCCUPIED	90.0	88.6
PERCENT OWNER OCCUPIED	81.0	80.9
PERCENT RENTER OCCUPIED	19.0	19.1
PERCENT VACANT	10.0	11.4
CITY OF SHELBYVILLE	**2000**	**2010**
NUMBER OF HOUSING UNITS	3,462	3,578
PERCENT OCCUPIED	92.4	90.7
PERCENT OWNER OCCUPIED	77.9	77.0
PERCENT RENTER OCCUPIED	22.1	23.0
PERCENT VACANT	7.6	9.3

Source: US Census Bureau

Future Land Use

Future land use in Shelby and Moultrie Counties will be determined to a great extent by the amount of use Lake Shelbyville receives as a major regional recreation area. Land use forecasts made for both counties in 1980 indicated expected growth of residential development around the lake and a subsequent growth of the nearby towns, particularly Shelbyville and Sullivan. Residential growth near Lake Shelbyville since the year 2000 has increased, although the larger communities have experienced little growth or some

decline in population. Even with more housing being developed in both counties, populations are stagnant to declining, indicating smaller families. Land use plans also exhibit a growing awareness in the impact area of the value of conserving lands and limiting development in flood zones. Despite county-wide growth around the lake and some recreational facilities development, the major land use in terms of total acres in both counties is expected to remain primarily agricultural with some industrial components in the foreseeable future.

2.13. ECONOMICS

According to the Corps' Value to the Nation Fast Facts from FY 2013, Lake Shelbyville's visitation resulted in more than $120,000,000 in visitor spending within a 30-mile radius of the lake, supporting 958 jobs. Factoring in multiplier effects, visitors to Lake Shelbyville supported 1,173 jobs. In turn, those jobs added $47,815,000 to the economy in wages & salaries, payroll benefits, profits, rent and indirect business taxes.

Lake Shelbyville has unique physical qualities not found elsewhere in Central Illinois. The lake is quite scenic by boat, by automobile, or on foot, which accounts for a large percentage of sightseers. The project also has an outstanding reputation with campers and statistics indicate that the majority are return visitors.

Local area tourism groups work hard at promoting the project and its activities, which could also increase visitation. Development at the lake includes Findlay Marina, Lithia Springs Marina, Sullivan Marina and Campground, and Eagle Creek State Park Resort. Eagle Creek Resort is currently closed indefinitely. The increased interest in alternative ways to enjoy the lake has changed the complexion of boating and appeals to a broader population. A viable resort will add to that appeal.

Presently, there are three concessionaires at Lake Shelbyville offering water based recreational services. These include power boat sales and service, rental slips, boat rentals, marine supplies, fishing supplies, and food and drink concessions. Based on actual demand for facilities and services, these concessionaires may wish to expand their marina operations in future years. Requests for marina expansion will be carefully considered.

Areas where possible resort-type concession facilities could be constructed include Dam West Recreation Area, an area within Compartment 50 and an area in Compartment 32 adjacent to Findlay Marina. These facilities could feature overnight accommodations, convention center, tourist center, golf, tennis or other recreational amenities. These would be major developments not necessarily to be constructed at the same time.

An EA and a positive recommendation based on a market study will be required before construction of any more resort facilities at Lake Shelbyville is considered.

The Eagle Creek State Park Resort and Conference Center has been closed since 2009. The facility catered to the demographic that desired an outdoor setting but did not necessarily like to camp. These visitors now have no place else to stay on the lake and have left the area. Although the golf course remains open, it has not attracted visitors as it had in the past because of the lack of overnight accommodations. A recent facility assessment identified extensive repairs to the buildings, with IDNR contemplating demolishing the complex. The State of Illinois is considering a plan to request information from interested developers to create a new resort complex.

Another positive factor of economic consideration is the project accessibility. The regional highway network allows ease of travel by Interstates 57 and 70. Although Chicago is 200 miles away, most of this distance is by Interstate 57. State roads carry visitation traffic from Decatur (36 miles), Champaign-Urbana (77 miles), Effingham (31 miles), Springfield (60 miles), and other urban areas. The St. Louis metropolitan area is slightly over 100 miles away via Interstate 70 and state two-lane highways.

2.14. RECREATION FACILITIES, ACTIVITIES AND NEEDS

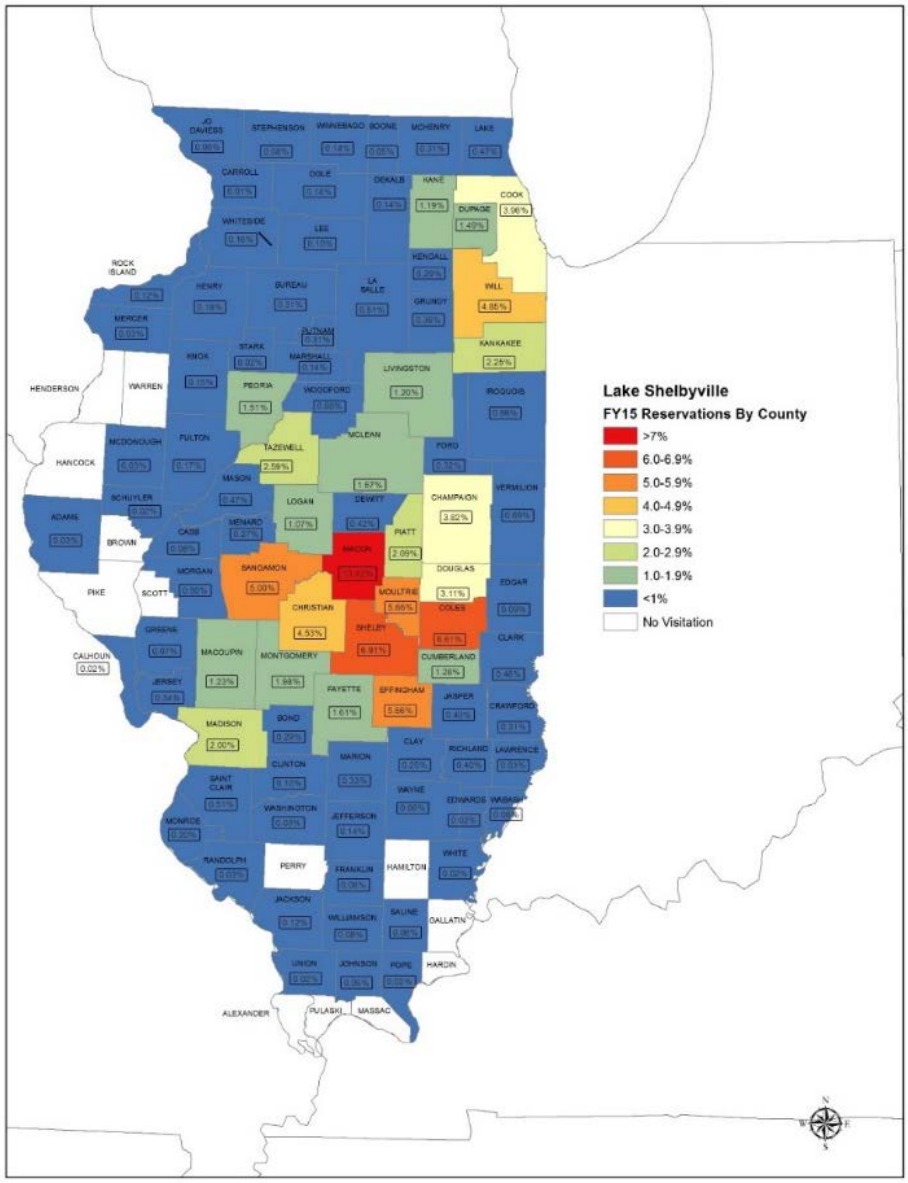
The recreational developments at Lake Shelbyville provide opportunity for outdoor recreation activities such as sightseeing, fishing, boating, water skiing, camping, picnicking, swimming, hiking, and hunting. Areas around the lake have been developed to provide both extended-use and day-use opportunities. Presently there are fourteen recreation areas, two wildlife management areas, and three marinas at Lake Shelbyville. Eleven recreation areas are operated by the Corps of Engineers, two state parks and two wildlife management areas are operated by the Illinois Department of Natural Resources, and private concessionaires operate three marinas. A description of land use and recreational development is presented in Chapter 5.

Overnight accommodations at Lake Shelbyville, both camping and lodging, are attractive to people from St. Louis and Chicago metropolitan areas and urban places in Central Illinois and families from western Indiana.

2.14.1. Zones of Influence

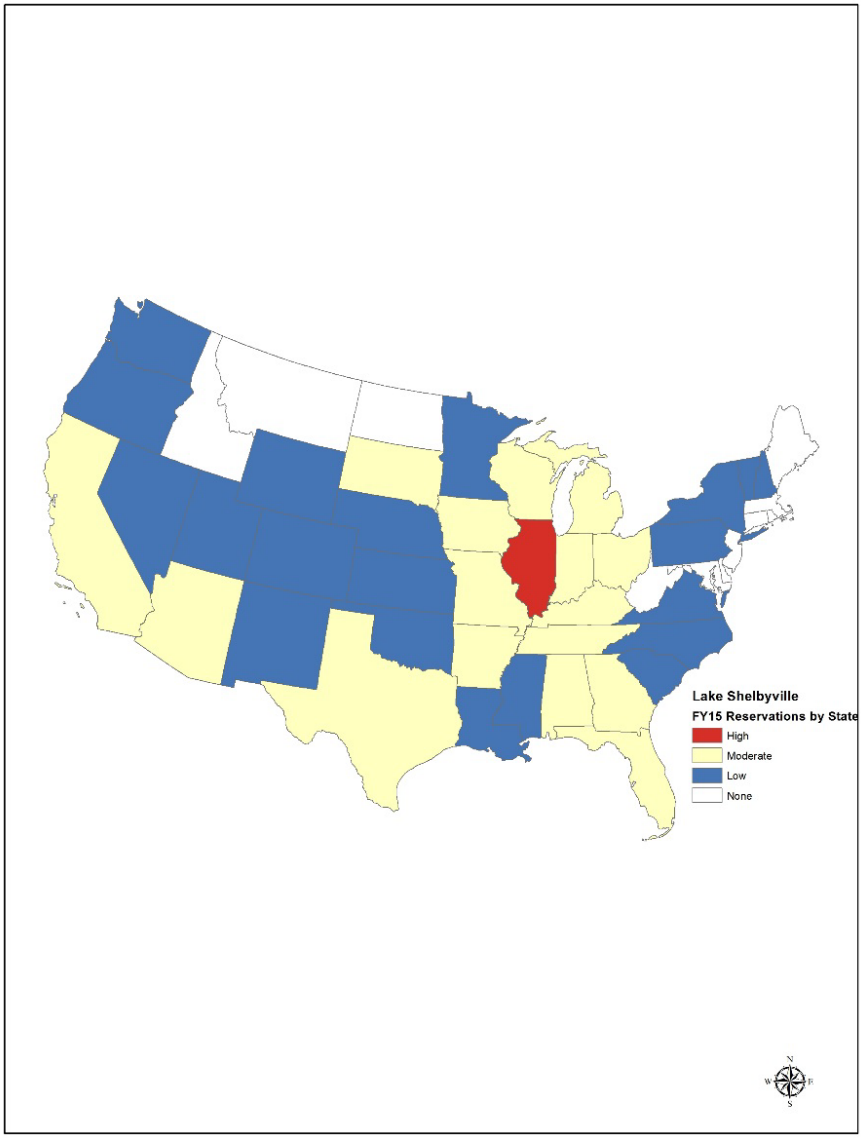
Data collected from camper registration shows the highest percentages of Lake Shelbyville's campers come from three counties – Shelby, Moultrie and Macon. Other high percentages of campers come from metropolitan areas with good interstate or state highway access (Cook, Will, Kankakee, Champaign, Douglas, Coles, Tazewell, Madison, Sangamon, Christian, and Effingham Counties).

Figure 3 - Percentages of Campers from Illinois



Although visitors from other states are a smaller percentage, the lake does attract a moderate number from neighboring states as well as southern states. Lake Shelbyville's regional influence over time is steady, but can vary year-to-year based on fishing prospects, water levels, economic or other factors discussed below.

Figure 4 – Visitation from Other States



2.14.2. Visitation Profile

Lake Shelbyville visitors are a diverse group including fishermen, campers who utilize both Corps campgrounds and those around the lake, visitors who prefer cabins or other accommodations, full time and part time residents adjacent to the lake, hunters, day users, marina customers, and other user groups. Severe weather conditions occurring during December, January and February generally restrict recreational use of the project during that period, except for bank fishing along the downstream spillway. The lake level, too, is usually much lower at this time of year. Lake Shelbyville's peak visitation occurs between Memorial Day and Labor Day. Spring and fall visitation largely depends on weather and fishing opportunities. Approximately 48 percent of the lake's total visitation occurs during the summer months.

Visitation calculation formulas have changed over the years. Table 8 represents visitation over the past 40 years with several different methods of calculation. In general, visitation has fluctuated little across various methods. Year to year variations largely have been due to changes in water, lake levels, cost and supply of gasoline, the economy in general, the level of development of facilities on the lake, and people attending special events within a 60-mile radius of Lake Shelbyville. An example would be peak visitation in the late 1980's to early 1990's. Eagle Creek Resort opened in 1989 along with the short-lived Okaw Valley Amphitheater, south of Shelbyville. The amphitheater featured nationally known entertainment, which attracted visitors from all over the area. When Okaw Valley closed some of those visitors stayed in the area, attracted by the lake and the resort. When Eagle Creek closed in 2009, those visitors moved on to other venues. Although the lake's visitation has been steadily increasing since 2009, the lack of a resort-type facility may have a deep impact on the lake and surrounding communities by not providing a complementary, alternative venue for visitors.

High lake levels have impacted visitation in past years. In some years, visitation dropped dramatically when water levels closed facilities. Since early 2000, efforts to improve access to the lake during high water events has made a difference. The addition of high water boat ramps around the lake and a high water beach at Wolf Creek State Park means the lake is now accessible at most water levels.

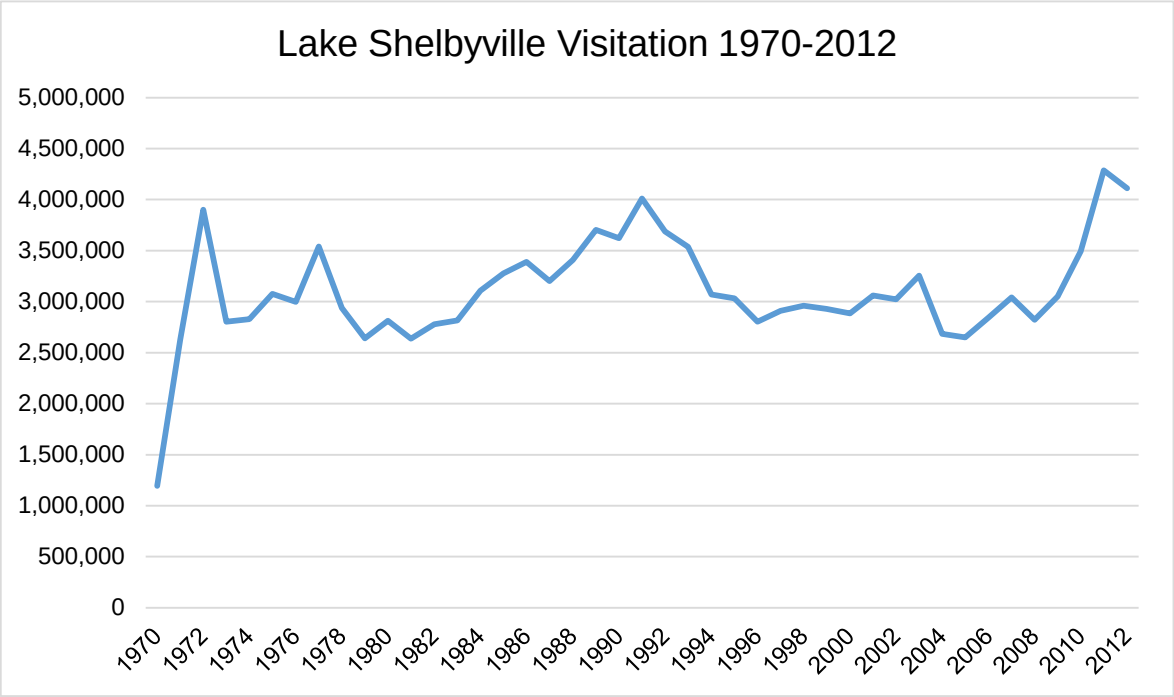
The next generation of visitors, the millennials (the group of people born between the mid 1980's and early 2000's), views nature and the outdoors differently than their parents and grandparents. Although there are large variations in the Millennial Generation, there are some things that are fairly consistent. Getting online and social media savvy is a must. *(purposefulentrepreneurship.com, 2013)* This generation is more interested in participating in activities with their friends, posting their experiences and being comfortable. In order to attract and retain these visitors, Lake Shelbyville will need to rethink camping and providing the outdoor experience. In the article "7 Ways to Make Your Parks Millennial Friendly", the author describes ways to attract this next generation of outdoor users. *(Hornick, 2015)* Technologically proficient, this group uses Wi-Fi and apps to find the next vacation spot. Consideration to providing Wi-Fi access in the recreation areas may be crucial to attracting and retaining these visitors in the future. Some research shows by 2025 millennials will become 75 percent of the global workforce. This demographic will become important to Lake Shelbyville's future management recommendations and success.

TABLE 7
LAKE SHELBYVILLE ANNUAL ATTENDANCE*

1970	1,193,000	1992	3,688,976
1971	2,628,000	1993	3,536,086
1972	3,901,000	1994	3,069,358
1973	2,803,000	1995	3,032,087
1974	2,828,000	1996	2,804,417
1975	3,077,000	1997	2,908,891
1976	2,997,000	1998	2,958,829
1977	3,542,000	1999	2,927,405
1978	2,937,241	2000	2,884,436
1979	2,640,415	2001	3,060,415
1980	2,813,522	2002	3,021,764
1981	2,636,245	2003	3,254,928
1982	2,777,302	2004	2,685,450
1983	2,815,026	2005	2,651,084
1984	3,108,404	2006	2,843,701
1985	3,275,904	2007	3,040,299
1986	3,390,884	2008	2,821,713
1987	3,201,590	2009	3,052,617
1988	3,410,220	2010	3,492,657
1989	3,704,914	2011	4,288,264
1990	3,622,523	2012	4,111,287
1991	4,010,874		

*2012 Visitation is most current

Figure 5 - Lake Shelbyville Visitation Chart



2.14.3. Recreation Analysis.

The 2015 Illinois Statewide Comprehensive Outdoor Recreation Plan, SCORP, is an examination of Illinois' outdoor recreation resources and needs. The plan looks at how best to meet those needs using available resources. Each year millions of people enjoy Illinois' outdoor recreation sites and facilities. Illinois collected data for the SCORP through three different surveys over time from the fall of 2013 through spring 2014. A random survey of 6,200 residents followed up with a subsample from the same group along with a sample of college students comprised the three surveys. The survey requested information concerning participation in thirty-seven different activities including how often and where they participate. Additional information was requested concerning attitudes and opinions about outdoor recreation availability. *(Illinois Department of Natural Resources, 2015)*

According to the SCORP – 'A substantial proportion of the respondents to the 2013-2014 Illinois Outdoor Recreation Survey indicated that outdoor recreation was important in their everyday lives. Well over eight out of ten respondents (85.4%) indicated that at the very least, outdoor recreation was of some importance in their everyday lives. *(Illinois Department of Natural Resources, 2015)* Top reasons for engaging in outdoor recreation varied from New Challenges to Experience Nature. Lake Shelbyville provides this outdoor experience through a variety of activities.

Eight out of ten (80.7%) respondents to the Illinois Outdoor Recreation Survey reported pleasure walking as the most popular outdoor activity in the state. In terms of gross participation levels, pleasure walking and observing wildlife/bird

watching were the two activities with the most participation. Half of the respondents engage in pleasure walking over 30 times per year, and half of the respondents engage in nature observation and bird watching over 10 times per year. Jogging was also among the most intensive activities.' *(Illinois Department of Natural Resources, 2015)*

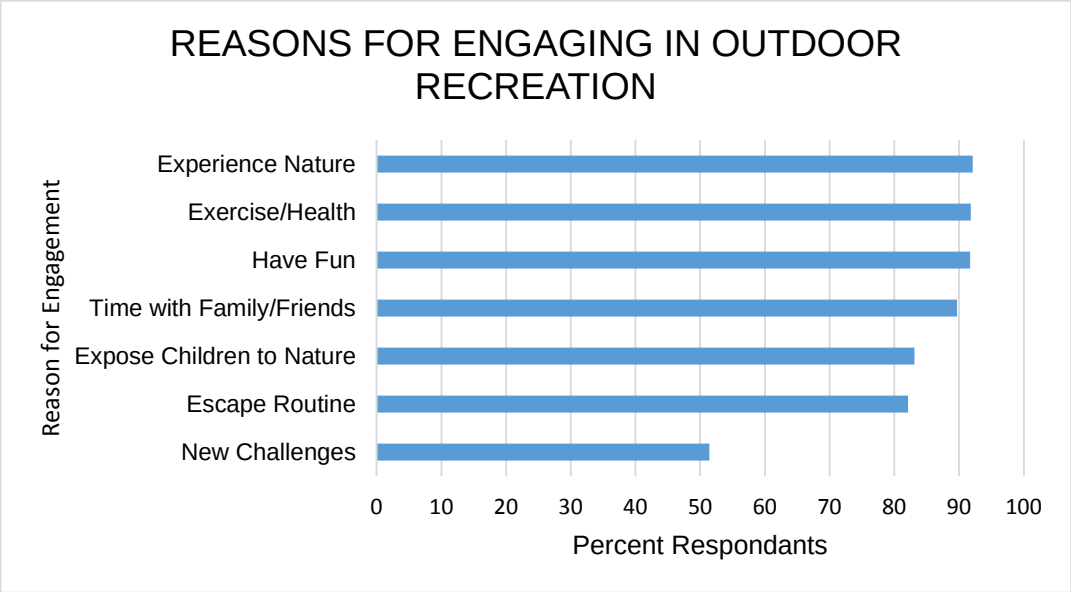
The economic potential relative to water recreation commercial uses can generally be based on the degree of visitor attraction the project possesses. At Lake Shelbyville, past visitation fluctuated based on lake conditions. High water years saw a reduced number of visitors as it was more difficult to access the lake. Boat ramps and beaches began closing when lake levels reached six feet over summer recreation pool. Over the years, high water boat ramps were added, making the lake accessible at any level. In 2013, Lake Shelbyville and Wolf Creek State Park partnered to change Wolf Creek's beach buoy system, allowing the beach to remain open when others were closed.

Recreational use at Lake Shelbyville continues to evolve as more families move to the area. A balanced approach to managing federal lands that considers public access to recreation and respect of adjacent landowner property will allow for a peaceful coexistence. Visitation in Corps-managed recreational areas remains strong. Increased development around the lake has put pressure on outlying land resources as wildlife are concentrating on government property.

According to the SCORP, trails are among the most requested amenity with visitors to an area. Bike/hiking trails are extremely popular with tourists and residents alike. The General Dacey Trail is slowly expanding at both ends of the lake and has become a major attraction. The Central Illinois Mountain Bicycling Association (CIMBA) has hosted regional mountain bike competitions at Camp Camfield in the north, while the Dacey Trail segment in the south, which has attracted foot races and winter luminary walks, sees trail use nearly every day. More detail on the General Dacey Trail concept and plans can be found in Chapter 5 and on Plate 37.

In a 2010 Forest Service assessment of recreation trends, Ken Cordell noted participation in outdoor recreation is growing and America's youth do spend time in the outdoors. Estimates from the National Fishing, Hunting and Wildlife Associated Recreation Survey indicated that 39 percent of hunters used public lands. Although not the fastest growing segment of outdoor recreation fishing and hunting still remain an important outdoor activity. *(Cordell, 2012)*

Figure 6 - Engaging in Outdoor Recreation



Source: (Illinois Department of Natural Resources, 2015)

2.14.4. Recreational Carrying Capacity

The US Army Corps of Engineers is the largest water-based outdoor recreation provider in the country. Most of the 403 projects nationwide are located close to metropolitan areas. Lake Shelbyville is within a two-hour drive from St. Louis and a four-hour drive from Chicago.

Lake Shelbyville continues to be a regional magnet for visitors looking for a place to unwind and relax in an outdoor setting. There is a constant public desire to enjoy the parks and waters of the lake, especially Memorial Day to Labor Day. During these times, especially weekends, the lake can appear to be overcrowded. Carrying capacity is the maximum number of individuals an area's resources can sustain indefinitely without significantly depleting or degrading those resources. Determining the carrying capacities for most organisms is fairly straightforward. For humans, carrying capacity is much more complicated. The definition is expanded to include not degrading our cultural and social environments and not harming the physical environment in ways that would adversely affect future generations. *(Abel, n.d.)*

Carrying capacity can also have a different meaning depending on its application. In a recreational setting, carrying capacity relates to the resource and the point at which it becomes degraded from overuse. The degradation can be to the environment or the social quality. If a visitor does not have a satisfactory experience because of overcrowding, they may not return whether it be from noisy, too close neighbors or poor physical quality of the recreation area itself.

Many factors influence the carrying capacity at Lake Shelbyville. They can be the number of visitors, vehicles or boats; types of users; level of adjacent

development; or changing demographics. Lake Shelbyville visitors are very diverse. Some come for the solitude, others for the community of fellow users. The lake is large enough to host that variety of users with few issues. Overcrowding sometimes tends to be self-regulating. In other cases, a change in how the park is managed will relieve pressure on the resources. Lake Shelbyville has addressed overcrowding in some parks by providing more amenities to underutilized parks or raising prices in more popular parks.

2.15. RELATED RECREATIONAL, HISTORICAL AND CULTURAL AREAS

Lake Shelbyville is the primary source of outdoor recreational activities for the area. Recreational facilities located within a 125 mile radius are listed in Table 9. Some of the lakes are small water supply reservoirs, which are also used for recreation. All are smaller than Lake Shelbyville except for Carlyle Lake and Rend Lake.

TABLE 8
RECREATIONAL FACILITIES WITHIN AREA OF INFLUENCE

Illinois	Fishing	Swimming	Boating	Camping	Picnicking	Hunting	Marina	Lodge	Trails	Principal Managing Agency	Miles from Lake Shelbyville
Beaver Dam State Park	X			X	X	X			X	IDNR	80
Cahokia Mounds State Historic Site					X				X	IDNR	94
Carlyle Lake	X	X	X	X	X	X	X	X	X	USACE	98
Clinton Lake	X	X	X	X	X	X			X	IDNR	52
Coffeen Lake	X		X		X	X				IDNR	38
Frank Holten State Park	X		X		X	X				IDNR	110
Fox Ridge	X		X	X	X	X			X	IDNR	36
Horseshoe Lake State Park	X		X	X	X	X			X	IDNR	109
Illinois River	X		X	X	X			X	X	Various agencies	
Kickapoo State Park	X		X	X	X	X			X	IDNR	73
Lake Benton	X		X							City of Benton	97
Lake Bloomington	X		X							City of Bloomington	74
Lake Charleston	X		X		X					City of Charleston	34
Lake Decatur	X	X	X		X	X	X			City of Decatur	31
Lake Jacksonville	X	X	X							City of Jacksonville	80
Lake Mattoon	X	X	X		X		X			City of Mattoon	24
Lake Pana and City Park	X	X			X					City of Pana	15
Lake Sara	X	X	X	X	X		X			Effingham Water Authority	24
Lake Taylorville	X	X	X	X	X				X	City of Taylorville	26
Lake Lou Yaeger	X	X	X	X	X	X			X	City of Litchfield	48
Lincoln Log Cabin State Park					X					IDNR	28
Lincoln's New Salem State Park				X					X	IDNR	70
Lincoln Trail Homestead State Park	X		X	X	X	X			X	IDNR	60
Marshall State Fish & Wildlife Area	X		X	X	X	X			X	IDNR	65
Newton Lake	X		X		X	X			X	IDNR	45
Illinois	Fishing	Swimming	Boating	Camping	Picnicking	Hunting	Marine	Lodge	Trails	Principal Managing Agency	Miles from Lake Shelbyville
Oakland Walnut Point	X			X	X	X			X	INDR	45

Pere Marquette State Park	X		X		X			X	X	IDNR	92
Pickneyville Reservoir	X				X					City of Pickneyville	97
Pool at Dam 24	X		X		X	X				USACE	113
Pool at Dam 25	X		X		X	X				USACE	108
Pool at Dam 26	X		X		X	X	X			USACE	80
Pool at Dam 27	X		X		X	X				USACE	86
Ramsey Lake State Park	X		X	X	X	X			X	IDNR	24
Red Hills State Park	X		X	X	X	X			X	IDNR	69
Rend Lake	X	X	X	X	X	X	X	X	X	USACE	117
Rice Lake Conservation Area	X		X	X	X	X				IDNR	103
Sam Parr State Park	X		X	X	X				X	IDNR	45
Sanganois Conservation Area	X					X				IDNR	84
Sangchris	X		X	X	X	X			X	IDNR	46
Shelbyville City Park	X	X			X					City of Shelbyville	1.5
Spitler Wood State Park				X	X				X	IDNR	26
Springfield Lake	X	X	X		X		X		X	City of Springfield	52
Stephen A. Forbes St Pk.	X	X	X	X	X	X			X	IDNR	44
Twin Lakes	X		X		X					City of Paris	61
Vandalia Lake	X	X	X	X	X		X		X	City of Vandalia	53
Indiana											
Cagles Mill Lake	X	X	X	X	X	X		X	X	Indiana State Park	108
Madsfield Lake	X	X	X	X	X	X			X	Indiana State Park	88
Monroe Lake	X	X	X	X	X	X			X	Indiana State Park	123
Cataract Lake	X	X	X	X	X	X		X	X	Indiana DNR	108
Wabash River	X		X		X			X		Various Agencies	100

2.16. REAL ESTATE

The acquisition policy for the Lake Shelbyville Project was based on the hydrology and hydraulic analyses and on engineering requirements. In general, the purchase of a fee area encompassed the majority of lands lying below the top of induced surcharge pool elevation (630.5 feet NGVD) or top of flood control pool elevation (626.5 feet), plus 300 feet horizontally, whichever was greater. Additional lands were purchased above this

elevation to support project missions and/or operations including recreation. The total fee title real estate interest at the Lake Shelbyville Project is 34,340 acres. The total flowage easement interest at Lake Shelbyville is 6,237 acres.

The majority of fee title land is managed by the U.S. Army Corps of Engineers in accordance with its authorized purposes and regulatory requirements. The Illinois Department of Natural Resources leases 2,752 acres for two State parks and 6,286 for two Wildlife Management Areas. Other lessees include the Sullivan Marina and Campground, Findlay Marina and Lithia Springs Marina.

2.17. PERTINENT PUBLIC LAWS

Development and management of Federal reservoirs for various purposes is provided under several statutes. These laws cover development of recreation facilities, licensing of lake lands for fish and wildlife purposes, protection of natural resources, and leasing of public lands for incidental uses other than recreation.

Recreation

Development and management of recreation facilities at Department of Army constructed reservoirs by the Corps of Engineers, other governmental agencies, local groups, and individuals is authorized under the following public laws:

•Section 1 and 4 of the Flood Control Act, approved 22 December 1944 (PL 534, 78th Congress) authorizes providing facilities for public use, including recreation and conservation of fish and wildlife.

•The River and Harbors Act, approved 2 March 1945 (PL 14, 79th Congress), specifies the rights and interests of the states in watershed development and water utilization and control, and the requirements for cooperation with state agencies in planning for flood control and navigation improvements.

•Section 209 of the Flood Control Act of 1954, approved 3 September 1954, (PL 780, 83rd Congress), amended the Flood Control Act of 1944. It authorized the Secretary of the Army to grant leases to federal, state or governmental agencies without monetary considerations for use and occupation of land and water areas under the jurisdiction of the Department of the Army for park and recreation purposes when in the public interest.

•Section 207 of the Flood Control Act of 1962, approved 23 October 1962 (PL 874, 87th Congress, 76 Stat.1195) amended the Flood Control Act of 1954. It authorized the Chief of Engineers to construct, maintain, and operate public park and recreation facilities at water resource development projects under the control of the Department of the Army, permit construction of facilities by local interests and permit the maintenance and operation of facilities by local interests.

•The Land and Water Conservation Fund Act, approved 1 September 1964 (PL 578, 88th Congress, 78 Stat. 897), contains provisions by which the Corps of Engineers may charge for admission and use of its recreation areas under prescribed conditions.

•The Federal Water Project Recreation Act, approved 9 July 1965 (PL 72, 89th Congress, 79 Stat. 213), contains cost sharing provisions for acquisition of lands and development of recreation facilities for water resources projects authorized after 1965. It also provides for cost sharing development of new areas that were not part of initial project construction.

•The Architectural Barriers Act of 1968, approved 12 August 1968 (PL 480, 90th Congress), together with the acts and amendments listed in 9, 10, and 11 below, provides information and guidance regarding universal accessibility for persons with disabilities to the Corps of Engineers recreation facilities and programs.

•The Rehabilitation Act of 1973, approved 26 September 1973 (PL 112, 93rd Congress) and the Rehabilitation Act Amendments of 1974, approved 7 December 1974 (PL 93-516, 93rd Congress). See Architectural Barriers Act above.

•The Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendments of 1978, approved 6 November 1978 (PL 602, 95th Congress). See Architectural Barriers Act above.

•The Water Resource Development Act of 1986, approved 17 November 1986, (PL 662, 99th Congress), Section 103 (c) (4) states that the non-Federal share of the costs assigned to recreation, is 50 percent of the separable costs, to be paid during the construction period. Non-Federal sponsors must also provide all lands, easements, rights of way, relocations, and disposal sites (LERRD) assigned to the recreation purpose and perform all necessary relocations.

•The Americans with Disabilities Act of 1990, approved 26 July 1990 (PL 336, 101st Congress). See Architectural Barriers Act above.

•The Water Resources Development Act of 1992, approved 31 October 1992 (PL 580, 102nd Congress), authorized the Challenge Cost Sharing Program (Section 225) that permits the Corps to develop and implement a program to accept contributions of funds, materials and services from non-Federal public and private entities to be used in managing recreation facilities and natural resources.

•The Omnibus Budget Reconciliation Act – Day Use Fees, approved 10 August 1993 (PL 66 103rd Congress), contains provisions by which the Corps of Engineers may collect fees for the use of developed recreation sites and facilities, including campsites, swimming beaches, and boat launching ramps but excluding a site or facility which includes only a boat launch ramp and a courtesy dock.

•The Water Resources Development Act of 1996, approved 12 October 1996 (PL 303 104th Congress), Section 208 (Recreation Policy and User Fees) directed the Corps to put increased emphasis on recreation opportunities at Corps projects and specifies that a portion of the recreation fees collected at Corps projects remain for use at the project where they are collected. Section 519 (Recreation Partnership Initiative) directed that, in general, the Corps is to promote federal, non-federal and private sector cooperation in creating public recreation opportunities at Corps projects.

•The Water Resources Development Act of 2000, approved 11 December 2000 (PL 541 106th Congress) Section 552 Watershed Management, Restoration and Development amended Section 503(d) of the Water Resources Development Act of 1996 by adding (29) Kaskaskia River Watershed, Illinois. The Corps may provide technical, planning, and design assistance to non-Federal interests for carrying out watershed management, restoration, and development projects. The non-Federal share of the cost of assistance provided will be 50 percent.

•Architectural Barriers Act (ABA) standards and guidelines for accessible design, 2004.

•Accessibility Guidelines for Outdoor Developed Areas, 26 September 2013.

Fish and Wildlife

The fish and wildlife aspects of resource development were authorized under the following public laws:

•The Fish and Wildlife Coordination Act, enacted 10 March 1934, as amended 14 April 1946 (PL 732, 79th Congress, 48 State. 401), and 12 August 1958 (PL 624, 85th Congress, 72 State. 563), provides authority for making project lands of value for wildlife purposes available for management by interested federal and state wildlife agencies. It further provides for more effective integration of a fish and wildlife conservation program with federal water resources developments.

•The National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq), declares a national environmental policy and requires that all federal agencies shall, to the fullest extent possible, use a systematic, interdisciplinary approach which integrates natural and social sciences and environmental design arts in planning and decision making.

•The Endangered Species Act of 1973 as amended (16 USC 1531 and 1536) requires that federal agencies shall, in consultation with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service), use their authorities in furtherance of conserving endangered and threatened species and take such action as necessary to assure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.

•The Water Resource Development Act (WRDA) of 1986, Section 1135, provides for modifications in the structures or operations of a project, consistent with authorized

project purposes to improve the quality of the environment, i.e. restoration of fish and wildlife habitat. WRDA 1996 amended Section 103 of WRDA 1986 by specifying that the non-federal share of environmental restoration and protection projects shall be 35 percent.

•Executive Order (EO) 12962, 7 June 1995, entitled Recreational Fisheries directs Federal agencies to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities by means of a number of duties. In addition, it establishes a National Recreational Fisheries Coordination Council consisting of seven members (including one designated by the Secretary of Defense). The "Coordination Council" is charged with developing a comprehensive Recreational Fishery Resources Conservation Plan. This EO also directs all Federal agencies to identify and minimize conflicts between recreational fisheries and their responsibilities under the Endangered Species Act of 1973 and expands the role of the Sport Fishing and Boating Partnership Council.

Forest Resources – Protection and Improvement of Natural Resources

The Forest Conservation Act, approved 6 September 1960 (PL 717, 86th Congress, 74 Stat. 817), provides for the protection of forest cover in reservoir areas, and specifies 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 national policy declared in the first section of this Act, 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 his or her jurisdiction, so as to yield the maximum benefit and otherwise improve such areas. Programs and policies developed pursuant to the preceding sentence shall be coordinated with the Secretary of Agriculture, and with appropriate state conservation agencies.

Other Incidental Uses

Title 10, United States Code (USC), Section 2667, authorizes the lease of land at water resource projects for any commercial or private purpose not inconsistent with other authorized purposes, subject to specific restrictions thereupon, as set out in regulations, policy, and Delegations of Authority. Title 16, United States Code, Section 460d, authorizes use of public lands for any public purpose, including fish and wildlife, if it is in the public interest. Such uses are also subject to regulations, policy and Delegations of Authority. The use of project lands for easements and licenses is authorized in various Congressional Acts and codified in Titles 10, 16, 30, 32, and 43 of the United States Code. Lands and rights-of-way will be acquired pursuant to provisions of the Uniform

Real Property Acquisition and Relocation Assistance Act of 1970, Public Law 91-646, as amended.

Cultural and Historical Considerations

A number of laws mandating the protection of cultural resources on public lands have been passed during the last century. These laws and Executive Orders are summarized in Appendix A of the St. Louis District Cultural Resource Management Policy (April 1982). The following laws subsume, clarify or supersede all previous cultural resource law:

• The National Historic Preservation Act of 1966, approved 15 October 1966 (PL 665 89th Congress), as amended through 2000 (PL 91-243, PL 93-54, PL 94-422, PL 94-458, PL 96-1999, PL 96-244, PL 96-515, PL 98-483, PL 99-514, PL 100-127, PL 102-575, PL 103-437, PL 104-333, PL 106-113, PL 106-176, PL 106-208 and PL 106-355), states a policy of preserving, restoring and maintaining cultural resources and requires that federal agencies take into account the effect any undertaking may have on sites that may be eligible for inclusion on the National Register of Historic Places.

•The Archaeological and Historic Preservation Act of 1974 (16 USC 469 et seq.) (Reservoir Salvage Act, Public Law 86-532, 27 June 1960, as amended) provides for the preservation of historical and archaeological data that might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any federal construction projects.

•The Archeological Resources Protection Act of 1979 approved October 31, 1979 (PL 95 96th Congress) (16 USC 470 et seq.) as amended. This law protects archaeological resources and sites that are on public lands and Indian land, and fosters increased cooperation and exchange of information between governmental authorities, the professional community, and private individuals.

Other Cultural / Historical Laws

•American Indian Religious Freedom Act, approved 11 August 1978 (PL 341 95th Congress) 42 USC Sect.1996, amended 1994. As stated in the implementing guidance, Chapter 6 of ER and EP 1130-2-540, the Commander shall consult with affected tribes, groups or individuals regarding appropriate action for project effect upon sacred sites, important to the practice of Native American religion.

•Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, 1983, 48 FR 44716-44742 are intended to provide technical advice about archeological and historic preservation activities and methods. These standards and guidelines are not regulatory and do not set or interpret agency policy.

•The Native American Graves Protection and Repatriation Act, approved 16 November 1990 (PL 601 101st Congress) requires federal agencies and museums to inventory human remains and associated funerary objects and to provide culturally affiliated tribes with the inventory of collection. The Act requires repatriation, on request, to the

culturally affiliated tribes and establishes a grant program within the Department of the Interior to assist tribes in repatriation and to assist museums in preparing the inventories and collections summaries.

•Curation of Federally-Owned and Administered Archeological Collections, 1990 (36 CFR 79) governs the Federal Archeology Program that establishes definitions, standards, procedures and guidelines to be followed by Federal agencies to preserve collections of prehistoric and historic material remains, and associated records, recovered under the authority of the Antiquities Act (16 U.S.C. 431- 433), the Reservoir Salvage Act (16 U.S.C. 469-469c), a section of the National Historic Preservation Act (16 U.S.C. 470h-2) or the Archaeological Resources Protection Act (16 U.S.C. 470aa-mm).

•Religious Freedom Restoration Act of 1993, approved 16 November 1993 (PL141 103rd Congress), 42 USC 2000bb, guarantees application of the compelling interest test in all cases where free exercise of religion is substantially burdened provides a claim or defense to persons whose religious exercise is substantially burdened by government. The compelling interest test, as set forth in prior Federal court rulings is a workable test for striking sensible balances between religious liberty and competing prior governmental interests.

•Indian Sacred Sites, Executive Order 13007 of May 24, 1996 (61 FR 26771-26772) orders Executive branch agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Where appropriate the agency shall maintain the confidentiality of sacred sites.

•The Water Resources Development Act of 2000, approved 11 December 2000 (PL 541 106th Congress) Section 208, authorizes the army to rebury Native American human remains that were discovered on Civil Works project lands and have been rightfully claimed by a tribe on those lands.

•Preserve America, Executive Order 13287, of 4 March 2003 states it is the policy of the Federal Government to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of historic properties owned by the Federal Government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties.

2.18. MANAGEMENT PLANS

Lake Shelbyville uses various management plans in the overall operation of the lake.

Emergency Action Plan, 2014. The Emergency Action Plan covers emergency actions for all work areas and facilities for the protection of employees and others from emergencies.

Environmental Compliance Policy, 2016. The 1975 Lake Shelbyville Environmental Impact Statement (EIS) acknowledges and states that the operation of Lake Shelbyville is intended to achieve the greatest possible benefit for each project purpose over the long run.

Flood Emergency Plan, 2016. The Flood Emergency Plan outlines steps initiated when pool exceeds normal recreation pool. Those steps detail how a facility is impacted and what steps are needed to protect the facility and the public from rising waters. The plan also identifies emergency contacts locally and within the Division.

General Dacey Trail Master Plan, 2002. This plan provides a conceptual framework guiding future trail development around Lake Shelbyville and to nearby communities. The goal of the plan is to ultimately connect population centers, recreation areas and wildlife areas regionally and statewide. The comprehensive trail plan encourages partnerships and inter-governmental agreements for construction and maintenance. See Chapter 6 for more detail on the General Dacey Trail Plan.

Historic Properties Data Synthesis: Compliance Document, Lake Shelbyville, Illinois, 1989. This document summarizes the lake's archaeological background. It includes chapters on the lake environment, previous archaeological investigations, all historic properties identified at the lake and the lake's cultural history. The concluding chapter establishes priorities for future historic properties investigations at the lake.

Lake Shelbyville Site Safety Plan, 2015. The primary goal of the project safety plan is to eliminate or control both known and potential safety and health hazards employees face on the job. This includes the safety and well-being of employees, the employees of contractors, and individuals of the visiting public, as well as the prevention of wasteful and inefficient operations, and damage to property and equipment.

Operational Management Plan (OMP), 2016. The OMP provides more detailed descriptions of facilities and the process for management of the lake's resources.

Physical Security Plan, 2013. The Physical Security Plan prescribes responsibilities, policies, procedures, and standards pertaining to physical security operations at Lake Shelbyville, US Army Corps of Engineer, St. Louis District. Applicable to all personnel assigned to Lake Shelbyville, the plan's objective is to minimize theft or destruction of public property.

St. Louis District Cultural Resource Management Policy, 1982. The Cultural Resource Policy governs the investigation and protection of cultural resources within the District

The St. Louis District Historic Properties Management Plan, Lake Shelbyville (HPMP), 1986. This plan is a guide to assist lake and other District personnel in meeting federal regulations concerning historic properties management at Lake Shelbyville. The HPMP includes chapters on organizational structure, compliance procedure, long term resource management, tasks and priorities (tied to the Operational Management Plan), training, staffing, and budget. This document is overdue for an update and talks of a digital GIS based system are ongoing.

St. Louis District Policy on Management of Flowage Easement Lands, 2011. This policy defines Corps and landowner responsibilities as well as the process for submitting and approval of construction permits.

Shoreline Erosion Plan, 1993. The Final Letter Report on Shoreline Erosion at Lake Shelbyville outlined a plan for consolidation, protection, removal or replacement of facilities that were in danger of periodic flooding.

Shoreline Management Plan, 1974. The Shoreline Management Plan governs the use and development of Lake Shelbyville's lands. It is the policy that private exclusive use will not be permitted on new lakes or on lakes where no private facilities existed as of 13 December 1974, the date of the implementing regulation (ER 1130-2-406). Current policy is documented in the Lake Shelbyville OMP.

Site Specific Security Plan, 2016. This document provides guidance on the execution of Risk Assessments for Stand Alone Facilities in order to facilitate informed decisions, commit resources, or enact policies and procedures. The process will assess threats; determine the criticality of the asset; identify vulnerabilities and include mitigation measures. This document coincides with the Emergency Action Plan.

The Water Control Manual – Appendix A to Master Reservoir Regulation Manual, 2008. This plan presents a detailed plan of water control and pertinent information relative to Lake Shelbyville and affects the general operation of water releases according to an established operational plan.