LUCIUS E. BURCH, JR.
STATE NATURAL AREA
MANAGEMENT PLAN

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NATURAL AREAS PROGRAM

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I. INTRODUCTION

A. Guiding Principles

1. Maintain values as a Tennessee Department of Environment and Conservation Class I Scenic-Recreational Natural Area.

2. Provide oversight and implement management actions as identified in the management planning process and in accordance with the Rules for Managing Natural Resource Areas and the Natural Areas Preservation Act of 1971.

B. Significance

Lucius E. Burch, Jr. State Natural Area (called Lucius Burch SNA hereinafter) is a 728-acre natural area located in Memphis, Shelby County, Tennessee. It is part of the 4,500-acre Shelby Farms Park. The natural area is a relatively large un-fragmented forest that follows the banks of the Wolf River.

The park and natural area is a significant destination for outdoor recreationalists. The Shelby Farms Park Conservancy (SFPC) reports that millions of people visit the park each year. Visitors use the natural area for hiking, biking, wildlife viewing especially bird watching and nature study. The Tennessee Trails Association and the Mid-South Trails Association sponsor numerous hikes and other activities in the natural area each year. A number of groups including the DNA, Shelby Farms Park, Agricenter International, and local schools use the natural area as a living classroom in which to teach about plants, animals, natural history, ecology and conservation. The natural area is without a doubt one of the most important outdoor teaching locations in the Memphis area. The park and especially the natural area is an important part of the research community in the area. Numerous teaching institutions including the University of Memphis, Rhodes University, Arkansas State University, and Shelby County Community College have used the area for biological study.

The forested natural area is part of a much larger tract of forest that extends west along the Wolf River to the Mississippi River and east for many miles. It is an integral piece of this forested corridor. The corridor provides an avenue for the movement of wildlife over long distances in a landscape that is highly fragmented. Any loss in the connectivity of this forest would greatly alter the activities of wildlife. The natural area as a separate entity provides habitat for animals and plants within an urbanized environment. Although the region is greatly impacted by exotic plants, areas dominated by native plants still exist. A small cypress-gum swamp devoid of invasive exotics exists within the natural area. In areas still containing wet or hydric soils, native wetland plants dominate. The state threatened copper iris is found in some of these locations.

Members of the Tennessee Ornithological Society (TOS) have documents 273 species of birds for Shelby Farms Park of which 87 have been recorded for Lucius Burch SNA. Shelby Farms Park is part of the Audubon Society's Great River Birding Trail. Lucius Burch SNA increases the avian richness in the park since it is the only large bottomland forest. The Memphis Chapter of the TOS conducts numerous birding trips and conducts a major part of the Memphis Christmas Bird count in the park including the natural area. Lucius Burch SNA is a very important site for bird watching in the Memphis area.

C. Management Authority

Shelby Farms Park including Lucius Burch SNA is owned by the people of Shelby County. Management of Shelby Farms Park including Lucius Burch SNA is the primary responsibility of the SFPC. The Tennessee Department of Environment and Conservation, Division of Natural Areas (DNA) co-manages the natural area with the SFPC. The park is under a conservation easement held by the Land Trust for Tennessee. The easement references Lucius Burch and requires that it is managed in accordance with the Natural Areas Preservation Act and the Rules of the Tennessee Department of Environment and Conservation.

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Jackson Environmental Field Office: 1625 Hollywood Drive, Jackson TN 38305, phone (731) 512-1369.

II. DESCRIPTION

A. Statutes, Rules, and Regulations

Lucius Burch SNA is designated by law as a Class I Natural Area under the Natural Areas Preservation Act of 1971 (T.C.A. 11-14-101; Appendix I). The classification is defined as, "scenic-recreational areas, which are areas associated with and containing waterfalls, natural bridges, natural lakes, small but scenic brooks or streams, gorges, coves, woodlands, caverns or other similar features or phenomena, which are unique in scenic and recreational value and not extensive enough for a state park but worthy of perpetual preservation" (T.C.A. 11-14-105). The area is managed in accordance with the Rules of the Tennessee Department of Environment and Conservation (Chapter 0400-2-8; Appendix II).

B. Project History Summary

The area that is now Shelby Farms Park was a penal farm from 1929 to 1964. By 1970, Shelby County Government declared the 4,500-acre penal farm surplus and began evaluating proposals for selling the property for commercial, residential and office development. The proposals were abandoned in response to public sentiment in favor of keeping the 4,500-acres for public use. Out of this response was formed the Friends of Shelby Farms Park. In 1976, Garrett Eckbo, a nationally known landscape architect wrote a plan to make Shelby Farms a public park. The plan pointed out the importance of maintaining a forested tract of land adjacent to the Wolf River. The city adopted the Eckbo plan but never implemented the plan. Despite the public outcry and the recommendations of the Eckbo plan to make the property a public park and to maintain forested land along the river, the county revealed plans in 1985 to extend a major north-south corridor through the middle of the forest. Again, because of public sentiment (led by an ad hoc citizens' committee supported by 24 civic organizations) the road was rerouted and the forests along the Wolf River were designated a state natural area by the Tennessee General Assembly in 1988. The natural area was originally called the Shelby Farms Forest State Natural Area. In 2003, the natural area name was officially changed to Lucius E. Burch, Jr. State Natural Area in honor of local conservationist Lucius E. Burch, Jr. In 2003, the natural area was surveyed to officially delineate the boundaries, easements, and inholdings. Actual acreage of the natural area was determined to be 728 acres, less than previously estimated. For a more inclusive history of Shelby Farms Park and Lucius E. Burch, Jr. State Natural Area see the Shelby Farms Park Master Plan Executive Summary (July 2008), page 20 at http://www.shelbyfarmspark.org/masterplan.

C. Natural Resource Assessment

1. Description of the Area

Lucius Burch SNA is a 728-acre natural area located adjacent to the Wolf River in Memphis, Shelby County, Tennessee (see Appendix III for map of area). It is part of the approximately 6,000-acre Shelby Farms Park. There are two sections to the natural area. The northern section is north of Walnut Grove Road and the southern section is south of this road. The north section is approximately 318 acres and the south section is approximately 410 acres. The Wolf River forms the southern and southwestern boundaries of the natural area for approximately four and one-half miles.

Both sections of the natural area are 98% forested with a bottomland forest community. In some low, depression areas cypress-gum swamps occur. It is surmised that these swamp forests were much more extensive in the area prior to the channelization of the Wolf River in the 1950's (see section titled "Description of Threats" for more information on the effects of channelization). Throughout most of the natural area, canopy trees consist of a mix of water, willow, swamp chestnut, pin, overcup and cherrybark oaks, hickories, elms, hackberries, cottonwoods, sycamores, sweetgums, red

maples, and ash species. Understory growth in many areas is primarily the invasive exotic plant privet. In areas that contain wetter soils, privet does not dominate. These areas tend to have an open subcanopy with light to heavy herbaceous ground cover. The state listed copper iris has been located in these low depressional areas lacking dense privet cover.

There are two man-made lakes located within the northern section of the natural area and numerous, seasonally wet oxbow depressions in both sections. Wolf Lake is located very near the I-40 crossing of the Wolf River. This lake is approximately eight acres in size and is connected to the Wolf River by a small canal. The second lake has two local names, Forty-foot Hole or Swamp Lake. The approximately four acre Swamp Lake is located adjacent to and under the L&N Railroad right-of-way and is not connected to the Wolf River. The lake is contiguous with a cypress-tupelo swamp that runs north and south of the lake. Anglers report catching bass, bream, catfish, and carp from both lakes.

2. Description of Threats

During the 1950s, the natural meandering channel of the lower Wolf River was channelized which caused a significant disruption of river floodplain interactions resulting in an ecologically degraded floodplain throughout Lucius Burch SNA. One major result of the channelization was a lower water table and a reduced hydroperiod, which created a drier riparian zone throughout the area. This drying caused and is continuing to cause a shift in plant communities from those adapted to hydric soils to those indicative of drier conditions. Wetlands and vernal pools have either dried-up completely or remain dry for most of the year. There is concern that such loss of habitat has negatively impacted amphibian populations at Lucius Burch SNA.

> Wetlands are important in many ways. They store and slow surface water flows, provide nutrients to floodplains through deposition of particulates and organic matter and they provide habitat for many plant and animal species. These wetland functions have been greatly reduced by the effects of channelization of the Wolf River.

Another threat that channelization may have encouraged is the colonization and spread of invasive, exotic plants particularly Chinese privet and Japanese honeysuckle. Currently 45 exotic plants occur at Lucius Burch SNA, 11 of which are ranked as either a “severe threat” or a “significant threat” by the Tennessee Exotic Pest Plant Council (TNEPPC; see Table 1). Chinese privet is the dominant shrub in the understory throughout most of the natural area. In scattered locations, Japanese honeysuckle dominates the ground cover. The dominance of privet throughout the shrub layer prevents germination and growth of native species. Native shrubs that are being crowded out by privet include river cane, elderberry, spicebush, red buckeye, and American hazelnut. In dense privet thickets the ground cover is entirely devoid of plant life. Native plant diversity and distribution throughout the natural area has been significantly affected by the growth of privet and other invasive, exotic plants.

Presently, the management and control of privet throughout the natural area is not feasible. Mechanical and chemical control measures can be implemented when management goals have achievable objectives that are clearly defined for specific sites. Attempts to remove this shrub are encouraged, but efforts to do so will require well thought out plans that recognize a long-term management commitment.

Table 1. Invasive exotic plants identified in Lucius Burch SNA that are ranked as severe or significant threats by TNEPPC.

Species Name	Common Name	TN EPPC Threat Rank	Population Size in Natural Area	Primary Threat
Ailanthus altissima	Tree-of-Heaven	Severe	Few scattered plants	Forest and forest edges
Celastrus orbiculatus	Asian bittersweet	Severe	Few scattered plants	Forests and edges
Festuca arundinacea	Tall fescue	Significant	Unknown	Fields
Glechoma hederacea	Ground ivy	Significant	Few scattered patches	Forest openings
Ligustrum sinense	Privet	Severe	Abundant	Forests
Lespedeza cuneata	Chinese lespedeza	Severe	One small patch found	Forest openings
Lonicera maackii	Amur honeysuckle	Significant	Few plants scattered in northern section of the natural area	Forests and forest edges
Lonicera japonica	Japanese honeysuckle	Severe	Abundant	Forests
Microstegium vimineum	Nepalgrass	Severe	Abundant	Typically riparian and floodplains
Polygonum caespitosum	Bristly lady's thumb	Significant	Common	Wetlands
Rosa multiflora	Multifloral rose	Severe	Few scattered plants	Forest/field edges

Some illegal activities documented in Lucius Burch SNA include hunting, and the use of motorized vehicles. Hunters use ATVs to access the property and to supplement their hunts with deer stands and baited areas.

D. Cultural Assessment

The area in and around the natural area has a long and interesting history. Mississippi Era Indians probably inhabited the area when DeSoto first arrived in the area. The Tennessee Division of Archeology lists two Native American occupation sites: 40SY100 and 40SY101 near the natural area but none within in natural area. During the mid-nineteenth century, Shelby Farms was home to Frances Wright's Nashoba Experiment. Humanist reformer, Ms. Wright set up a commune on the land intended to prepare slaves for their future freedom by training them with the proper skills and educating them in the liberal arts. In 1928, Shelby County acquired 1,600-acres of the land for use as a model

penal farm. In the late 1960's, Shelby County determined the penal farm was no longer viable and shut it down.

Rapid urban growth of Memphis during the mid-twentieth century eventually threatened the development of open space at Shelby Farms. Numerous plans to develop the area were proposed but all were met with strident public opposition and eventually discarded. Though some private development of the area has occurred, much of the area has remained forested and open to the public.

E. Target Elements

Inventory work by the West Tennessee Stewardship Ecologist is ongoing and has been bolstered by volunteers, visiting biologists, and amateur enthusiasts. Botanical surveys of Shelby Farms Park conducted by graduate student Meghan Foard and her advisor Dr. Travis Marsico, Assistant Professor of Botany, Arkansas State University were conducted between 2010 and 2011. The University of Memphis conducted animal surveys of the area during this same period (see Appendix IV for animal and Appendix V for plant inventories).

1. Communities (Ecological Systems and Associations)

To determine ecological systems within Lucius Burch SNA, Lower Mississippi Valley Gap Landuse/Landcover data from the United States Geological Service (USGS), Biological Resources Division, National Wetlands Research Center were referenced. These data were compared with observations and data collected in the field by the Stewardship Ecologist from 2008 to 2012. The following list of systems is a combination of data from the USGS and the Stewardship Ecologist. Community names and descriptions are based on ecological systems described by NatureServe 2002 unless otherwise stated. The CES numbers provided are from the NatureServe databases.

a. East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559): This system is predominantly forested throughout its range. It is dependent on a natural hydrologic regime, especially annual to episodic flooding (flooding frequency at Lucius Burch SNA has been greatly decreased due to river channelization). The landscape in this system contains features created by past hydrological events (i.e., meander scars, sloughs, old depressions, and/or oxbows are present). Bottomland hardwood tree species are typically important, although mesic hardwood species are also present in areas with less inundation. This system makes up approximately 90% of Lucius Burch SNA.
b. East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Uplands (CES203.559): The extent of this forested system has been heavily reduced due primarily by agriculture throughout its range. Little is known about the

community types and therefore descriptions of the system are considered speculative. Despite this, typical stands within this system are known to contain oaks and other hardwoods. In Lucius Burch SNA, the canopy is typically dominated by oaks such as willow oak, and cherrybark oak. Other important canopy species include shagbark hickory, elms, white ash and hackberry. The understory is typically dominated by greenbrier, crossvine, flowering dogwood, hornbeam, and sassafras.

c. Managed transmission line rights-of-way: This community is not a described NatureServe 2002 system. The community exists under the transmission line in the northern section of the natural area. It is primarily herbaceous growth.
d. Open water: This community is not a described NatureServe 2002 system. The ponds known as Wolf Lake and Forty-foot Hole are the only open water areas in Lucius Burch SNA.

2. State and Federally Listed Animals and Plants

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
Iris fulva	Copper iris	--	T	G5	S2
Magnolia virginiana	Sweetbay magnolia	--	T	G5	S2

Source: State Natural Area Rare Species List, November 2011 as listed in "BIOTICS," Tennessee Resource Management. Explanations for status and ranks can be found at http://www.state.tn.us/environment/na/pdf/Status&Ranks.pdf

Copper iris occurs in five locations in the southern tract of the natural area. A major threat to the population is prolonged drought and changes in hydrology. Channelization is thought to have caused the drying of the bottomland forest. Management of this plant is problematic due to the lack of moisture in the area. The population should be monitored once a year or once every two years. Introductions into moister habitats may be necessary.

III. MANAGEMENT OF LUCIUS E. BURCH, JR. STATE NATURAL AREA

The DNA will work with its primary managing partner and other organizations in order to achieve the management goals set forth in this management plan. All management goals and actions must be in compliance with the Tennessee Natural Areas Preservation Act. Management goals encompass administrative oversight, maintenance, public relations, and ecological issues. These management issues are all addressed below in

general terms. More specific and detailed management plans addressing these issues separately will be written as needed and appended to the finished Lucius E. Burch, Jr. State Natural Area Management Plan.

The Shelby Farms Park Conservancy (SFPC) is the primary manager of the property. They are in charge of carrying out the day to day management of the natural area. All management and policy decisions must adhere to the tenets outlined in the Natural Areas Preservation Act of 1971 and the Rules for Management of Tennessee Natural Resource Areas. The DNA will provide assistance in planning and management and will provide consultation to the SFPC especially on management issues dealing with ecology and rare species protection. The DNA is responsible for developing and updating the management plan. The management plan is developed in cooperation with the SFPC. All partners will work together to achieve the goals set forth in this management plan.

A. Natural Area Goals and Objectives

I. Provide Administrative Oversight Responsibilities

a. Develop an annual report addressing the annual accomplishments and future needs of the natural area. A completed annual report will be filed within the DNA database by the end of March of each year.
b. Update management plan as needed.

II. Address Maintenance and Operational Needs

a. SFPC staff will conduct regular site visits throughout the year to check on conditions. All new or arising issues must be reported to the DNA within a reasonable time. The West Tennessee Stewardship Ecologist will conduct at least one site visit to the area yearly.
b. Conduct site visits to the natural area when deemed necessary in response to reports of illegal activities, resource issues and other public concerns.
    i. Create reports for each site visit and enter reports into the DNA database.
c. The boundary must be periodically inspected to ensure that it is clearly marked and there have not been any illegal encroachments onto the property.
    i. Respond to illegal encroachments (such as vehicles entering the property or unapproved trails) on the property soon after the violation is noticed or reported by blocking the illegal entrance, putting up boundary signs and signs stating the penalty for illegal ingress and by reporting the incident to the proper authorities.
d. Provide gates and fencing when appropriate in order to stop illegal ingress.
e. SFPC will maintain the trail system with the help of the DNA so that it is well marked with signs and/or blazes, and free of obstructions.
f. The SFPC will conduct routine trash removal.

III. Provide and maintain opportunities for public use of the natural area and provide opportunities for education and research addressing the natural area and its values.

a. The DNA will provide information regarding the history, location, and the values of the natural area on their website.

b. The DNA website will provide a link to the SFPC and the Memphis Parks and Neighborhoods websites.
c. The SFPC will undertake initiatives to increase public safety
d. Undertake initiatives to increase public awareness and knowledge of the natural area.
    i. Conduct hikes and other special events to increase public awareness, enjoyment, and knowledge of the natural area.
e. Develop opportunities for research in the natural area.
    i. Develop a relationship with research institutions and promote research opportunities to these institutions.
    ii. Ensure all researchers get the appropriate research permits from the Division of Natural Areas and other necessary departments. The West Tennessee Stewardship Ecologist should approve the conditions of the permit before issuance. These measures are necessary to avoid research methods that could be destructive to native species or communities.
    iii. Stay informed of research and keep a research history of all past and future research conducted in the natural area.

IV. Manage the ecological and natural resources of the natural area in order to restore, maintain or improve these resources.

a. Create an inventory of plants, animals and ecological communities within the natural area in order to foster a more inclusive management of natural and ecological resources.
b. Develop and implement a management strategy to manage or eradicate invasive exotic pest plants.
c. Work with the appropriate experts to identify threats to natural resources and to develop and conduct the appropriate management needed to restore, maintain or improve these resources.
d. Work with the appropriate experts to identify threats to plant communities and to develop and conduct the appropriate management needed to restore, maintain or improve these communities.
e. Identify all other ecological and biological resource management issues within the natural area (these could include erosion, toxic substances, and others). Work with the appropriate experts when necessary to eradicate or lessen these threats if eradication is not possible.
f. Monitor the results of all management actions conducted. Management that does not provide the intended results or is deemed too destructive to natural resources should be modified or stopped if necessary. A new management action should be adopted.
g. Identify potential threats to ecological or natural resources within and outside the natural area.
    i. Outside threats should be addressed by building a relationship with adjacent landowners.
    ii. The DNA and the City of Memphis should provide assistance to landowners who are responsive to these threats.
    iii. If landowner assistance is not obtainable, the potential threats should be monitored and dealt with when they encroach upon the natural area.

IV. PUBLIC USE

Only day-use, passive recreation (with some restrictions- see below) is allowed in the natural area. Permitted passive recreation activities include hiking, photography, nature activities (e.g. birding), and organized interpretive hikes. Recreation activities should be encouraged on developed foot trails, access points along the river and other designated observation sites only. Off-trail activities should be limited and discouraged. Research activities are encouraged, but must be coordinated through the Natural Areas Program Administrator.

Biking in Tennessee state natural areas is typically not permitted. The Rules for Management of Tennessee Natural Resource Areas Chapter and rule number 0400-02-08-.13 says the following about biking in a natural area:

"Trail development in designated natural areas is limited to foot trails and foot bridges. Only low impact recreation associated with hiking is permitted on foot trails. An exception may be granted for county or municipal-owned natural areas where biking activities were expressly permitted prior to designation, provided that it is mentioned as a deviation in the management plan as provided in Rules 0400-02-08-.5 and 0400-02-08-.30."

Shelby Farms Park which includes the Lucius Burch SNA is a municipal-owned park where biking has been expressly permitted in the park prior to the natural area's designation. Therefore, the Lucius Burch SNA meets the criteria for permitted biking granted in the Rules. The state will grant an exception for biking in the Lucius Burch SNA for the following reasons:

1. The criteria for exception have been met,
2. There is a demand by park users to continue biking in the natural area
3. The SFPC has expressed a clear interest in continuing biking in the natural area,
4. Past biking has not shown to cause any detrimental effects to the natural resources of the area

The DNA and the SFPC may limit biking in the natural area if biking is found to have any detrimental effects.

The following public uses are prohibited because these activities can cause damage to archeological, scientific, historical, or other significant resources, including rare natural features of interest for scientific study and\or because they conflict with passive use recreation activities or policy.

1. Hunting is not allowed anywhere on the property.

2. Horseback riding – Horseback riding is not permitted anywhere within the natural area. Horses can cause significant degradation of natural resources through dispersal of

invasive exotic pest plants, increased soil erosion, trampling and loss of vegetation, soil compaction, alteration of wetland areas, and decreased water quality.

3. Motorized off-road vehicles (motorcycles, ATVs, go-karts, jeeps, etc.) – Motorized vehicles are not allowed anywhere within the boundaries of the natural area except by the SFPC staff. The staff may use motorized vehicles in order to bring equipment into an area for trail repairs or for emergencies. Off-road vehicle use can cause significant degradation of the natural resources through increased soil erosion, crushing and loss of vegetation, soil compaction, alteration of wetland areas, decreased water quality, the alteration of wildlife behavior, and disrupts passive recreation activities.

4. Collection or destruction of plants, animals, minerals, or artifacts – The collection or destruction of any natural feature is not permitted anywhere within the natural area unless approved in advance by a permit obtained from the Natural Heritage Inventory Program.

5. Consumption or possession of alcoholic beverages and controlled substances – The consumption or possession of alcoholic beverages, controlled substances, and other intoxicating drugs or chemicals is not permitted anywhere on the natural area.

6. Camping and fires– Neither of these activities are permitted in the natural area.

V. DEVELOPMENT AND MAINTENANCE ISSUES

A. Parking

Several parking areas are located on the south side of Walnut Grove Road and west of Germantown Road. Graveled parking areas should be maintained with sufficient gravel and erosion of the gravel kept to a minimum.

B. Signs

Directional signs are placed near the Walnut Grove Road exit from I-240. Entrance signs are located at the access points. Surveyors have posted signage identifying the natural area boundary.

C. Trails

The Shelby Farms Park Field Operations staff with the help of volunteers and the DNA will maintain trails. Two primary trails run through the natural area. The blue trail runs through the interior of the natural area and the yellow trail primarily follows the Wolf River. Both loop trails are approximately six-miles in length.

D. Buildings

There are no existing buildings or structures. Future development of any buildings is not allowed.

E. Boundaries / Site Patrol

The natural area should be patrolled regularly for vandalism and encroachment. Any such activities should be reported immediately to the Natural Areas Program Administrator and to the SFPC. SFPC has hired rangers to patrol the park. Rangers will provide law enforcement of the natural area that includes enforcement of the Natural Areas Act, rules, and management plan.

F. Litter Removal

All trash and debris should be removed from the natural area. Litter and garbage should be removed on a regular basis.

G. Adjacent Lands

Lucius Burch SNA is a part of Shelby Farms Park. Shelby Farms Park is a multiuse park. Certain legal uses within the park such as horseback riding are not allowed in the natural area. Across the Wolf River from the natural area is a section of a proposed 22-mile greenway. The natural area and park are surrounded by a heavily developed landscape, which includes homes and commercial development. Incompatible activities adjacent to the natural area need to be monitored.

VI. EDUCATION AND RESEARCH

Since Lucius Burch SNA is situated in a densely populated urban area, there are ample opportunities for education and research. Education should focus on the ecology and ecological impacts. Lucius Burch SNA is a place where impacts on the resource can be interpreted and used as an educational tool to demonstrate the ecological effects of river channelization (straightening of the river channel) and the impacts of invasive exotic pest plants. Natural area values should be promoted by the Shelby Farms Park interpretive staff and the West Tennessee Stewardship Ecologist. Natural area values include recreational, aesthetic, and ecological services provided by the conservation and preservation of natural areas.

There has been a number of research projects conducted at Shelby Farms Park including Lucius Burch SNA. The University of Memphis and the University of Arkansas both participated in an intensive species inventory and ecological study in the park including the natural area. The information provided by this study will be included in a Shelby Farms Park management plan. The DNA should continue to promote ecological research. Desirable research projects include studies on privet and Japanese honeysuckle control and/or eradication, studies on aquatic habitat improvement and remediation, studies on copper iris habitat and management, and inventory studies. In addition, it is desirable to

have an archeological study of the natural area and surrounding areas due to the rich history of the site.

VIII. LIST OF APPENDICES