



Lake Catherine



Carpenter-Remmel Project FERC No. 271

Hot Springs, Arkansas

Shoreline Management Plan



Lake Hamilton

April, 2003



ENTERGY ARKANSAS, INC.

CARPENTER-REMMEL PROJECT
(FERC NO. 271)

SHORELINE MANAGEMENT PLAN

April 2003

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ENTERGY ARKANSAS, INC.
CARPENTER-REMMEL PROJECT
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SHORELINE MANAGEMENT PLAN

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ENTERGY ARKANSAS, INC.
CARPENTER-REMMEL PROJECT
(FERC NO. 271)
SHORELINE MANAGEMENT PLAN

EXECUTIVE SUMMARY

The Carpenter-Rommel Project (FERC No. 271) (Project) is an existing, federally licensed hydroelectric project owned and operated by Entergy Arkansas, Inc. (Entergy) located in west central Arkansas. The Project generates clean renewable energy for use by Entergy's customers. The project also provides two reservoirs, Lake Hamilton and Lake Catherine, that are used and enjoyed by residents and visitors of Hot Springs and the Diamond Lakes Region.

Upon receiving its new operating license from the Federal Energy Regulatory Commission (FERC), Entergy was required to prepare a Shoreline Management Plan (SMP) for the Project. An SMP is a comprehensive plan to manage the multiple resources and uses of the Project's shorelines in a manner that is consistent with license requirements and Project purposes, and to address the needs of the public. Entergy was also required to prepare a Recreation Plan to explain how it planned to monitor public recreation use at the Project and implement appropriate enhancements during the term of the new license.

The resulting Recreation Plan, contained in Section 6.0, discusses plans to implement the enhancements proposed during the relicensing effort, to notify FERC of those changes being implemented, and to monitor use concurrent with the Form 80 process. The SMP identifies the resources and acceptable uses that Entergy will consider in analyzing the impact of proposed shoreline facilities and activities within the Project boundary prior to granting permits for those uses. Facilities and activities that occurred or were begun prior to this SMP are considered "grandfathered" and will not face immediate revision or modifications to meet the new SMP standards, provided they are consistent with the requirements of Entergy's FERC license.

While the SMP introduces some new strategies regarding the management and permitting

of shoreline activities and facilities within the Project boundary, it is based on management practices established by Entergy over the years. Entergy maintains its commitment to balancing all uses within the Project boundary with recognition that adjacent property owners, local residents, and other users, and the environmental resources of the area, are all-important factors in any decisions affecting use and access of the Project lands and waters. To do so, they have utilized a collaborative process that entailed input from all of these uses in creating this document. A glossary of terms used in this document is contained in Appendix C.

This document represents conditions within the Project boundary as they existed in January 2003. As discussed in Section 11.0, updates to the drawings contained herein will occur periodically as needed. Revisions to the SMP itself will occur only in the event that it appears major changes associated with recreational use, shoreline land uses within the Project boundary, or other environmental resources present cumulative impacts that may limit the SMP's effectiveness.

1.0 INTRODUCTION

The Carpenter-Rommel Project (FERC No. 271) (Project) is an existing, federally licensed hydroelectric project owned and operated by Entergy Arkansas, Inc. (Entergy). The Project consists of the Carpenter development (river mile 461, completed in 1932) and the Rommel development (river mile 450, completed in 1925). Both developments have continually operated since they were completed. The Project consists of both the physical structures and equipment and two reservoirs that are used by the public for recreation and other purposes. Entergy manages both lakes pursuant to the terms of the license granted by the Federal Energy Regulatory Commission (FERC).

The Carpenter-Rommel Project is located on the Ouachita River in Garland and Hot Spring Counties in west central Arkansas (see Figure 1-1 located at the end of this section). The nearest incorporated city is Hot Springs. The 542-mile long Ouachita River begins near the city of Mena in the Ouachita Mountains near the western border of Arkansas and these headwaters flow into Lake Ouachita. The Army Corps of Engineer's (ACOE) Blakely Mountain Dam forms the 40,105-acre Lake Ouachita. Lake Ouachita was developed for flood control and hydropower production but is also used for recreation. From Blakely Mountain Dam the river flows for approximately 30 miles through the Project area (Lakes Hamilton and Catherine). Both Lakes are part of the "Diamond Lakes Region", a region where people from Little Rock and other areas travel to as a recreation destination. The Ouachita River continues in a southerly direction through the West Gulf Coastal Plain region of Arkansas and Northeastern Louisiana before ending at its confluence with the Mississippi River.

The Carpenter development (upstream) as licensed by FERC consists of a dam, powerhouse containing the generating equipment and Lake Hamilton. Lake Hamilton has a large irregular shaped basin upstream of the dam that narrows to a more riverine type shape as one proceeds upstream towards the ACOE's Blakely Mountain dam. Lake Hamilton is characterized by its many small coves and inlets and extensive residential and commercial development along its shores. While the linear distance of the reservoir is only 18.25 miles long, the irregular shape with lots of cove areas produces a shoreline about 198 miles long and a surface area of 6,897 acres at elevation 399.9. In accordance with its federal license, Entergy maintains property

rights and therefore has control over types of facilities and activities that occur below the 400-foot contour line (*i.e.*, the Project boundary) on Lake Hamilton. While Entergy may possess additional fee ownership and flowage easements extending beyond the Project boundary in several locations around Lake Hamilton, the federal government's authority in regard to the Licensed Project only extends to those lands and waters located within the Project boundary. Use of lands located beyond the Project boundary are at the discretion of the private property owner and governed by local or state laws or regulations.

The Rommel development (downstream) consists of a dam, powerhouse containing the generating equipment and Lake Catherine. Lake Catherine is approximately 11.78 miles long with about 56 miles of shoreline and a surface area of 1,642 acres at elevation 304 feet Msl. The shape of Lake Catherine is riverine in nature. Entergy maintains property or flowage rights to at least the 307-foot contour elevation (*i.e.*, the Project boundary) on Lake Catherine. While Entergy may possess additional fee ownership and flowage easements extending beyond the Project boundary in several locations around Lake Catherine, the federal government's authority, in regard to the licensed Project, only extends to those lands and waters located within the Project boundary. Use of lands located beyond the Project boundary are at the discretion of the private property owner and governed by local and state laws or regulations.

The federal operating license granted by FERC requires that public access to Project waters be provided to the general public. An additional requirement of the federal license requires that Entergy maintain property rights and manage uses that occur within the Project boundary. One of the management responsibilities that FERC bestows upon each licensee is the authority to grant permission for certain uses and occupancy of project lands and waters. However, per Standard FERC License Form L-5, and other Project specific land use articles within the license, Entergy can only exercise that authority if the "proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project." Use and occupancy of Project owned lands and waters is a privilege. In exchange for this privilege, persons wanting to use and occupy Project lands, including those under the water, must comply with permit conditions and regulations developed by the licensee, as well as applicable local, state and federal regulations.

Entergy's previous operating license was issued in 1980 and provided authority to develop a permitting system to ensure that use and occupancy of Project lands and waters is consistent with Project purposes. Entergy developed a permitting system to comply with Article 47 of that license, and has been granting approvals for conforming shoreline facilities and activities within the Project boundary since that time.

Entergy filed an application with FERC for a new federal license for the Project in December 2000. Article 408 (See Appendix D) of the new license, issued December 30, 2002, (effective March 1, 2003) requires that Entergy prepare a Shoreline Management Plan (SMP). An SMP is a comprehensive plan to manage the multiple resources and uses of a project's shorelines in a manner that is consistent with license requirements and project purposes, and address the needs of the public. This SMP is Entergy's response to the license requirements and identifies the existing resources at the Project and acceptable uses that Entergy will consider in analyzing the impact of new shoreline facilities and activities within the Project boundary, prior to granting a permit or authorization for such uses.

Interested members of the Applicant Prepared Environmental Assessment Team that helped Entergy with the relicensing process make up the SMP Team. The SMP Team consists of local business people, state agency personnel and others who are familiar with the Project relicensing efforts and processes and provided valuable local and regional perspectives. The team provided guidance and input in development of this SMP based upon each of their respective interests. Entergy, with the support of the team, has balanced those interests when one interest or resource may have conflicted with another, while ensuring that legal or regulatory obligations are not impinged upon. While the SMP was developed to be a management tool to assure that use and occupancy of Project land and water is consistent with FERC guidelines and Entergy management policy, it also serves as a helpful guide for property owners adjacent to the Project shoreline. For example, those persons wishing to implement new facilities and activities within the Project boundary will now have a document that provides information on the types of shoreline facilities and activities that will be allowed within specific portions of the Project boundary. This document also identifies the types of regulatory approvals that they may need to seek for their particular activity. Adjacent owners should be aware that Article 412 of the license provides Entergy with limited authority to approve specific activities. Should adjacent shoreline

owners desire to undertake a use or occupancy of the Project lands (or waters) that exceed these limits, a separate and more detailed review will also be conducted by FERC. In the event that a new use or occupancy do not meet the criteria of the SMP and/or permitting criteria established by Entergy for the Project, the proposed new facilities or activities will not be forwarded by Entergy to FERC for further review.

This SMP identifies four Use Categories: Residential, Commercial, Public, and Multipurpose. Section 7.0 provides details on how the predominant existing uses of the shoreline and other guidelines were used to establish these Use category designations. The Use Categories will be used as an initial screening and will provide information on the general type of shoreline facility or activity that either currently exists, or will be allowed, along particular shoreline segments. Once the Use category of the particular shoreline segment is determined, the SMP details the three Management Classification designations (General Use, Limited Use, and Resource Management) that may be considered for the particular Project shoreline segment. These Management Classification designations are based upon a review of existing available resource information, permitting requirements of the various agencies involved, and federal laws pertaining to protected resources (see Section 8.0 for details). The SMP also outlines the proposed monitoring and amendment process that will be utilized to ensure that the approach outlined in the SMP remains consistent with project needs during the term of the new license.

Section 6.0 of the SMP includes Entergy's proposed Recreation Plan for evaluating public recreation facilities at the Project and ensuring that they are consistent with applicable management goals for the Lakes.

Figure 1-1: Location of the Carpenter-Rommel Project (FERC No. 271)

2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN

The Federal Energy Regulatory Commission's (FERC) publication entitled “Guidance for Shoreline Management Planning at Hydroelectric Projects” explains that:

Licensees have a responsibility to ensure that shoreline development activities that occur within project boundaries are consistent with project license requirements, purposes, and operations. As development and multiple uses of the shoreline continue to grow, licensees will face more and more challenges related to the effects of such development on project lands and waters, including public recreational use and environmental resources. A comprehensive plan, such as a shoreline management plan (SMP), can assist the licensee in meeting its responsibilities throughout the term of its license. An SMP is a comprehensive plan to manage the multiple resources and uses of the project’s shorelines in a manner that is consistent with license requirements and project purposes, and addresses the needs of the public.

FERC guidelines recommend that a Shoreline Management Plan (SMP) utilize existing resource information to designate Shoreline Management Classifications and guidelines in order to provide a framework for determining which proposed shoreline facilities or activities are most appropriate in relation to the existing uses and the environmental resources. An SMP identifies areas that should be afforded additional protection through more intensive scrutiny of new uses prior to permitting. An SMP can also identify those shoreline segments that are most suitable for future use and expansion and therefore may not require as much scrutiny. The intent of the SMP is to ensure that the Licensee's actions conform to the Project license requirements and are consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project. These include protection of natural and cultural resources and providing access to the public while maintaining consistency with other jurisdictional policies and plans relevant to the area. The SMP will need to protect those resources that are currently protected by federal and state regulations (*e.g.*, threatened and endangered species, and archaeological sites). As such, Entergy has designed the SMP to implement its compliance with these existing regulations, considering other management plans, such as the Historic Preservation Management Plan (HPMP) (Entergy, 2003) developed for the Project. The SMP will also outline the Licensee’s plans to integrate FERC license requirements for future management of recreation needs at the project. The SMP provides measures for future monitoring of shoreline use and recreational needs and for amendment of the SMP in the event that revisions are

necessary as well as providing a framework for Entergy to enforce permitting requirements within the Project boundary.

3.0 SHORELINE MANAGEMENT PLAN GOAL AND OBJECTIVES

The overall goal of this Shoreline Management Plan (SMP) is to formalize the process and criteria that Entergy Arkansas, Inc. (Entergy) will use to manage and balance private and public use of the Carpenter-Rommel Project (Project) lands and lakeshore with natural and cultural resources and hydroelectric generation needs at the Project. The SMP serves as a reference document for Entergy in implementing the Standard Land Use Article (see Appendix D for license articles pertaining to the SMP) to ensure the protection and enhancement of the Project's scenic, recreational and other environmental values over the term of the license.

The objectives of the Project SMP are to:

- Provide a summary of the existing shoreline resources located within the Project boundary.
- Provide a reference and/or linkage to other Project-related studies, management plans, and permitting regulations.
- Establish an equitable and reasonable balance between private/public uses, overall maintenance of existing natural and cultural resources, and hydroelectric generation.
- Provide a summary of the types and locations of existing recreational opportunities and future enhancements that are set to occur as a requirement of the new Project license.
- Establish Shoreline Management Classifications (SMC) and Allowable Uses to help in the management of non-Project uses of Entergy's shoreline lands within the Project boundary.
- Describe the SMP amendment and monitoring process.
- Alert lakefront property owners of Best Management Practices (BMP) that can be voluntarily implemented on their non-Project lands that will directly benefit their use and enjoyment of the Project land and waters.

Section 5.0 of this SMP summarizes existing shoreline resources within the Project boundary and provides maps of these resources. These maps are part of a Project resources database (Geographic Information System or GIS) that provides a visual summary of this

information and also serves as a tool for analysis and management of these resources. These maps and cross references to other Project related studies allow users to reference more detailed Project-related information and help integrate the various management plans to limit the potential of conflicting management objectives for the Project's shoreline resources. More detail Project related information is available for specific resources as listed in the SMP bibliography.

The summary of existing and proposed recreational resources in Section 6.0 of the SMP will help ensure that the public will have reasonable recreational access to Project waters over the term of the license. This section incorporates a general Recreation Plan component into the SMP to help guide recreation facility management within the Project boundary and ensure consistency with the SMP.

An assessment of existing shoreline resources served as the basis for establishing classifications and guidelines for future management of shoreline within the Project boundary as discussed in Section 7.0. The SMC sections define the types of use and occupancy that will be compatible and where they should occur, and delineate sensitive shoreline resources that require protection. These "Management Guidelines" define specifically what activities should be allowed or prohibited under any given classification. Overall, these classifications and guidelines seek to balance the protection of sensitive shoreline resources, while allowing appropriate use and reasonable access to the remaining shoreline areas within the Project boundary.

4.0 CONSULTATION

The relicensing process for the Carpenter-Rommel (Project) utilized a collaborative team-based process that involved participants representing all major issues. This collaborative process was an extension of the day to day outreach program accomplished by Entergy staff in dealing with local and regional concerns regarding Project resources. Relicensing team members included key interests (*e.g.*, state and federal resource agencies, shoreline owners, private fishermen, private property advocates). The relicensing team worked through a dynamic process in order to develop the Preferred Alternative that balanced all of the competing uses at the Project.

Several of these relicensing team members transitioned over and participated in the process to develop the Shoreline Management Plan (SMP). Again, the SMP Team incorporated individuals having different interests regarding the Project and Project resources. Input on resource issues, regional concerns, and general plan layout utilized much of the balancing that occurred during the relicensing process and development of the Environmental Assessment, with additional input and guidance provided on specific issues by SMP Team members. In addition, Entergy has undertaken numerous discussions through informal contact with property owner associations, boat dock builders and owners, land developers, real estate agents and members of the local Chambers of Commerce. The Team was provided multiple chances to provide input and review SMP drafts (see meeting minutes dated September 5, 2002, October 8, 2002, and March 4, 2003 in Appendix E). The team consists of personnel from State and Local Government entities, private businesses, as well as local residents. The group includes:

Betty	Beaver	Lakefront Property Owner
Richard	Boyes	Lake Catherine State Park
Parker	Dozhier	Dozhier's Rainbow Landing and Bait Shop
Steve	Drown	Arkansas Dept. of Environmental Quality
Henry	Jones	Entergy, Relicensing Project Manager
Andy	Meyers	Meyers Realty
Bobby	Pharr	Entergy, Hydro Operations

Chris	Salazar	Prime Reality and Management; President of Hot Springs Board of Realtors
Ted	Smethers	Entergy, Hydro Operations
Jean	Wallace	Director; Hot Springs Parks & Recreation Dept.
Hon. Terry	Smith	Arkansas State Senate
Stuart	Wooldridge	Fisheries Biologist, Arkansas Game & Fish Commission
Chris	Horton	Fisheries Biologist, Arkansas Game & Fish Commission

The team met on three occasions and provided edits to the draft document compiled by Entergy. They provided commentary and editorial suggestions that resulted in the final SMP, which was then finalized and approved by the group prior to submittal to the Federal Energy Regulatory Commission (FERC). Results of these meetings, other input received by commentators, and Entergy's responses to these comments are included in Appendix E.

The Team provided valuable input from entities familiar with the Carpenter-Rommel Project (Project), the goals and objectives identified, as well as the issues addressed as part of the relicensing process for the operation and management of the Project over the term of the new license. In addition, this review provided the opportunity for entities potentially affected by shoreline management issues to provide comments and input on the overall future management of the shoreline resources.

In addition to the consultation conducted for the development of the SMP, the Licensee will continue to cooperate with all regulatory and non-regulatory stakeholders such as the Arkansas Game and Fish Commission (AGFC), the City of Hot Springs and other entities, as appropriate, in the management of the Project resources as outlined in the FERC license.

While FERC does not require consideration of economic impact of the Project on the area around the Project boundary, the Licensee is aware of the importance of the Project resources (*e.g.*, recreation on and development around the Lakes) as well as private property interests on the surrounding region. This SMP was written to balance the use of the Project lands with natural and cultural resources and hydroelectric generation, while at the same time being mindful of the socio-economic impacts that the SMP requirements could have.

5.0 INVENTORY OF EXISTING SHORELINE RESOURCES

The following section provides a summary description of the Carpenter Rommel Project's (Project) shoreline resources based on studies and data collected as part of the Project's relicensing process. The referenced studies (complete references are contained in the bibliography at the end of the Shoreline Management Plan (SMP)) provide more detail on the Project's shoreline resources (See Section 12.0). Affects of relicensing to specific resources (upon which this SMP was developed) were addressed by the Federal Energy Regulatory Commission (FERC) in the "Environmental Assessment for Hydropower License" (EA) issued December 28, 2001. Resources that are particularly important relative to the overall shoreline management process (detailed in Sections 7 and 8) are discussed in greater detail.

5.1 Geologic and Soil Resources

The Project is located in the Ouachita Mountains physiographic region, which is characterized by gentle to very steep slopes. Bedrock consists of shale, sandstone, chert, and novaculite. Shale bedrock is commonly exposed on the lower slopes. The mountains, ridges and peaks are predominantly composed of harder, more erosion resistant rock, with novaculite bedrock typically exposed on the highest ridge tops. Portions of the lower slope soils are formed in shale, chert, and sandstone, some of which are susceptible to erosion.

Over all, the Project shoreline, totaling 254 miles, is comprised of stable soils and materials. The majority of the Project shorelines consists of stabilized shorelines (*e.g.*, retaining walls, rip-rapped shorelines) or naturally stabilized (exposed bedrock) shorelines (see Figures 5-1A - 5-1C located in Appendix B). A study undertaken during the relicensing effort only identified 21 non-typical erosion sites around the Project's shoreline (FTN, 1999). These sites comprise approximately 0.6 shoreline miles (0.3 percent of the shoreline) at Lake Hamilton. In general these erosion sites are concentrated in the lower third of the lake where the lake is widest and subject to more wind/wave action and from waves associated with recreational boating traffic. At Lake Catherine, the seven identified sites total approximately 0.4 shoreline miles, or 0.7

percent of the shoreline. In general these erosion sites are located at various locations throughout the reservoir.

As discussed in Sections 7 and 8, Steep Slope and Natural Rock Shoreline Areas are unique resources relative to a shoreline management perspective. Steep Slopes are generally areas with a 30% gradient, rising sharply from the shoreline. Such areas are less likely to experience disturbance of the natural condition by construction activities due to the gradient of the slopes, which makes it more difficult, if not impossible to construct major buildings on the slope. These areas may occur within and/or adjacent to the Project lands. Steep slopes provide a dramatic and aesthetically pleasing backdrop to the Lakes.

The Natural Rock shoreline feature consists of rock outcrops, exposed bedrock and boulders at the shoreline (see Figures 5-1A-5-1C located in Appendix B). These areas are unlikely to experience active erosion. Areas of natural rock shoreline dissipate wave energy more effectively than engineered methods such as sea walls, serve as important habitat features for organisms such as fish and aquatic insects, and are a relatively unique aesthetic amenity, functioning to make the shoreline visually more natural and environmentally complex. To assure these unique qualities are maintained, these areas have been placed within the Limited Use classification (see Section 7.2.2 for details). These shorelines, as discussed above, are a relatively unique aesthetic amenity, functioning to make the shoreline visually more natural and environmentally complex.

Section 5.3.1.3 of the FERC issued EA summarized the effects on soils and geologic resources. That EA concluded that a minor amount of erosion may still occur due to recreation and wind related wave action on shoreline soils and an increased fluctuation on Lake Catherine from June through February. However, given the fact that the majority of the Project shorelines consist of stabilized shorelines and natural rock shorelines, no significant effects on soils or geologic resources are expected. Implementation of BMP's during any recreation construction would minimize any effects associated with Project operation. Whereas the EA concluded a preference for the use of rip-rap for shoreline structures this SMP includes a designation of rip-rap as the preferred

shoreline stabilization method in some of the Shoreline Management Areas (see Section 8.1 for details).

5.2 Water Quality

Water quality sampling conducted during the relicensing effort concluded that both lakes stratify (warm water on the surface with colder water being found in depths) during the warm summer season. Dissolved oxygen levels in the upper levels of the water column exceeded 7.0 mg/l, dropped to below 1.0 mg/l near mid depth and rising again to near 3.0 mg/l near the bottom of the lakes. The decreased dissolved oxygen levels in the mid-water column has been linked to high nutrient inputs (*e.g.*, fertilizers, organic debris input). This decrease in dissolved oxygen was more pronounced in the long narrow embayments along Lake Hamilton. The bottom releases from Blakely Mountain Dam helped to keep the lower portions of both lakes well oxygenated.

Section 5.4.1 of the FERC issued EA indicates that

all enhancement measures proposed by Entergy would have beneficial cumulative effects on water quality and temperature. Each enhancement by itself would contribute to improved water quality. However, taking all the measures together, water quality and temperature would be maintained in the project lakes and improved in the Ouachita River below Remmel Dam.

Among these enhancement measures FERC cites the provision of base flows below Remmel Dam as primary action contributing to enhanced water quality within the Project boundary.

5.3 Aquatic Resources

Lakes Hamilton and Catherine are relatively unique lakes in that they represent a wide variety of thermal regimes and productivity levels, primarily due to the cold water releases from Lake Ouachita upstream of the Project. Despite the cold water releases from Lake Ouachita, the Project waters maintain a remarkable mixture of cold water, cool water, and warm water habitats. The lakes support a wide range of habitats for a

variety of fish species. The productivity of each lake varies from fairly productive (mesotrophic) to highly productive (eutrophic). These factors also create a unique and diverse fishery resource in both lakes. The lake fisheries resources are currently managed and regulated by the Arkansas Game and Fish Commission (AGFC). Entergy cooperates with these management activities through seasonal lake level manipulations. Figures 5-2A, 5-2B, and 5-2C (located in Appendix B) show the location of areas where fish habitat structures have been placed in Lake Hamilton and in Lake Catherine by the AGFC, with assistance from Entergy, in order to provide cover and shelter for juvenile and adult fish species. There is also anecdotal evidence that public fishing interests and general members of the public are also involved, independently, in the creation of fish structures by sinking brush and discarded Christmas trees in the lakes. These structures are not included in the AGFC documented sites.

Submerged aquatic vegetation beds occur throughout Lake Catherine and Lake Hamilton and include species such as Chara, Nitella, Naiad and other aquatic vegetation. Small fish and diving ducks utilize these beds for food and cover. In response to numerous complaints from recreation users and property owners adjacent to the shoreline on Lake Hamilton regarding the excessive presence of aquatic vegetation beds, Entergy, in cooperation with the AGFC and the University of Arkansas Cooperative Extension Service, evaluated excessive/nuisance aquatic vegetation growth. This led to the development of an Aquatic Vegetation Control Plan for Lakes Hamilton and Catherine (Entergy, 1997f). The Plan uses winter drawdowns and grass carp stocking as primary aquatic vegetation control methods and was first implemented in 1996. The plan was successful in the management of naiad and has since been revised to deal with the current infestation of Eurasian Watermilfoil.

In developing this SMP, Entergy worked cooperatively with representatives of the AGFC to locate sensitive fish spawning and nursery areas along the Project shoreline areas. These spawning and nursery areas are also illustrated on Figures 5-2A through 5-2C (see Appendix B). Lakes Hamilton and Catherine are relatively unique lakes representing a wide variety of thermal regimes and productivity levels. The lakes support a wide range of habitats for a variety of fish species. The productivity of each lake varies

from fairly to highly productive. These factors also create a unique and diverse fishery resource in both Lakes. This is supported by the EA findings of Cumulative Effects in section 5.3.3.2 which states the Project water bodies currently meet or exceed their existing fish management goals for resident lake species. The EA also states that the Proposed Action associated with the relicensing process will provide beneficial effects to the existing fishery resources.

Unique and sensitive spawning and nursery areas are typically associated with shallow shoreline areas. The areas are called the littoral zone and are often composed of a variety of habitats: weed beds, overhanging vegetation, undercut banks, stumps, and other types of structure. These habitats provide a variety of resources for the fish community, such as spawning and nursery areas, nursery areas for juvenile fish, feeding areas for juvenile and adult fish, and physical structures that attract adult fish.

By protecting these unique and sensitive areas (see Section 8.1 of this SMP), Entergy and the AGFC are attempting to protect the unique fisheries of both lakes. Protection of spawning, rearing, and feeding areas around the Lakes will ensure that the fish community can complete their life cycle and grow to catchable sized fish. In addition to the environmental value of the fisheries in the Lakes, this diverse and productive fishery provides sport fishing, which has a distinct economic benefit to the area.

5.4 Terrestrial Resources

Wetlands are limited along the shorelines of Lake Hamilton and Lake Catherine, as a result of the relatively steep slopes and shallow soils. An additional factor limiting the extent of existing wetlands is the relatively heavily developed lake shorelines. As a result, there is limited shoreline containing natural or undisturbed vegetative communities.

Wetlands are areas with standing water or areas that are wet often enough to support vegetation adapted for life in wet soils. Wetlands also provide important water

quality functions by serving as a filter for sediment, nitrogen, and other sediment based pollutants. Wetlands include areas commonly referred to as marshes, sloughs, swamps, floodplains, etc. While wetlands play an extremely important role in the overall environmental health of the Lakes Hamilton and Catherine through habitat for birds, amphibians and fish, they are relatively limited within the Project boundary (Figures 5-3A-5-3C located in Appendix B). The EA associated with Project relicensing indicated that the wetlands that do exist within the Project boundary are largely restricted to areas protected from the wind and wave action and tributary mouths where silt has settled and accumulated. Wetlands provide important wildlife, plant, and fisheries habitat. In an effort to maintain the integrity of these limited areas, they have been placed within the Limited Use classification (See Section 8.2).

For the entire Project area, there are 11 wetland areas totaling about 21.79 acres and 2.05 shoreline miles (0.81 percent of the Project's shoreline). Eight wetland areas are located adjacent to the Lake Hamilton shoreline, totaling about 15.46 acres and 1.88 shoreline miles (about 0.95 percent) of the Lake Hamilton shoreline. For Lake Catherine, there is one wetland area along the shoreline, totaling about 0.6 acres and 0.17 shoreline miles, about 0.3 percent of the Lake Catherine shoreline. In addition, there are two wetlands located within the Project boundary below the Rommel dam (*i.e.*, along the Ouachita River shoreline downstream of Lake Catherine) totaling about 5.73 acres. Table 5-1 summarizes the type of wetlands and Figures 5-3A, 5-3B, and 5-3C (see Appendix B) show the location of wetlands within the Project boundary.

Table 5-1. Summary of Wetlands Located within the Project Boundary (Source: FTN, 1998)

Lake	ID No.	Type	Acreage
Lake Hamilton	1	Palustrine Emergent	0.72
	2	Palustrine Forested	0.81
	3	Palustrine Forested/Palustrine Emergent/Palustrine Scrub-Shrub	6.03
	4	Palustrine Emergent	3.85
	5A, 5B	Palustrine Scrub-Shrub	0.62
	6	Palustrine Scrub-Shrub	0.54
	7	Palustrine Scrub-Shrub	0.02
	8A, 8B, 8C, 8D, 8E	Palustrine Forested/Palustrine Emergent	2.87
	Sub-Total		
Lake Catherine	9A, 9B	Palustrine Scrub-Shrub/Palustrine Emergent	0.93
	10	Palustrine Forested	4.8
	11	Palustrine Forested	0.6
Sub-Total			6.33
Total			21.79

As outlined in Section 8.1 of this SMP, Entergy has developed guidelines regarding future shoreline development activities in the Resource Management area containing wetland resources.

5.4.1 Threatened and Endangered Species

There are no federally listed threatened or endangered plant species or habitat locations within the Project area. Several state-listed threatened or endangered plant and wildlife species may occur in the Project area, based on habitat assessments, although none were observed (FTN, 1998). Potential habitat occurs in the affected area for nine species (five animals and four plants) of concern at the state level (FTN, 1998). These species are designated as extremely rare to uncommon at the state level. There are no formal protection measures for state listed species in Arkansas other than on land owned by the Arkansas Natural Heritage Commission. The AGFC has adopted the Federal list for state-listed animals, giving them standard federal protection. Arkansas Natural Heritage

Commission provides ANHC provides a list of state-listed plants that goes beyond the federal list but there are no regulations to add protection to the additional species.

One of these nine species, prickly greenbrier (*Smilax tamnoides*), which is listed as a state threatened species, was confirmed during 1998 field investigations (FTN, 1998). This species has colonized Ouachita River terraces with favorable soil conditions and hydrology (FTN, 1998). The remaining four plant species of concern at the state level that could potentially occur in the affected area, but were not observed, are: caric sedge (*Carex bromoides*), Shinner's sunflower (*Helianthus occidentalis*), royal catchfly, and a wild rose (*Rosa foliosa*) (FTN, 1998). The royal catchfly and wild rose occur in glades or prairie-like openings in upland forests. As with the bristly greenbrier, Shinner's sunflower occurs on riparian terraces and floodplains, and potential habitat is limited to the Ouachita River riparian zone downstream from Remmel Dam. Lastly, caric sedge occurs in emergent wetlands, which are of very limited acreage in the Project area.

The four animal species of concern at the state level that could potentially occur in the affected area, but which were not observed, are queen snake (*Regina septemvitta*), Bachman's sparrow (*Aimophila aestivalis*), great egret (*Casmerodius albus*) and little blue heron (*Egretta caerulea*) (FTN, 1998). Potential habitat for the queen snake, which inhabits rocky streams with good crayfish populations, is limited to the small tributary streams to Lake Hamilton and Catherine. Bachman's sparrow prefers young pine-dominated upland forests and associated thickets, which are not commonly associated with the Project area. Great egret and little blue heron use emergent wetlands and shallow water. The great egret and little blue heron rely on shallow water areas, such as emergent wetlands and adjacent buffer areas, and the queen snake relies on rocky banks of small creeks, such as tributary streams. Suitable nesting habitat for bald eagle (federally threatened) in the affected area is limited by a lack of suitable nesting and roosting trees, such as large, tall trees near open water, and by the pattern and density of lakefront property development (FTN, 1998). Sightings of non-

resident (migrant) bald eagles occur during most winters on Lake Hamilton and Lake Catherine. As no nesting eagles have been observed, all are assumed to be transient individuals.

5.5 Land Use and Aesthetics

Lakes Hamilton and Catherine are located below the headwaters of the Ouachita River. The Project area is surrounded by mountains and foothills, streams, and narrowly defined floodplains. The viewscape of the area ranges from undeveloped areas, characterized by extensive tree cover and natural areas, to developed areas on both Lake Hamilton and Lake Catherine, with views of homes, boathouses and docks, commercial marinas and retaining wall and rip-rap structures.

Lake Hamilton is approximately 18.25 miles long with approximately 198 miles of shoreline and has a surface area of 6,897 acres at elevation 399.9 feet Msl. The lake is narrow for approximately one-third of its length from Blakely Dam to just after the US-70 bridge. The middle section of the lake is broader with large coves and inlets until it constricts again at the AR-7 bridges. The last one-third from AR-7 to Carpenter Dam is the broadest section of the lake (approximately 1.5 miles wide) and includes three large islands, Electric Island (formerly Big Goat Island), Little Goat Island, and Rabbit Island.

Lake Hamilton lies fully within Garland County and adjacent to the City of Hot Springs. The majority of land bordering the lake is in residential development, especially the southeastern portions. The residences are closely spaced and much of the shoreline has been modified with retaining walls or rip-rap. Many of the residences are large and spacious, and have docks and/or boathouses, frequently with multiple watercraft per residence. Areas located near highway bridge crossings have been extensively developed with condominiums, hotels, private marinas, convenience stores, restaurants, and lake-based commercial attractions.

Lake Catherine is approximately 11.78 miles long with approximately 56 miles of shoreline and has a surface area of 1,642 acres at elevation 304 feet Msl. The reservoir is

much more riverine and narrower than Lake Hamilton with the widest portions only being approximately 1/2 mile. The physical characteristics of the lake's south shore differ from the north shore. About half of the south side of the lake is dominated by steep rises of terrain, providing a physical setting less amiable to intensive lakefront development.

Lake Catherine is located southeast of the City of Hot Springs, and lies partially in Garland County and partially in Hot Spring County. Lake Catherine has not experienced the extensive level of commercial and residential development as Lake Hamilton. Residences are typically older, smaller, and spaced further apart and there are large tracts of undeveloped, wooded shoreline. Many of these homes have manicured lawns and bulkhead walls. Early in Lake Catherine's history, in the 1930's, over 2,000 acres, including 3.4 miles of shoreline on its south side were reserved by Entergy and either donated or leased to the state and developed as Lake Catherine State Park, thus maintaining the natural setting of the area near Remmel dam.

Figures 5-4A through 5-4G show the designated Project boundary for both Lake Hamilton and Lake Catherine (see Appendix B).

The designated Project boundary includes both Lakes Hamilton and Catherine. The Project boundary extends to the 400-foot contour on Lake Hamilton and generally to the 307-foot contour on Lake Catherine. Also, in many locations, Entergy possesses additional fee ownership and flowage easements extending further inland beyond the Project boundary on both lakes. Entergy manages the water levels of the reservoirs pursuant to the license granted by FERC.

Except for temporary variances due to emergency maintenance or drawdowns for actual or anticipated high inflow event, on a daily basis Entergy operates the Project with no more than 12 inches of fluctuation at Lake Hamilton and 24 inches on Lake Catherine. In addition, Entergy operates the Project, which results in fluctuation of the lake levels on a seasonal basis. During the period March 1 through May 15 (or when Lake Catherine is refilled after an annual drawdown) Lake Catherine fluctuations are within the range of six

inches (El 304.0-304.5) to enhance spring fish spawning habitat. From May 16 to May 31, Lake Catherine is transitioned from a six-inch fluctuation to a two-foot fluctuation. For the remainder of the year Entergy limits daily fluctuation to 24 inches on Lake Catherine.

The total acreage within the Project Boundary is about 9,320 acres, with about 7270 acres at Lake Hamilton and 2032 acres at Lake Catherine, most of which lies under water.

Figures 5-5A, 5-5B, and 5-5C (see Appendix B) denote the existing land use adjacent to as well as within the Project boundary. Table 5-2 summarizes the distribution of shoreline land use (including shoreline miles and percent of the total shoreline) adjacent to the Project boundary for the entire Project and both Lake Catherine and Lake Hamilton individually.

Table 5-2. Distribution of Land Use Adjacent to the Project Shoreline (Source: Burns & McDonnell, Inc., 1999)

Classification	Lake Hamilton		Lake Catherine		Total Project	
	Shoreline	% Total	Shoreline	% Total	Shoreline	% Total
	Miles	Shoreline	Miles	Shoreline	Miles	Shoreline
Agricultural	2.0	1.0	0.8	1.5	2.8	1.1
Camps	0.0	0.0	0.9	1.6	0.9	0.4
Commercial	8.0	4.0	0.6	1.2	8.6	3.4
Forested	47.8	24.1	23.9	42.7	71.7	28.2
Industrial	1.2	0.6	1.2	2.2	2.4	0.9
Open Lands*	1.4	0.7	0.6	1.1	2	0.8
Other Urban	0.3	0.2	2.2	3.9	2.5	1.0
Parks	1.9	0.9	4.8	8.6	6.7	2.6
Residential	135.3	68.4	20.9	37.3	156.2	61.5
Total	198	100	56	100	254	100

*Open land includes undeveloped lands not forested; open wetlands; vacant lands;

Figures 5-6A, 5-6B, and 5-6C (see Appendix B) show the ownership for lands located immediately adjacent to the Lakes Hamilton and Catherine Project Boundary (see Appendix B). Table 5-3 summarizes the distribution (including shoreline miles and percent of the total shoreline) of land ownership adjacent to the Project boundary for the entire Project and both Lake Catherine and Lake Hamilton individually. Of the total acreage associated with the Project, there are 34.3 acres of federally owned lands within the Project boundary. The Army Corps of Engineers (ACOE) is responsible for this land as part of the Lake Ouachita-Blakely Dam reservation. The U.S. Forest Service (USFS) manages extensive tracts of land adjacent to the Project in the upstream segments of Lake Hamilton associated with the Ouachita National Forest.

Table 5-3. Distribution of Land Ownership Adjacent to the Project Boundary

Classification	Lake Hamilton		Lake Catherine		Total Project	
	Shoreline	% Total	Shoreline	% Total	Shoreline	% Total
	Miles	Shoreline	Miles	Shoreline	Miles	Shoreline
Federal	5.4	2.7	0	0.0	5.4	2.1
State	1.1	0.5	2.3*	0.0	1.1	0.4
City	0.5	0.3	0	0.0	0.6	0.2
Entergy	8.6	5.7	10.2	18.1	21.4	8.4
Private	182.4	90.8	43.5	81.9	225.9	88.9
Total	198	100	56	100	254	100

*Entergy owns a portion of the land inside Lake Catherine State Park and leases it to the State

Existing land uses and ownership was one of the criteria utilized in the development of Shoreline Management Classifications (see Section 7.0 for details)

5.6 Cultural Resources

A Programmatic Agreement (PA) (Entergy, 2002b) for the Project was signed on August 16, 2002 by FERC, the Advisory Council on Historic Preservation (Advisory Council) and the Arkansas State Historic Preservation Officer (SHPO). The Caddo Tribe of Oklahoma (Caddo Tribe) and Entergy are concurring parties to the PA. The Quapaw

Tribe of Oklahoma (Quapaw Tribe) was provided copies of the PA for review but did not comment on the content. The PA requires Entergy to develop a Historic Preservation Management Plan (HPMP) that outlines the measures that it will implement relative to the preservation, protection, and management of Pre-Historic and Historic Properties at the Project during the term of the new license. This PA was, to some degree, in response to the SHPO's concerns identified during the Project relicensing (*i.e.*, potential future shoreline development could have an adverse effect on historic properties) and addressed in the FERC EA. The EA (Section 5.3.7.2) indicated that "the PA and HPMP provides provisions and measures for consultation with the SHPO for any proposed structural modification or maintenance activities that may affect the historic integrity of the project facilities listed on the NRHP." Additionally the EA indicated that "the remaining action contained in the Proposed action are not likely to effect historic structures".

Both Pre-historic and Historically sensitive sites were identified within the Project boundary in the course of the Project relicensing. These sites have been included in the Project GIS database, but are not made available to the general public. Prehistoric designation refers to pre-European cultures and civilizations that existed at the location of the Project as well as the region, and in some instances throughout the country. Historic generally refers to the time frame after European settlement of North America and can include both Native American and European sites.

Pre-Historic and Historically sensitive sites are areas that:

- are associated with events that have made a significant contribution to the broad patterns of our history;
- are associated with the lives of significant persons in our past
- are of a particular type, time, or method of construction that is distinctive
- represent an important and noteworthy person place or activity
- have yielded, or may yield important information about prehistoric or historic events, people, or objects.

Based on information provided by the SHPO, there are a total of 62 prehistoric sites, of which 21 sites are located along the shoreline and 41 sites are located within the

lakes. At Lake Hamilton there are a total of 33 prehistoric sites, of which 9 sites are located along the shoreline and 24 sites are located within the lake. At Lake Catherine there are a total of 29 prehistoric sites, of which 12 sites are located along the shoreline and 17 sites are located within the lake.

There are a total of eleven National Register of Historic Places (NRHP) listed and four NRHP eligible historic sites within the Project boundary. At Lake Hamilton, there is one NRHP listed site, Carpenter Dam, and no identified NRHP eligible sites. At Lake Catherine there are ten NRHP listed sites and 3 NRHP eligible sites. The ten facilities listed on the NRHP at Lake Catherine include Remmel Dam and three cabins associated with Lake Catherine State Park. Six other structures that are listed as being eligible for the listing include: two cabins associated with Lake Catherine State Park, the Lake Catherine Seasonal Employee Housing, Retaining Wall No. 4 at the Lake Catherine State Park, and two rustic sculptures.

The location of the archaeological and historic sites is not provided in this SMP due to the sensitive nature of the site-specific information and the need to protect the integrity of these sites. More detailed information, including further description of the identified sites and the location of these sites may be provided in the HPMP, which is only circulated to those parties that are signatories on the PA. The HPMP will contain provisions for controlling site location information based on a need to know criteria.

All proposed new facilities and activities within the Project boundary that will involve major ground disturbing construction or commercial use will be subject to review by the SHPO. Cultural resource protection will be provided through the implementation of the PA, the HPMP, and has been incorporated into the decision-making process relative to areas where, and types of, new shoreline uses will be allowed (see Section 7.2.2.3).

5.7 Recreation Resources

5.7.1 Recreation Facilities

There are 11 public recreation areas located within or immediately adjacent to the Project boundary totaling about 2,657 acres and 11.1 shoreline miles (4.4 percent of the Project's shoreline). Of these recreation areas, 7 are located around Lake Hamilton, totaling about 458 acres and 8.6 shoreline miles (4.3 percent of the Lake Hamilton shoreline), and 4 are located around Lake Catherine, totaling about 2,199 acres and 2.5 shoreline miles (4.5 percent of the Lake Catherine shoreline).

5.7.1.1 Lake Hamilton

There are a total of 49 sites on Lake Hamilton that provide recreation opportunities, including 7 noncommercial sites and 42 commercially operated sites. Figures 5-7A and 5-7B (see Appendix B) denote the location of the non-commercial and commercial recreation sites at Lake Hamilton (see Appendix B). Table 5-4 summarizes the key characteristics of the seven non-commercial sites and Table 5-5 summarizes the commercial recreation sites at Lake Hamilton. Of the noncommercial sites identified, five provide shoreline access to the lake, while the remaining two are islands. Except for Garvan Woodland Gardens, access at all non-commercial public recreation sites is available free of charge (Kleinschmidt, 1999).

Table 5-4. Characteristics of the Noncommercial Recreation Sites Adjacent to Lake Hamilton

Site	Facilities	Owner	Fee Required
Andrew Hulsey Fish Hatchery	Visitors' center, picnic pavilion, courtesy dock, boat ramps, fishing pier, parking, portable toilet	AGFC	No
Hill Wheatley Park	Swimming beach, boat launch, boat dock, picnic tables, picnic pavilion, restrooms, a one-mile nature trail, parking	City of Hot Springs	No
Stephens Park	Camping facilities, picnic pavilion, picnic tables, tailwater fishing access, parking, restrooms	ACOE	Yes, for camping
Avery Day Use Area	Covered picnic facilities, nature trail, camping facilities, parking, restrooms	ACOE	No
Sunnybrook Landing	Boat launch, fishing pier, parking, picnic tables	Entergy (operated by AGFC)	No
Electric Island	No developed sites, but utilized for hiking, picnicking, and wildlife viewing	Nature Conservancy	No
Garvan Woodland Gardens	Gardens, trails, pavilion, chapel, amphitheater, observation areas, courtesy docking facilities, celebration center, restrooms	University of Arkansas	Yes

Table 5-5. Summary of Commercial Recreation Facilities Adjacent to Lake Hamilton

Marinas

Dodd City Marina	Futrell Marine/Salty Dog
Kahuna Bay	Arkansas Marine
Power Boats/Water Dock SuperStop	Sunset Lodge Marina
M & M Marineland	SunBay Resort
Poverty Point Marina	Buena Vista Resort
Lake Hamilton Resort/H2O Fun Marina	Clarion Inn
Bradford Marine	Paradise Point Resort

Hotels, Resorts, Campgrounds

Buena Vista Resort	Long Island Lake Resort
Clarion Inn	Patton's Resort
Cozy Acres Resort	Shore Crest Resort
Edgewater Resort	Tina's Last Stop
Hamilton Inn Resort	Wayward Winds Resort
Hideaway Resort	Willow Beach Motel
Knollwood Lodge	Country Inn
Lake Hamilton Resort	Young's RV Park
SunBay Resort	Lake Hamilton Camp
Wagon Wheel RV Park	

Restaurants

Gilligan's	Martin's Harbor
Doe's Steaks & Tamales	Sam's Pizza
Cajun Boilers	SunBay Resort
Dockers	Fisherman's Wharf
Hamilton House Restaurant	Lago Vista
Beach Club	Clarion Inn
Lake Hamilton Resort	La Siesta Restaurant
	Hoggs

5.7.1.2 Lake Catherine

There are eleven sites adjacent to Lake Catherine providing recreation opportunities to the public. Of these, four are noncommercial sites, such as state and local parks and facilities owned by Entergy, and seven are commercially operated facilities. Except for Lake Catherine State Park, access at all non-commercial public recreation sites is available free of charge. Figure 5-7C denotes the location of the non-commercial and commercial recreation sites at Lake Catherine. Table 5-6 summarizes the key characteristics of the four non-commercial sites and Table 5-7 summarizes the commercial recreation sites adjacent to Lake Catherine.

Table 5-6. Characteristics of the Noncommercial Recreation Sites adjacent to Lake Catherine

Site	Facilities	Owner	Fee Required
Rommel Dam Tailrace Area	Access road, steps to the tailrace, boat ramp	Entergy	No
Rommel Dam Park	Boat ramp, picnic area, pavilion, picnic tables, night lighting, fishing pier, courtesy docking pier, portable toilets, parking	Entergy (to be operated by AGFC)	No
Lake Catherine State Park	Camping, cabins, picnic facilities, covered pavilion, swimming beach, playground, boat ramp, interpretive exhibit, outdoor amphitheater, nature trails, parking, restrooms, commercial small boat rentals and a gift shop	Arkansas Dept. of Parks & Tourism (ADPT)	Varies: from no fee for admission to fees for camping, cabins, etc.
Carpenter Dam Park	Fishing platform, boat ramps, picnic tables, courtesy docking piers, night lighting, portable toilets, parking	Entergy (operated by the City of Hot Springs)	No

Table 5-7. Summary of Commercial Recreation Facilities adjacent to Lake Catherine

<u>Marinas</u>	Diamondhead Marina Dozhier's Rainbow Landing Lake Catherine State Park Marina
<u>Hotels, Resorts, Campgrounds</u>	Lake Catherine State Park Pearson's Landing
<u>Restaurants</u>	Boss Hog's Penny's on the Lake
<u>Other</u>	Essex Park Golf Course

5.7.2 Recreation Use

5.7.2.1 Lake Hamilton

Annual recreation use of Lake Hamilton in 1997 - 1998 was estimated at 179,800 recreation days, with recreational boating and recreational fishing accounting for approximately 67 percent and 27 percent of the total, respectively. Other recreation activities included shoreline recreation, swimming, other water-based activities, and playground use. Commercial development is much more intensive at Lake Hamilton than at Lake Catherine (Kleinschmidt, 1999). As of the date of the SMP's development, the 2002 recreation data was being processed, but early analysis indicates a continuing trend of increased use at Lake Hamilton.

There are three distinct recreational user groups at Lake Hamilton: park visitors, marina patrons, and property owners adjacent to the shoreline. The most common activities in which park visitors reported participating included power boating, swimming and sunbathing,

shore/dock fishing, use of personal watercraft (PWC), picnicking, and boat fishing. Marina patrons participate most frequently in scenic viewing, swimming and sunbathing, power boating, boat fishing, shore/dock fishing, and viewing wildlife. Property owners adjacent to the shoreline most frequently participate in power boating, swimming and sunbathing, viewing wildlife, walking or jogging, and boat fishing.

5.7.2.2 Lake Catherine

Annual recreation use of Lake Catherine in 1997-1998 was estimated at 145,686 recreation days, with Lake Catherine State Park accounting for approximately 77 percent of the total. Recreational boating and recreational fishing accounted for only about three percent and 16 percent, respectively. Other recreation activities included shoreline recreation, swimming, and other water-based activities. Commercial development is much less intensive than at Lake Hamilton (Kleinschmidt, 1999). As of the date of the SMP's development, the 2002 recreation data was being processed, but early analysis indicates a trend of slightly decreased use at Lake Catherine.

As with Lake Hamilton, there are distinct user groups that frequent Lake Catherine for purposes of recreation: park visitors, marina patrons, and property owners adjacent to the shoreline. In this case, park users are split between visitors to Lake Catherine State Park and visitors to other parks. The number of marina patrons is much lower than that observed on Lake Hamilton, primarily because of the smaller population of potential users. Park visitors commonly participate in picnicking, shore/dock fishing, swimming and sunbathing, power boating, and boat fishing. Popular activities at Lake Catherine State Park include swimming and sunbathing, camping, picnicking, viewing wildlife, walking or jogging, hiking, shore/dock fishing, and participating in park programs. Marina patrons participate most frequently in viewing wildlife, boat fishing,

swimming and sunbathing, power boating, picnicking, scenic viewing, hiking, and walking or jogging. Property owners adjacent to the shoreline primarily participate in scenic viewing, swimming and sunbathing, power boating, viewing wildlife, and boat fishing (Kleinschmidt, 1999).

FERC, in the Environmental Assessment (EA) associated with relicensing (Section 5.3.8.2) determined that the proposed recreational enhancements that were contained in the Preferred Alternative will have long term positive effects, contributing to a

long-term beneficial effect on the Ouachita River. The Proposed Action retains the project lakes and includes recreational enhancements that will benefit many of the existing users...and may actually attract new users to the region.

The Recreation Plan outlined in Section 6.0 below, addresses details relative to how these enhancements will be implemented.

6.0 RECREATION PLAN

As represented by the Recreation Report (Kleinschmidt, 1999), recreation use at the Carpenter Rommel Project (Project) is growing and is likely to create new issues among recreational user groups and may potentially affect other existing Project resources. Lakefront development, existing fisheries, the natural shape of Project waters, and the surrounding topography heavily influence the recreational activities that occur within the Project boundary.

6.1 Planned Enhancements

With the support of the Applicant Prepared Environmental Assessment (APEA) Team, Entergy proposed and Federal Energy Regulatory Commission (FERC) included in the license, several enhancements to the existing recreational resources at the Project. These enhancements will have long term positive effects on recreational activities provided by the Project.

Entergy's enhancement activities included:

- Providing floor flow in the Ouachita River below Rommel Dam.
- Restricting water level fluctuations on Lakes Hamilton and Catherine.
- Communicating planned flow releases to the public.
- Providing special whitewater releases & weekend boating flow releases during the summer.
- Working cooperatively with the Arkansas Game and Fish Commission (AGFC) regarding boating access facilities on Lakes Hamilton and Catherine.
- Relocating and modifying Carpenter Dam boat ramp.
- Cooperating with the City of Hot Springs to identify locations for additional public access areas.
- Transferring operation and maintenance of Rommel Dam Park to AGFC.
- Transferring operation and maintenance of Carpenter Dam Park to the City of Hot Springs.

- Incorporating 188 acres of undeveloped Entergy lands into the Project boundary to accommodate future project recreation needs.

In addition to the above activities, Entergy is actively engaged in other corporate activities that are associated with recreational enhancements in the vicinity of the Project, including a new city park and the Professional Bass Fishing Hall of Fame.

The following section provides additional details on the recreational enhancements.

Flow and Water Levels

Entergy is providing whitewater boating releases in the Ouachita River below Remmel Dam on Saturdays and Sundays from the Memorial Day weekend through the Labor Day weekend, inclusive. The provision for weekend generation releases supports the growing increase in whitewater boating use on the Ouachita River, as it is the only river segment in the state that has reliable, boatable flows during the dry summer season. In addition, Entergy is providing up to four full generation flow releases during requested time periods for whitewater boating enthusiasts for training and special events. Accommodating four annual special whitewater boating events and training exercises below the Remmel Dam benefits both recreational boaters and emergency service providers by allowing for public service training opportunities.

Provision of a continuous minimum instream flow below Remmel Dam enhances the potential for wildlife viewing, fisheries, and provides a base flow for canoeing by novice boaters and families that want to get on the river under milder conditions. In an effort to allow boaters more flexibility in planning their recreational activities, Entergy is providing public notification of weekly flow release plans via the Internet, e-mail and recorded telephone messages.

Boating Access Enhancements

Entergy is working cooperatively with AGFC to improve boating access in the upstream portion of each lake through identification of direct needs and appropriate locations for new installations as well as potential upgrades to existing facilities. This has the potential to improve public access and angling opportunities on both lakes and will be governed by both a demonstrated need (as outlined in the Form 80 process) and the availability of suitable land.

Entergy and the AGFC worked together and completed relocation and redesign of the Carpenter Dam boat ramp in 2002. While the new improved ramp may attract some new boaters away from other existing ramps to reduce their usage, it is not expected to significantly increase total use on Lake Catherine. A protective jetty was constructed upstream of the new ramp to redirect generation flows from Carpenter away from the ramp providing easier and safer launching opportunities for boaters downstream of the Carpenter Dam tailrace.

Public Access and Management

Transferring operation and maintenance of Carpenter Dam Park to the City of Hot Springs allows the City's recreation department to manage the facilities and further the goals outlined in their Master recreation plan for the entire city. Transferring operation and management of the Rommel Dam Park to the AGFC continues the site as a public access area and provides access for area residents. These efforts are not expected to significantly increase recreation use, but rather serve to incorporate them into the overall planning process of these local entities. While transferring operation and management of these facilities, Entergy retains oversight of uses and modifications of such. Lessees are required to maintain the parks as non-fee facilities, with the requirement that modifications be solely related to public recreational purposes. Any modifications to the facilities will require review and prior consent of Entergy.

Entergy is working with the City of Hot Springs to identify locations for additional public access. Should a suitable site be selected, this enhancement could either increase existing use at the Project, or redirect it from other existing locations.

Entergy has included an additional 188 acres of undeveloped land in the Project boundary to accommodate future recreational needs at the Project. This effort is not expected to increase recreational use in the near term, but rather is reserved for potential use in the future should it become needed.

6.2 Schedule/Implementation Plan for Proposed Recreation Components

Article 408 of the new license requires that Entergy undertake the above recreational enhancements, provide as-built drawings to FERC upon completion, and update FERC on the status of the cooperative efforts undertaken with the AGFC and the City of Hot Springs. Some of the activities have been implemented while others are being held in reserve for future needs. Actions already implemented include the floor flow and summer whitewater boating flows, and notification of flow releases. As of the date of preparation of this SMP, Entergy and the AGFC were working together to finalize the details of the transfer of maintenance and operations of certain properties as well as efforts regarding public access consistent with the findings of the recreation needs assessment developed during the relicensing effort. A similar agreement was finalized between Entergy and the City of Hot Springs prior to preparation of the SMP. It is anticipated that these activities will be completed by April 2004, at which time Entergy will submit an updated report to FERC, summarizing the consultation findings and any proposed follow-up actions. Implementation of the actions identified in the new license meets the recreation needs at the Project for the foreseeable future. On-going consultation with the City of Hot Springs and the AGFC will ensure that as recreational use changes occur, they will be evaluated and the modification or addition of facilities can be implemented as needed. As specified in Article 408 of the new license, the filing of as-built drawings with FERC occurs within six months of completion of each new enhancement.

Entergy has committed to the ongoing analysis of recreation sites and identification of new user needs. These goals will be accomplished both through the Form 80 assessments, which are required to be completed every six years, and through on-going cooperation with state and local entities (see next section for details).

6.3 Use Analysis and Reporting

In an effort to ensure that the Project recreational resources are meeting the overall management goals, while being consistent with other recognized goals and plans (*e.g.*, project operation, Historic Properties Management Plan) Entergy is proposing to enhance the traditional Form 80 process to include consultation with appropriate agency personnel. In order to meet this goal, Entergy will conduct Form 80 Surveys at existing public non-commercial recreational facilities on the existing six-year cycle outlined by FERC. This will allow Entergy to collect data on current use of these recreational facilities, identify locations that are approaching the design capacity, and areas that are not being optimally utilized. Information obtained during this process also includes total use at the Project, which will provide insight into the relative increase or decrease in recreational use at the Project. This information will be filed with FERC and used as a tool for Entergy's long range recreation management planning. Entergy will perform an analysis of the Form 80 surveys and within one year of filing each Form 80 with FERC, will consult with appropriate state and local entities to discuss the findings, both singly and in context with other management goals. It is intended that this consultation would produce recommendations for either upgrades to specific facilities or a finding that existing facilities are meeting the designated need within the overall context of management of all Project resources. These findings will be reported to FERC, accompanied by Entergy's proposed actions and comments from the agencies within 90 days following Agency consultation. Any opposing views of agency personnel will be noted. It is anticipated that FERC will utilize this report to provide specific direction to Entergy (*e.g.*, acceptance of the plan put forth by Entergy, acceptance of plan with modifications) through the issuance of a Director's Order. Entergy would then proceed to implement the approved actions, if any, during the following years, and the effects would be assessed by the subsequent Form 80 monitoring process.

7.0 SHORELINE MANAGEMENT GUIDELINES FOR PROJECT LANDS

These guidelines apply only to Entergy-owned lands and easements (*i.e.*, collectively the Project boundary), and have been developed to comply with state and federal guidelines and regulations (See Appendix A). The federal operating license granted by the Federal Energy Regulatory Commission (FERC) requires that Entergy maintain property rights and manage uses that occur within the Project boundary. FERC bestows each licensee with the authority to grant permission for certain uses and occupancy of Project lands and waters. However, the licensee can only exercise that authority without further FERC review or approval if the "proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project". This Shoreline Management Plan (SMP) identifies what facilities and activities are consistent with FERC's license requirements. These requirements were developed through consultation with/discussion among FERC, project stakeholders (agencies, non-governmental organizations, property owners, etc.) and Entergy to ensure that development within the Project boundary on Lakes Catherine and Hamilton is balanced. This means protecting and enhancing the environmental values that have attracted residents and visitors to the area, while safely operating and maintaining the project. Protecting these values must include relevant natural resources (fish, vegetation, wildlife, public recreation access, scenic character, and cultural resources). Entergy recognizes the value of the natural resources within the Project boundary, but also realizes that property owners adjacent to the Project boundary have a desire to use these resources as well. While, as stated above, these guidelines apply only to land within the Project boundary, adjacent property owners are encouraged to adopt similar strategies on non-Project lands.

The following sections of this SMP provide a comprehensive, user friendly framework for determining the types of shoreline facilities and activities that are appropriate in relation to the existing uses and environmental resources located within specific areas of the Project boundary. It also identifies clear steps property owners adjacent to the shoreline will need to take to determine if their desired new shoreline facility or activity is allowed within the Project boundary (adjacent to their property). Entergy has an established permitting system also mandated by FERC that provides further and more specific requirements for new shoreline facilities and activities.

Entergy considered existing local, state, and federal jurisdictional review requirements in the development of these guidelines. These include the Arkansas Game and Fish Commission (AGFC), Army Corps of Engineers (ACOE), Arkansas Department of Environmental Quality (ADEQ), and the State Historic Preservation Officer (SHPO). The new facility and activities evaluation process is detailed in Section 8.0. As recognized in the Project's relicensing process and the associated EA, Entergy's shoreline permitting program will continue to serve as a tool for regulating land compliance activities on Project lands. The development of the guidelines discussed in the SMP are an effort to further clarify and define acceptable ongoing development and shoreline uses. Consultation and general permitting requirements are discussed in Section 9.0. Details of the permitting requirements are outlined in Entergy's permitting handbook.

7.1 Determination of Shoreline Use Categories

To identify and define specific management areas within the Project boundary, Entergy analyzed existing resources, land use patterns, and residential/commercial uses adjacent to Lake Catherine and Lake Hamilton (as presented in Section 5.0). The existing land use patterns around Lakes Catherine and Hamilton reflect distinct pockets of particular facilities and activities. Some areas (by the nature of the existing facilities and activities) are clearly neighborhoods, some are more remote with fewer houses or docks, some remain public lands, and some represent the active commercial operations associated with recreational and general use of the Project. These differences are generally clear to both year round residents of the region as well as to visitors enjoying the Lakes for the first time.

After identifying the multiple uses currently occurring adjacent to the Project boundary and assessing the potential for future growth and development needs along the shoreline of Lake Hamilton and Lake Catherine, Entergy identified four distinct Shoreline Use Categories. These include:

- Residential Areas: existing shoreline areas with predominantly residential use and character.

- Commercial Areas: existing shoreline areas primarily supporting commercial activities.
- Public Areas: areas utilized by municipalities and utilities for infrastructure such as water intake/outflow, transmission/utility line crossing, roads, bridges, and gas/oil pipelines as well as areas currently managed for public use such as State parks, public beaches, and other areas currently being managed as areas accessible to the public.
- Multipurpose Areas: shoreline areas currently supporting scattered residential and/or commercial use, but without a clearly definable use pattern. These areas remain available for all uses, subject to site specific criteria being met. If over time a definable use pattern emerges, then particular areas may be re-categorized to reflect the predominant use.

The rationale for use determination and the definitions for use areas are detailed below. Shoreline Use areas are detailed in Appendix B, Figures 7-1A – 7-1G.

7.1.1 Residential Areas

As described in Section 5.0, residential use adjacent to the Project boundary is relatively well established through historic settlement patterns in the region. While there may be some individual lots within existing residential areas that are not currently developed, any future commercial/industrial development in these areas would likely be incompatible with the desires of the surrounding residential use. They are also unlikely candidates for recreational or other public uses. Multi-family residential developments such as larger condominium or apartment complexes serve a residential purpose and will be included in the overall residential use determination. The residential use areas along the shoreline of both Lakes Catherine and Hamilton include:

- Single Family dwellings
- Multi-Family dwellings (include condominiums, apartment complexes and duplexes)
- Seasonal lodges
- Subdivisions (including any undeveloped lots within the subdivision)

7.1.2 Commercial Areas

Existing commercial areas occur in distinct pockets along both Lake Catherine and Lake Hamilton. The commercial use areas along the shoreline of both Lakes Catherine and Hamilton include:

- Marinas (for profit, non-residential)
- Restaurants, eateries and bars with shoreline accesses such as docks, decks etc.
- Golf courses with lake access facilities
- Industrial facilities
- Commercial recreational facilities related to R.V. parks, hotels, resorts, bait shops, boat tours, etc.

7.1.3 Public Use Areas

This category of use is for areas utilized by municipalities and utilities for infrastructure such as water intake/outflow, transmission/utility line crossing, roads, bridges, and gas/oil pipelines. While sometimes occurring within or adjacent to other use areas, these specific shoreline uses require a degree of separation from other activities to ensure public safety or to assure the security of the infrastructure system.

Public Use areas also include areas currently managed for public use such as State parks, public beaches, and other areas currently being managed as areas accessible to the public. ACOE is responsible for the Lake Ouachita-Blakely Dam

reservation. The U.S. Forest Service (USFS) manages extensive tracts of land adjacent to the Project associated with the Ouachita National Forest. While most of these areas are open to the public, the overall management goals and strategies for these lands restrict development of new uses that do not fall within the respective agency management goals for these areas.

Some areas identified by Entergy as potentially available for future public use during relicensing will be included in this use category. If, in the future, during periodic review of the SMP it is determined that these areas do not represent viable public access areas, they may be removed from this use category and placed in the Multipurpose use category.

7.1.4 Multipurpose Areas

Some lands within the Project boundary do not yet exhibit a distinct use pattern. These areas, currently not being utilized as residential or commercial, but possibly appropriate for either use, will be considered available to both uses under the Multipurpose Use category subject to site specific criteria being met. These criteria are detailed below.

In areas that may be appropriate for either future commercial or residential related use of Project lands for non-project use, Entergy will make determinations of appropriate uses within the Multipurpose Areas based on site specifics such as slope, potential for erosion, congestion, navigability and adjacent land uses. In the event that areas categorized as multipurpose develop distinct patterns of development, Entergy reserves the right to remove them from the Multipurpose Use category and place them in the Residential, Commercial or Public use category.

7.1.4.1 Future Determination of New Use Areas and Non-Project Use of Project Lands

1. Future commercial shoreline facilities and activities

Entergy will review future commercial shoreline facilities and activities under the following guidelines:

1.a. Existing uses - In general new commercial related use of Project lands for non-Project use will be considered most appropriate adjacent to existing established Commercial Use areas. This does not preclude the construction of new commercial related facilities and activities in other locations; however, impact to environmental and aesthetic resources utilizing information from the EA and any subsequent data or analysis will be a consideration for any new, isolated commercial facilities and activities. It is important to note that FERC regulations require that some new commercial enterprises, particularly marinas, be at least a half-mile apart from similar existing activities in order to minimize congestion on Project waters. To assure that associated boat traffic does not impede or restrict existing residential use, new commercial marina type activities will require adequate buffer and set backs from established residential shorelines as identified in Entergy's permitting handbook.

1.b. Navigation - The nature of commercial activities, specifically marinas and other water dependent activities are more appropriate in areas which provide deep water access and room for docks, slips, and moorings and to safely operate watercraft. Associated boat traffic should not impede and restrict general public navigation or adjacent residential use of the shoreline. Narrow coves and/or areas with shallow water may be inappropriate for new commercial facilities and activities or expansion of existing commercial activities. Future commercial facilities and activities will be most appropriate in areas with adequate cove opening width and depth, as well as shoreline distance requirements. These requirements are

addressed in Entergy's permitting handbook.

As related to navigation, large commercial facilities and activities have a potential for creating or increasing congestion both within coves and inlets as well as along the shoreline. Boating density and accident information will be considered in evaluating proposed new commercial facilities.

1.c. Shoreline configuration - Steep areas in excess of 30 percent slope are typically not appropriate for new commercial facilities and activities, as they require excessive shoreline disturbance to access the waterways. Such areas may need to meet additional requirements prior to being considered for commercial use of Project lands for non-Project use.

1.d. Necessity of new facilities and activities - Through their permitting process, as required by FERC, Entergy will evaluate the relative extent of public and private need for new commercial facilities and activities. Proponents of such must be able to justify and demonstrate the public and commercial need for the proposed project.

It is important to note that facilities and activities associated with commercial and multi-family dwellings may require additional state and federal review, as well as FERC approval.

2. Future Residential shoreline facilities and activities

Entergy will review future residential related shoreline facilities and activities under the following guidelines:

2.a Existing uses - In general there are no specific considerations or requirements for future residential facilities or activities in regard to existing uses. However, future larger, multi-family dwellings (apartments and condominiums are considered residential uses) may be reviewed to assure adequate shoreline distance exists for residential activities as

identified in Entergy's permitting handbook.

2.b. Navigation - Narrow coves and/or areas with shallow water may be inappropriate for non-Project use of Project land for facilities related to multiple residential dwellings or expansion. Permitting guidelines for such activities are detailed in Entergy's permitting handbook.

Boat traffic associated with multi-family dwellings or housing developments should not impede and restrict adjacent residential use of the shoreline.

2.c. Shoreline configuration - Steep areas in excess of 30 percent slope are typically not appropriate for new residential facilities and activities, as they require excessive shoreline disturbance to access the waterways and increase the potential for erosion and water quality impacts. These areas may require that additional requirements be met prior to being considered for permitting of non-Project use of Project lands related to future residential facilities or activities.

It is important to note that facilities and activities associated with residential shoreline facilities and activities may require additional state and/or federal review, as well as FERC approval.

7.2 Determination of Shoreline Management Classifications

Shoreline Management Classifications (SMC) is a component of a system that looks at existing uses and environmental resources adjacent to and within the Project boundary. The purpose of establishing this Classification system is to identify what shoreline facilities or activities are most appropriate for specific areas along both Lake Catherine and Lake Hamilton within the Project boundary. SMCs serve as a tool that allows Entergy to clearly identify new facility and activity requirements as they pertain to environmental resources. SMCs also serve as a reference point for property owners

adjacent to the shoreline (both residential and commercial) to plan new non-Project uses of Project lands (facilities and activities) in such a manner that will both protect the environmental resources while allowing continued access to the Project. This system will allow property owners adjacent to the shoreline to determine whether their proposed shoreline facility or activity is consistent with the classification, and therefore likely to be permitted, and what level of regulatory review it may face. It is important to note that Entergy does not have jurisdiction over private/commercial properties outside the Project boundary (See Appendix C for definition). However, Entergy is required to manage use of Project lands.

As a result of this shoreline classification the majority of shoreline areas will continue to be considered for new projects. However some areas may not be suitable for some new facilities and activities due to the presence of unique or protected resources (see Section 5.0 and FERC EA for details). Utilization of the SMC will help guide the future management of the Lake Hamilton and Lake Catherine shorelines within the Project boundary.

7.2.1 Shoreline Use as a Filter for Management Classifications

The SMCs outline allowable shoreline non-Project uses of Project lands as they relate to the Shoreline Use categories. All SMCs occur within Residential, Commercial, or Public Shoreline Use areas. With the exception of the Public Use areas noted above, future new facilities and activities must be compatible to either residential or commercial activities as they pertain to the location of the proposed new use. Entergy's first consideration in determining SMCs was how to maintain a level of ongoing use acceptable to property owners adjacent to the shoreline, visitors to the Lakes, as well as regulatory and environmental agencies, while protecting important resources (as identified below). Property owners adjacent to the shoreline will need to identify whether their property is located in a Commercial, Residential, Public, or Multipurpose Shoreline Use area at the onset of planning process for the new use (see Section 8.0 for additional details).

By analyzing the environmental resources (Section 5.0) relative to the identified Shoreline Uses (Section 7.1) Management Classification were established that:

- Protect the environmental and aesthetic nature of the Project
- Allow for continued growth and access to Project lands, while
- Maintaining the character of existing neighborhoods and commercial centers

Using Shoreline Use Areas to develop SMCs recognizes the fact that residential uses and needs adjacent to and within the Project boundary differ from those of commercial uses in:

- Size - large commercial docks and slips vs. smaller residential facilities
- Density - multiple slips and moorings for commercial facilities vs. individual facilities for residential areas
- Navigation and congestion - high traffic commercial operations vs. lower traffic residential areas
- Impact of Use - overall commercial areas are anticipated to have more frequent and more intensive use patterns than residential areas.

These needs and uses put varying degrees of stress or impact on environmental resources and require different levels of review. FERC encourages and, in some instances, requires different standards for allowable shoreline facilities and activities within the commercial and residential use areas and this designation is an important filter for any new project. Figure 7.1 graphically depicts the SMC definition process as it relates to Shoreline Use categories and environmental resources at the Project.

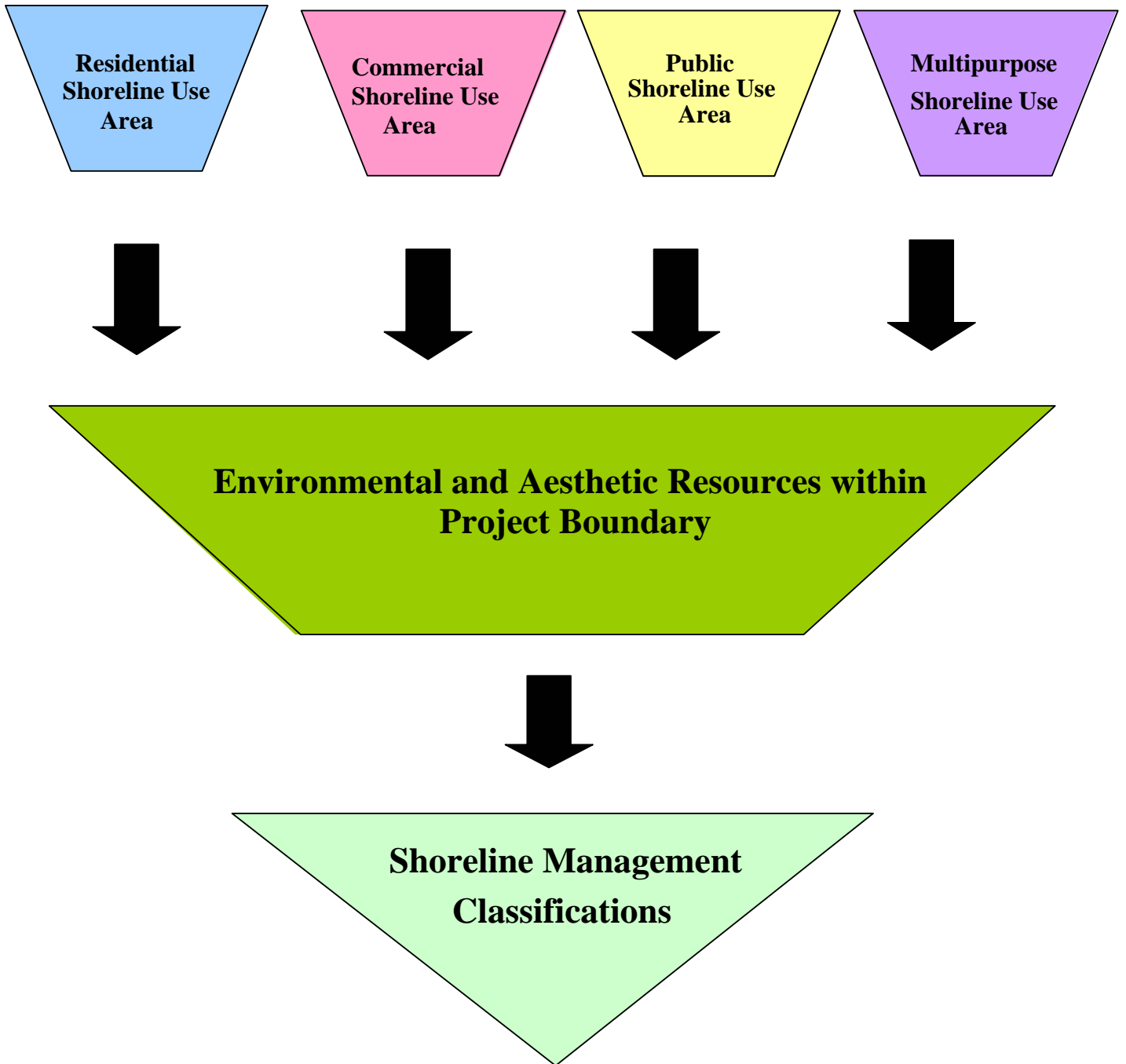
7.2.2 Classification Definitions

Development of the SMCs involved considering the anticipated needs of property owners adjacent to the shoreline, categorizing these needs into a workable formula, and allowing the widest range of new facilities and activities

while limiting the impact to natural resources at the project. Each SMC area has been mapped and designated based upon a review of existing shoreline use categories and the types of environmental resource present in each specific location within the Project boundary. Maps showing use categories, management classifications, and environmental resources will be available to landowners to assist in the planning process. These designations are included in all classification mapping and are based in part on the balancing of resources and uses during the relicensing process and subsequent input by members of the SMP Team. The shoreline management classifications are:

- **Resource Management:** These areas have historically remained less extensively developed and managed for particular public purposes such as State Parks, forestlands, and recreational areas. In general these areas are less extensively developed and managed for public purposes.
- **General Use:** Areas with established development typically having few to no significant environmental resources.
- **Limited Use:** Areas that may require special consideration for proposed new facilities or activities because of environmental sensitivity.

Figure 7.1: Shoreline Management Classification Process



Persons proposing new facilities or activities should be aware that some degree of review, particularly for Pre-historic resources, is associated with all SMCs.

In developing the shoreline use and classification systems, Entergy established a comprehensive guide for property owners adjacent to the shoreline who wish to pursue the construction of new facilities and activities within the Project boundary. Having identified and defined areas of special concern, and mapped them for property owner use, it is the responsibility of the project proponents to research where their properties are located in relation to Project environmental resources and SMCs. Entergy will provide assistance to property owners adjacent to the shoreline in understanding the type, location, and specific requirements for their particular properties. The following Section (8.0) further identifies the Evaluation and Permitting process with step by step instruction on how to evaluate both the property and the requirements for new facilities and activities. (See Figure 8.1)

7.2.2.1 Resource Management

These areas have historically remained less extensively developed and managed for particular public purposes such as State Parks, forestlands, and recreational areas. These areas may include forests, fields, or even areas that support some forms of low intensity recreation such as camping. Primarily these areas have limited or no commercial, residential, or municipal uses occurring on them. General members of the public will not need to concern themselves with these parcels, as they are typically owned by a public entity or Entergy. These areas are an asset to residents and visitors to the watershed and warrant continued protection. Entergy will not consider permitting any new shoreline facilities or activities in these areas that are not directly related to existing management plans as defined by the managing agent of the particular property. Any proposed facilities or activities related to management

plans will require review by the State Historic Preservation Officer (SHPO) to assure no adverse impact to known or potentially sensitive archaeological sites.

Resource Management areas have been identified as:

- 34.3 acres of federally owned lands, managed by the Army Corps of Engineers as part of the Lake Ouachita-Blakely Dam reservation
- The Lake Catherine State Park, managed by the Arkansas Department of Parks & Tourism State Parks Division
- Electric Island, a 100-acre island donated to the Nature Conservancy by Entergy and managed by Arkansas Game and Fish Commission as a wildlife habitat.
- Entergy owned undeveloped islands - 16 islands totaling 40.5 acres.
- City of Hot Springs Water Supply intake structure.
- Garvan Woodland Gardens.
- Diamond K -Future recreation site owned by Entergy on the upper riverine section of Lake Hamilton.
- Miscellaneous utility crossings.
- U.S. Forest Service lands associated with Ouachita National Forest on the west side of Lake Hamilton downstream of Blakely Mountain dam.
- Hill Wheatly Park
- Entergy Park

7.2.2.2 General Use

General Use areas are typically areas with a significant to heavy level of existing shoreline development with few significant environmental resources. Because of existing development and limited

environmental concerns, these areas have been identified as the most appropriate areas to support new shoreline facilities and activities. While least stringent, this classification does not, however, preclude review and permitting of facilities and certain activities by Entergy or possibly other local, state, or federal regulatory agencies (see Section 8.0 for details). Certain proposed facilities and activities within the General Use classification may require some degree of review by the SHPO to assure that there will be no adverse impact to any known or potential archaeologically sensitive sites. Commercial, Residential and Public areas are eligible to occur within the General Use classification. Verification that any new shoreline facilities and activities is consistent with the existing designation will be required.

7.2.2.3 Limited Use

The Limited Use Classification was created for areas that require special considerations for proposed new facilities or activities. This determination was made in an effort to protect environmental resources, provide habitat for fish and wildlife species important both to the economic and environmental health and provide particular aesthetic value and integrity to the Project lands and waters. The resources that are protected under this Use area were generally identified during the relicensing process and subsequent EA. It is not Entergy's intent to unreasonably restrict property owners adjacent to the shoreline in their non-Project use of the shoreline resources within the Project boundary. It is, however, Entergy's responsibility, as the recipient of a federal license, to ensure that resource considerations are applied to new uses within the Project boundary.

Generally, new facilities or activities will be allowed within Limited Use areas; however, specific resource concerns as identified above affect allowed and permissible types. Property owners adjacent to

the shoreline will need to be able to assure that the resources within the area affected by their proposed facility or activity have been adequately protected and the project has been designed to minimize impacts to these resources. This will be possible by reviewing the guidelines for this SMC and the permitting requirements detailed in Entergy's permitting handbook.

Particular resource concerns within Limited Use Areas, as described below, may occur singularly or in groups, which can add to the level of detail or requirements for new facilities and activities. Specific Resource Concerns addressed in the Limited Use Classification have been identified and include:

- Archaeologically Sensitive Areas
- Steep Slopes,
- Unique and Sensitive Fish Spawning and Nursery Areas,
- Existing Wetlands Areas, and
- Natural Rock Shorelines

An explanation of each of these resources, their relative importance in shoreline management, and the types of impacts caused by different types of shoreline development is contained in Section 5.0.

7.3 Best Management Practices and Educational Outreach

Equally important is the recognition by property owners adjacent to the shoreline that regardless of the classification of the shorelines in front of their properties, best management practices in regard to activities such as: erosion, use of fertilizer, boat maintenance, litter control, debris disposal on their land can benefit resources associated with the Project. While these activities are not necessarily jurisdictional either through Entergy or other permitting agencies, property owners adjacent to the shoreline are encouraged to protect water quality and other environmental resources. This will help

assure ongoing environmental integrity of the lake resources. In their ongoing commitment to protecting natural resources at the Project, Entergy encourages all adjacent landowners to utilize best management practices (BMP) for any activity on their properties. Entergy has information available to assist landowners on BMPs.

8.0 NEW SHORELINE FACILITIES OR ACTIVITIES EVALUATION PROCESS

This section of the Shoreline Management Plan (SMP) describes a four step evaluation process to determine the types of shoreline facilities, and uses are that allowed. This process allows lakefront property owners to:

- (1) Determine what Shoreline Use Area (Section 7.1) their property is located adjacent to.
- (2) Determine what Shoreline Management Classifications (SMC)(Section 7.2) occur adjacent to their properties.
- (3) Identify the environmental resources (Section 5.0), if any, that are being protected; and
- (4) Determine what future uses are allowed at their location (Section 8.0).

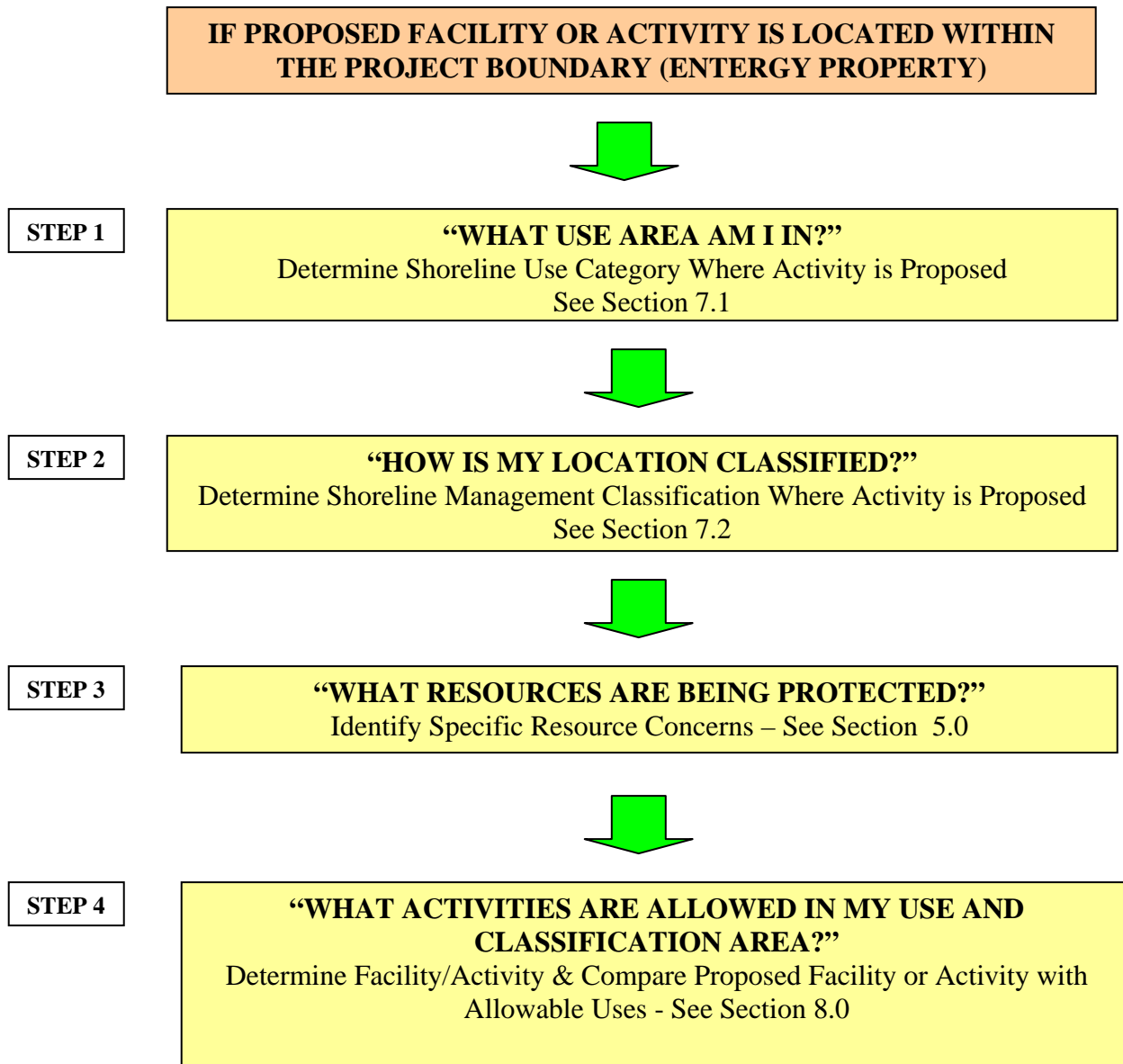
The allowable use matrix (Figure 8.2) will assist lakefront property owners to quickly assess what, if any, special standards apply to their particular type of proposed facility or activity.

This section also identifies potential agency consultation that lakefront property owners may need to undertake. More in-depth information on permitting is included in Section 9.0 as well as Entergy's permit guidelines, (which is available from Entergy). The flow chart in Figure 8.1 summarizes this process. The guidelines for new facilities and activities have been developed to encourage use of the shoreline by both property owners and the general public.

8.1 Evaluation Process

Property owners considering new shoreline facilities or activities within the Project boundary will follow a standard procedure for initiating, permitting, and completing their proposed projects. It is important that property owners determine whether their desired facility or activity is allowed on Project lands and waters. The evaluation process to make this determination is as follows:

Figure 8.1: Evaluation Process



Step 1 “What Use Area am I in?”

The lakefront property owner should first identify whether their proposed shoreline facility or activity would occur in a Commercial, Residential, or Public Use Area (See Section 7.1). Entergy has developed Shoreline Use Maps that will assist property owners adjacent to the shoreline in determining which of the areas are present within the area of their proposed new facility or activity.

If the proposed shoreline facility and/or activity is located in an area that is designated as either Residential or Public, please proceed to Step 2. However, if the proposed shoreline facility or activity is to support a Commercial use, and meets Entergy permitting requirements, FERC regulations will require that additional analysis be undertaken prior to assessing conformity of use and may require FERC review and approval. For Commercial projects, the lakefront property owner first needs to demonstrate that the proposed use is:

- Necessary and needed use
- Conducive to limiting congestion
- Not a detriment to general public safety or navigation
- Not a contributing factor to new or ongoing shoreline soil erosion
- Aesthetically blended with surrounding uses and the overall character of the site
- Environmentally defensible

If the proposed project, in the sole opinion of Entergy, does not meet these requirements, the lakefront property owner will have to reassess the proposed facility or activity, finding ways to either comply with Entergy’s requirements or withdraw the project from consideration.

Step 2 “How is my location classified?”

The lakefront property owner should now determine if the proposed new

shoreline facility and/or activity would occur in a General Use, Limited Use or Resource Protection Classification area (See Section 7.2). If the proposed use is located in a Limited Use Classification, the type of resource protection that may apply should be determined (Step 3 below). If the proposed use is located in the General Use Classification, Step #3 is not applicable. Lakefront property owners can use the Shoreline Management Classification maps to locate their properties and determine what classification their proposed new facility or use is located within.

Step 3 “What Resources are being protected at my location?”

As discussed in Section 7.2, determination of Management classifications are based, in part, on identified environmental resources adjacent to and within the Project boundary (See Section 5.0). If a lakefront property owner finds that their proposed shoreline facility and/or activity is within a Limited Use or Resource Management Classification, it is most likely because a unique or protected resources occurs adjacent to or near their location. Lakefront property owners can reference their property location with the resource maps provided in Appendix B to identify what resources occur at their location. Further verification of these resources can be provided by Entergy during permitting of new facilities or activities. As such, some activities may still be appropriate while others will require review and permitting by Entergy and other state and federal agencies. For instance, if a unique and sensitive spawning and nursery area occurs off the shore of a particular property, dredging and filling at that location may not be appropriate. However, if a lakefront property owner wishes to stabilize the shoreline with rip-rap, that activity may pose less of an impact to the identified fish habitat.

Step 4 “What Activities are allowed in my use and classification area?”

The Allowable Uses Matrix (Figure 8.2) identifies each SMC, New Facilities and Activities, and permissible activities within each management classification.

Lakefront property owners should determine which category the proposed facility or activity falls into. In general most proposed shoreline facilities and activities will fall

into one of six types of activities. These include:

Construction and Modification of Docks

These activities include all new dock installations (both floating and pier supported) as well as any modifications to the size, shape, or location of existing structures.

Bank Stabilization

Bank stabilization may include retaining walls, rip-rap, or bio-engineered methods such as plantings to prevent shoreline erosion and slumping.

Dredge or Fill Activities

Removal of materials/soils from the lakebed or the placement of fill in the lakebed; typically performed during drawdowns.

Infrastructure Improvements or Construction (e.g., roadways, culverts etc.)

Installation of culverts, pipelines, transmission lines, new roads or modification/improvement of existing travelways.

Landscape modification/enhancements (including limited incidental clearing of vegetation on Project land adjacent to private properties)

Subject to conditions that will be specified in the permit, Entergy reserves the right to permit limited clearing of brush or vegetation from Entergy's Project shoreline lands for the above activities. If the above activities include the disturbance, placement or planting of vegetation on Entergy's land within the project boundary, these activities are subject to Entergy review and permitting standards as well.

Heat exchange installations

Installation of heat exchange systems generally involve the placement of small pipes across the shoreline and into the lake to a depth that will allow heat exchange with the lake water for home or business heating and cooling systems.

Aquatic Vegetation Control and Removal Activities

Application of chemicals to control unwanted aquatic vegetation or algae.

The installation of bottom screening devices, typically a permeable blanket or mesh that restricts the growth of aquatic vegetation.

Atypical Erosion Control Activities

Areas undergoing unusual or unanticipated erosion that may require special attention or stabilization efforts. Identified erosion areas will be addressed on a case by case basis.

Not all proposed new facilities or activities fall directly into a specific category. Some new facilities or activities will require further clarification and review to establish whether they are appropriate for the location.

As indicated in Figure 8.2 special precautions may be required to protect unique resources in Limited Use Areas. The types of special precautions are outlined below:

- Steep Slopes

Entergy will place special requirements on shoreline lake facilities in Steep Slope areas to protect the aesthetic values of these areas. FERC characterized the blend of natural and developed areas around the Lakes as creating a unique vista for visitors and property owners, going on to indicate that that increased residential development and the number of boat docks along the Lake's shoreline corresponds to a decrease in tree coverage and forest vegetation. (FERC EA, Section 5.3.6.1). As such, dock and pier designs will be required that blend into the surrounding scenery for these areas. In keeping with the natural state of most steep slope areas, bank stabilization, if necessary and feasible, should consist of either natural stone rip-rap or other bioengineering methods. Some landscape improvements and/or brush clearing may be allowed, but again these activities need to be reviewed by Entergy permitting staff prior to the activity occurring. It

is not anticipated that dredge and fill activities will occur in these locations. However, if they are proposed, Entergy will review each on a case by case basis. Other infrastructure improvements such as the installation of heat exchangers or utilities will be reviewed and permitted on a case by case basis only.

- Fish Spawning & Nursery Areas

As cited earlier, the FERC EA indicates that the Project water bodies currently meet or exceed their existing fish management goals for resident lake fish species. FERC identifies approximately 42 species of fish within Lake Hamilton and 45 within Lake Catherine and further states that the lakes provides a “balanced, self-sustaining fishery” (EA Section 5.3.3.1). In an effort to assure continued fish habitat and desirable fish species continue to thrive in the Lakes, Entergy will place special requirements on any activities in areas that have been identified as unique and sensitive spawning and nursery areas. Docks will be restricted to those with pile supported structures per AGFC recommendations. These types of structures limit direct impact to spawning habitat during construction and do not disturb these areas throughout the season. There may be seasonal restrictions coinciding with drawdowns on construction activities associated with dock installation. Property owners adjacent to the shoreline wishing to install bank stabilization structures will be required when engineering feasible to use rip-rap or bioengineering methods to minimize impacts to overhanging vegetation or undercut banks which also provide habitat, shelter and feeding areas for some fish species. Generally, no new dredge or fill activities will be allowed in areas identified as sensitive fish spawning and nursery habitat, as they can cause severe impacts resulting in complete destruction of these important areas. Maintenance dredging may be allowed in established boat channels. Landscape enhancements and modification including the removal of vegetation from the shoreline will be reviewed on a case by case basis, as will the installation of any shoreline infrastructure such as intake pipes or heat exchange systems. Aquatic vegetation control or removal will not be allowed in most cases, unless the method of removal has minimal affect on fish populations and the benefit to the overall

fisheries outweighs the potential negative impact to the spawning habitat.

- Wetlands

While most property owners adjacent to the shoreline may not need new facilities within wetland areas, some activities will require special review from Entergy. As indicated previously, and noted in the FERC EA, wetlands are limited within the Project boundary and are restricted to protected area along the lakes where sediments have settled and provided habitat for the development of wetland vegetation. FERC cites unavoidable indirect effects to wetlands through increased recreational activity and associated disturbances to wildlife and their habitat. While these effects were considered relatively insignificant, the potential for habitat disturbance coupled with the previously cited FERC recognition that vegetated areas along the shoreline contribute to the Lake's unique aesthetic qualities. As such, only pile supported docks through wetland areas will be allowed, but construction should occur after the growing season is over and most species are no longer using the areas for nesting or feeding. Any proposed bank stabilization activities will be required to be bio-engineered to maintain the integrity of the wetland habitat and should include species already occurring within the wetland such as willow or buttonbush. Entergy will provide commentary and suggestions for such activities. Limited clearing of some vegetation or landscape modifications may be allowed, but again, Entergy must review and permit these on a case by case basis to determine if the activities will adversely affect the wetland areas. Other activities such as infrastructure improvements (pipes, utility lines, etc.) and heat exchange systems may be reviewed and permitted on a case by case basis. Aquatic vegetation control, unless to alleviate invasive species that are having a detrimental affect on the wetlands, will not be allowed.

- Natural Rock Shorelines

Entergy does not anticipate that the construction or repair of docks in Natural Rock Shoreline areas will have any adverse affect and places no restrictions on them. However, since these areas dissipate wave energy more effectively than engineered methods such as sea walls and serve as important habitat features for organisms such as fish and aquatic insects, no new bank stabilization activities will be allowed except in atypical erosion areas. Additionally, the Federal Energy Regulatory Commission (FERC) regulations do not allow Entergy to permit bulkhead in shoreline areas that are naturally stabilized. Dredge or fill activities are also not anticipated to have an impact on these areas, but in light of other potential environmental impacts, will be reviewed on a case by case basis. Infrastructure improvement, landscape modifications, and the installation of heat exchange systems may allowed, but should be designed to have as minimal an impact on the aesthetic and habitat values on these shorelines.

Figure 8.2: Allowable Uses Matrix

Shoreline Management Classifications						
New Facilities and Activities¹	General Use	Limited Use				Resource Management
		Steep Slopes (see Figures 5-1A -5-1C Appendix B)	Fish Spawning & Nursery Areas ² (see Figures 5-2A -5-2C Appendix B)	Wetlands (see Figures 5-3A -5-3C Appendix B)	Natural Rock Shorelines (see Figures 5-3A -5-3C Appendix B)	
Construction & Repair of Docks	Allowed w/permit review	Allowed w/permit review	Some designs allowed w/permit review	Some designs allowed w/permit review	Allowed w/permit review	Only as related to existing management plans and emergency activities
Bank Stabilization	Rip-rap/ Retaining Walls/ Bioengineering	Rip-rap/Bio Engineering	Rip-rap/Bio Engineering ³	Bio Engineering only	No new activities	
Dredge ⁴ or Fill;	Permit required	Reviewed on a case by case basis	Limited dredge/no fill	Not Allowed	Reviewed on a case by case basis	
Boat ramps	Permit required	Not Allowed	Not Allowed	Not Allowed	Not Allowed	
Infrastructure Improvements	Permit required	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	
Landscape Enhancement/Mo dification	Permit required	Permit required	Reviewed on a case by case basis	Reviewed on a case by case basis	Permit required	
Heat Exchange	Permit required	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	
Aquatic Vegetation Control or Removal	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	
Atypical Erosion Control	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	Reviewed on a case by case basis	

¹ All new facilities and activities will require some form of permitting and/or review by Entergy; Please refer to Entergy permitting handbooks for further details.

² Any deviation in these areas requires both AGFC & Entergy Approvals.

³ Some exceptions at Entergy's discretion; permissible activities will require review and permitting by Entergy.

⁴ Dredging is generally limited to 25cy and will only be allowed during drawdown events. No channel dredging is allowed.

Matrix Use Instructions:

To use the matrix, first identify the activity most similar to the one being proposed in the far left column, next identify the Shoreline Management Classification (SMC) assigned to the project location, moving across the activity row and down from the SMC column, the intersecting box identifies whether the use is allowed, reviewed on a case by case basis, or not allowed.

8.2 Agency Consultation

Utilizing the matrix in Appendix A, the shoreline property owner, with the assistance of Entergy staff, can verify which agencies will require consultation and/or additional permitting (see Section 9.0).

8.3 Grand-fathered Improvements

Existing facilities or activities or those permitted prior to adoption of this SMP or existing permitting regulations may remain for their useful lives, as long as they are in compliance with the size, location and type requirements set forth in Entergy's construction requirements in effect at the time the structure was built. All existing and new facilities will have to comply with all current regulations pertaining to maintenance, safety and environmental protection. When major repairs are proposed, involving more than 50 percent of the structure, as determined by Licensee, the structure must be repaired so as to be in compliance with the SMP. This will include a review of the proposed repairs by Entergy to assure that the a structure is appropriate for the Shoreline Use Category and Management Classification it is located within as well as to determine if the facility or activity is considered and allowed use within any identified resource area. If a previously permitted structure is destroyed or damaged by fire, natural disasters or other means, the replacement structure must be in compliance with these requirements and guidelines as established by this SMP.

9.0 AGENCY CONSULTATION

The Shoreline Management Classification (SMC) process is a tool for a permitting process that Entergy has been involved in around the Lakes for decades. It is designed to work as a roadmap to allow property owners to assess their proposed new facilities or activities, and modify them if necessary or possible to accommodate particular requirements as well as minimize impacts to environmental resources at the Project. The classification system simply defines and refines a management ethic, which has been in place for years. This process will assist lakefront property owners in determining what facilities and activities may be allowed at their location before applying for a permit from Entergy, anticipate potential regulatory restrictions and determine the feasibility of having their projects approved. Entergy will provide written information to guide property owners adjacent to the shoreline in this process.

9.1 Agency Consultation

As described above, lakefront property owners proposing a new shoreline use within the Carpenter-Remmel Project (Project) boundary will need to take their proposed projects through a series of steps to assess the impacts before receiving a permit for a new use. Entergy is committed to streamlining the permitting process while ensuring the protection and enhancement of the Project's scenic, recreational and other environmental values over the term of the license.

Consultation can include several different agencies, depending on the type of proposed new use and the resources present within the Project area. A more in depth discussion of jurisdiction and permitting requirements, permit applications, processes, and timelines are discussed in the following section.

Lakefront property owners, after identifying permit requirements, can contact Entergy for the relevant application forms and further guidance on permitting requirements for their projects. Other jurisdictional agencies should also be contacted at this time to initiate the process needed to obtain state and federal permits if required.

Federal Energy Regulatory Commission (FERC) allows licensee's to charge a reasonable fee to assist in recouping the costs associated with managing the permitting process required to ensure that activities occurring on Project lands are consistent with the overall goals for the project. Licensee fees for permit management was challenged and upheld in court (*Coalition for Fair and Equitable Regulation of Docks on the Lake of the Ozarks v. FERC* 8th Circuit, July 24, 2002). Such fees can be one time front end and/or annual costs. Entergy has historically charged a modest front-end processing fee for its efforts in managing the lakes resources. The amount of the fee charged for different types of activities will be reviewed and adjusted periodically during the license term in accordance with the effort required by Entergy to support such a program.

Lakefront property owners should submit Entergy permit applications for review to determine if the proposed new facility or activity meets initial screening requirements and to assure the application is complete. Once reviewed for completeness, lakefront property owners should begin consultation with other jurisdictional agencies. It may be advisable to begin the consultation process with Entergy staff at the conceptual stage of larger complex or resource sensitive projects. If there are questions regarding the location of specific resource concerns and the proximity of such to new uses, Entergy staff will be able to address such inquiries at this time. Entergy staff will also be able to discuss specific permitting requirements with the property owner.

Depending on the proposed new facility or activity, agencies may impose requirements on construction start/stop dates, the placement of erosion control devices, treatment plans, remedial measures, submittal of start construction notifications, and/or best management practices. Any permit applicant should be aware of such conditions, as violations may nullify a permit.

As detailed in the Historic Preservation Management Plan developed by Entergy, any shoreline construction activities that require cutting and active disturbance of bank or shoreline areas along Lakes Hamilton and Catherine within the Project boundary must be reviewed by the HPMP Coordinator and, if found to be a potential impact to historic or cultural resources, must be reviewed by the SHPO.

In some instances post construction monitoring to assure that no negative impacts have or will occur as a result of a new facility or activity are required as a condition of permitting. These will most likely be identified during agency consultation and will be restated in any permits issued.

The following describes the jurisdiction of Entergy and of Local, County, State, and Federal agencies that may be involved in new use permitting.

9.2 Entergy

As the recipient of a federal license, Entergy is responsible for supervision and control of the uses and occupancies that it grants permission for. Additionally Entergy is required to monitor compliance with any permits or conveyances they issue. FERC has delegated Entergy the authority to issue permits for the non-Project use of Project lands for construction, replacement and modification of all shoreline facilities and activities within the Project Boundary by lakefront property owners for:

- Landscape plantings (includes clearing of brush and vegetation);
- Non-commercial piers, landings, boat docks, or similar structures and facilities accommodating no more than 10 watercraft and serving single family residences;
- Embankments, bulkheads, retaining walls, and rip-rap for erosion control;
- Food plots and other wildlife enhancements.

FERC requires Entergy to provide them with prior notification of intentions on proposed activities dealing with the following:

- Permission or conveyance of project lands for replacement, expansion, realignment or maintenance of bridges or roads;
- Storm drains and water mains;
- Sewers that do not discharge into project waters;
- Minor access roads;

- Telephone, gas, and electric utility distribution lines;
- Non-project electric transmission lines;
- Submarine, overhead, or underground telephone cables or major electric distribution line (69-kV or less); and
- Water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.
- Private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina

Any activities not listed above will need to be reviewed and approved by both Entergy and FERC. A written application must be submitted to Entergy with drawings providing location, design and dimensions, and a description of materials and type of construction. All facilities must conform to Entergy's general requirements and minimum design standards.

Specific information that relates to these permitting requirements is detailed in separate documents entitled "Private Facility/Activity Permits" and "Construction, Operation and Maintenance Requirements & Inspection Procedures" for Commercial Facilities and Activities. Those documents may be updated periodically as needed.

The facility/activity procedure manuals provide detailed permit application procedures for property owners adjacent to the shoreline and new users. The documents provide information on general requirements for docks and piers, bank stabilization measures, and dredging as well as information on facility construction and maintenance requirements. They establish the criteria used in evaluating proposed new uses for both commercial and residential activities as well as facility construction standards for each activity.

Proposed modifications or new uses will be evaluated by Entergy based on:

- The relative extent of the public and/or private need for the proposed facility and

activity;

- The practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed facility or activity;
- The extent and permanence of the beneficial and/or detrimental effects which the proposed facility or activity is likely to have on the uses which the area is suited;
- Existing governmental jurisdictional regulations and SMC designation.

Benefits and detriments are balanced by considering effects on items such as: safety, navigation and congestion, general environmental concerns, environmental concerns specific to identified resource areas, aesthetics, fish and wildlife values, and shoreline erosion.

Lakefront property owners often seek permits from Entergy to excavate and remove lake sediments to construct new marinas, boat docks, boat ramps, and other facilities. Lakefront property owners also seek permits to excavate sediments to maintain access at existing facilities (maintenance excavations). If Entergy and the Army Corps of Engineers (ACOE) determine there is a need to more efficiently process requests for excavation permits at the Project (other than those qualifying for an ACOE nationwide permit) they may pursue further jurisdictional oversight for such activities within the Project boundaries. This will involve coordination and the development of a Memorandum of Understanding (MOU) with the ACOE, the State Historic Preservation Officer, and possibly others to determine acceptable parameters such as fill/dredge quantities, appropriate locations, as well as to assess the potential environmental affects for such activities. Entergy's longstanding relationship with the ACOE has involved ongoing training of Entergy staff regarding project assessment and permitting within the federal guidelines established through the ACOE jurisdiction. This relationship has proactively equipped Entergy with staff with the necessary skills to implement the conditions of an MOU. If an extension of Entergy's project review capacity for dredge and fill activities is instituted through an MOU, Entergy's permitting handbook will be revised to include such activities.

The shoreline permitting process documents are implemented under the

Licensee's authority granted under the Standard Land Use Articles in the Project license. For more information on the permitting process or to receive a copy of the above-mentioned documents, contact Entergy's Hydro Operations or visit the web page www.entergy.com/hydro.

9.3 FERC Consultation

In accordance with FERC Land Use Articles (see Appendix D), Entergy is given the authority to grant permission for the uses detailed in this Plan. Entergy is allowed to exercise this authority only if the proposed use and/or occupancy is consistent with the protection and/or enhancement of scenic, recreational, and environmental values within the Project area. Land Use articles within the Project license requires FERC review of any conveyances in fee title, easements or rights of way, or leases of project lands for some activities within or crossing Project boundaries. Depending on the size, location, and nature of proposed new facilities or activity, specific approval of FERC may be required. Anything not identified as completely within Entergy's authority will also require FERC review and approval. Most commercial activities and facilities fall into this area and are detailed below. FERC review can consist of requiring Entergy to annually report each conveyance, the type of interest conveyed, the location of the conveyance, and the nature of use for which the interest was conveyed. For commercial or infrastructure (roads, pipelines, commercial marinas etc.) projects, FERC requires Entergy to submit a letter to the Director of the Office of Energy Projects, stating its intent to convey the interest and briefly describing the type of activity and the location of the lands to be conveyed. It is the responsibility of the lakefront property owner to prepare all documentation required by FERC, as directed by Entergy. Within 45 days, the Director will notify Entergy if an application to FERC is required.

9.4 Army Corps of Engineers (ACOE)

The ACOE, under Section 404 of the Clean Water Act, regulates the discharge of dredged and fill materials into waters of the United States, including adjacent wetlands. Any work at or below the 305' elevation on Lake Catherine and the 400' elevation on

Lake Hamilton (typically the ordinary high water mark where a debris line is visible) may require consultation, project review and permitting by Corps staff. If a project deemed jurisdictional by the Corps is completed without prior approval, property owners adjacent to the shoreline face a range of penalties ranging from removal of the structure/fill to fines and imprisonment. Anyone proposing a project involving dredging or filling should contact the ACOE Vicksburg District office. As detailed above, Entergy may elect to pursue further jurisdiction to oversee minor dredge and fill activities within the Project Boundary.

9.5 State of Arkansas, Regional, and Local Agencies

Several state and regional agencies/departments may have jurisdiction over new uses within the Project area.

The Arkansas Department of Environmental Quality (ADEQ) reviews and permits stormwater control measures. Under terms of the Federal Clean Water Act, operators of a wide range of construction and industrial activities must obtain NPDES permits for non-point source discharges of storm water. Section 401 water quality certifications may be required prior to the issuance of federal permits such as Corps. Both ADEQ and the Arkansas Department of Health (ADOH) review subsurface disposal of domestic and non-domestic wastewater (such as septic tanks and leach fields which would occur outside the Project boundary) depending on the type and volume of waste.

AGFC and Entergy work cooperatively in locating fish structures, providing boater safety awareness, and controlling aquatic vegetation. AGFC also has jurisdiction over recreational boating safety activities, establishing and enforcing boating and rental operation regulations, and establishing and enforcing fish and wildlife regulations.

The Garland County Sheriff's Department is responsible for enforcing boating regulation and has established special regulations concerning the placement of buoys & navigational aids on Lake Catherine within Garland County and Lake Hamilton. The Hot Spring County Sheriff's Department serves in the same capacity for that portion of Lake

Catherine in Hot Spring County.

9.6 State Historic Preservation Office (SHPO)

Generally major shoreline ground disturbance activities require review and comment from the SHPO. Through standards established in the HPMP, all proposed new uses will be reviewed by Entergy staff to identify potential impacts to known or potentially sensitive archaeological and historical properties. Early identification of proposed activities, as well as identification of activities requiring authorization and those that do not, will be key to minimizing problems for the requestor. Entergy will review the submitted information to ensure that the property owner or new user provides the appropriate information. Entergy will assist landowners in determining whether the proposed action requires consultation with the SHPO. The Licensee, Entergy, as a requirement or condition of its permit, can require any entity that is proposing ground disturbing activities within the Project boundary to undertake the appropriate level of investigation, monitoring, and any subsequent mitigation found to be required for reasonable protection of Historic Properties within the Project boundary.

The basic conditions for future consultation with the SHPO are during instances when Entergy receives requests that entail:

- Conveyances of Entergy land
- Recreational developments
- Dredging and other shoreline construction activities that require extensive amounts of cutting and disturbance of bank or shorelines areas along Lakes Hamilton and Catherine within the Project boundary (note that Entergy may develop some form of programmatic agreement for minor bank disturbances, see Section 9.2; or
- Maintenance or modifications that could adversely affect National Register properties within the Project boundary.

Appendix A provides a summary table of potential shoreline activities that may

occur along the Project's shoreline and the agencies and entities that would require consultation, permit or authorization and summarizes associated governing guidelines that pertain to those actions.

10.0 ENFORCEMENT OF THE SHORELINE MANAGEMENT PLAN

The Project license, and more specifically the Standard land use article, within the license, directs Entergy to oversee shoreline activities and take action to prevent unauthorized uses of Project shorelines. FERC (and its predecessor the Federal Power Commission) have historically required some form of oversight of Project lands by licensees. In 1980 FERC formalized the use of a Standard Land Use Article (Order Amending License for the Brazos River Authority's Morris Sheppard Project FERC ¶ 61,162) which gives licensees broader and more inclusive oversight of uses and occupancies on Project lands. This article is also included as Article 412 in the 2002 FERC license order. As referenced in other portions of this document, all proposed facilities, structures or activities, which affect Project land and waters, are subject to approval of Entergy. Entergy retains the authority, pursuant to the land use article, to review these uses and occupancies through their permitting criteria and standards to ensure they are consistent. The SMP has been designed to compliment and support these criteria and standards, as set forth in Entergy's permitting handbooks.

All facilities and activities approved by Entergy through their permitting processes are subject to inspection by Entergy staff. Should an inspection reveal that these facilities and activities deviate from the approved plans, Entergy will require that the property owner or project proponent correct the discrepancy or remove the encroachment from Entergy property. In the event that a facility or activity is undertaken without prior Entergy approval, the same restrictions and requirements will apply. Any alterations, additions, relocation or other physical changes to existing facilities or activities must be approved by Entergy prior to such changes.

In an effort to ensure the goals and objectives of the SMP as well as all license requirements are adhered to, Entergy reserves the right to revoke any permits. In extreme cases of non-conformance of established rules and requirements, Entergy will take all legal measures necessary to require removal of the facility or activity, as well as restoration of the property to its original condition if these conditions are not followed.

11.0 MONITORING/AMENDMENT PROCESS

Entergy has committed to the long-term stewardship of Project lands and water to protect the scenic, recreational, or other environmental value of Lake Catherine and Lake Hamilton. This plan has been formulated to anticipate growth and new uses on and adjacent to Project lands. Entergy recognizes that the region is a popular tourist destination and residential area and that use will most likely change over time. This type of change in use is generally slow, but can result in overall patterns that may someday necessitate reassessment of the SMP. To assure that the SMP continues to serve its intended purpose and remains relevant to the activities on and around Lakes Catherine and Hamilton, certain processes have been instituted to periodically review and, if necessary, amend the plan.

11.1 Overall Land Use Monitoring

As demographics and user groups change within the Project area, changes in residential and commercial areas may occur. Often this type of change in use is incremental and cumulative, occurring over a period of years or decades. While Lake Hamilton is closer to reaching its build out capacity both in terms of residential and commercial growth, there are areas in the northern section of the Lake that may warrant particular attention to determine if land use patterns change in the course of the next decade. Additionally the area adjacent to State Highway 7 has and is experiencing a growth surge, and may warrant continued monitoring to assure up to date information is available on the Shoreline Use maps. Lake Catherine has historically been less utilized, and because of this has more areas that may provide additional opportunities for both commercial and residential growth.

Entergy will review their existing land use mapping every six years and note changes in use. Use analysis reporting in conjunction with Form 80 surveys (see Section 6.3) will be a useful tool in this review. This review will be augmented by the permitting processes, which will provide long time data useful in identifying areas experiencing change.

During the review of Project mapping minor changes such as new development within existing subdivision adjacent to the Lakes, or changes in recreational uses will be noted in the Entergy land use database and on the Project maps but are not anticipated to warrant amendments to the SMP. These changes will be captured in Entergy's GIS system. New maps will be distributed to AGFC, ADPT, SHPO, and the City of Hot Springs every six years.

Major changes within the Project boundary may change goals and assumptions presented in this plan. Entergy has established the following criteria that may indicate the need to address amendment of the plan.

New Residential Uses or Pressure: These may include large, new housing developments, infrastructure improvements that could lead to new development, or socioeconomic changes affecting the influx, and out-migration of populations.

Major Commercial Upgrades or New Uses: As mentioned above, the southern shoreline of Lake Hamilton is experiencing ongoing commercial growth. This could possibly change the overall Shoreline Use pattern in this area. Entergy will continue to monitor this growth and compile data that may be useful in the event an SMP amendment becomes necessary during the review period. While Lake Catherine does not currently support major commercial uses; Entergy recognizes the potential for commercial growth. These areas may warrant special attention in the future.

Large Parcel Land Sales/Major Changes in Land ownership: In the event that major parcels of previously undeveloped land change ownership, with an identifiable purchaser and new intent for use, Entergy may review both the Use category designation as well as the SMC within the area to determine if amendments to the SMP are warranted.

Changes within the Management Classifications: The SMCs identified in this SMP are based on environmental and aesthetic resources. Some of these classifications are dynamic by nature. It is possible that within the review period new concerns such as nuisance aquatic vegetation or wetland habitat may change, therefore necessitating the re-

evaluation and possible amendment of both Management Classifications as well as the allowable uses within them.

11.2 Amendment Process

Project and resource drawings will be updated on an ongoing basis by Entergy to assure they are reflective of field conditions. As long as resource and use criteria as established by this SMP do not change, Entergy will not seek additional review by FERC.




Form 80 surveys, which occur every six years provide useful information on one specific resource at the Project. As discussed in Section 6.0, Entergy is proposing to analyze recreational use data and the Form 80, and sit down with appropriate agencies to discuss whether any adjustments are necessary to the Recreation Plan for the Project. Entergy believes that this Recreation Resource review process (which occurs during the year after the Form 80 submittal) could also be useful in reviewing the criteria and potential for cumulative impacts to the Projects, as discussed above. If it appears there may be major impacts on the SMP's effectiveness, Entergy will initiate agency and stakeholder review of SMP language and/or assessment of the overall document.

Entergy will invite a group of reviewers to include personnel from Arkansas Game and Fish Commission (AGFC), Arkansas Department of Parks and Tourism (ADPT), the State Historic Preservation Officer (SHPO), and the City of Hot Springs to assess what changes, if any, need to be made to the SMP. If it is determined that an amendment to the plan is necessary, Entergy will notify FERC of its intentions, provide draft language for review by the Commission, and implement such changes as approved. These changes may include revised license exhibits, permitting process changes or establishing other uses or activities not currently in the SMP.

Table 11-1: Agency Coordination and Shoreline Management Plan Monitoring/Amendment Schedule

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
License Article	TASK																
Recreation	408	Transfer mgmt responsibilities to the City of Hot Springs and AGFC,	✓	✓	★												
	408	Coordination with City of Hot Springs	●.....→						★	●.....→							
	408	Coordination with Arkansas Game & Fish Commission	●.....→						★	●.....→							
	302/408	Submit revised as-built Exhibit F and G as necessary	●.....→														
	Part 8	Form 80 Survey	✓						✓						✓		
	Part 8	File Form 80 with FERC		★						★						★	
	Part 8	Agency Consultation on Form 80 findings		✓					✓						✓		
	Part 8	Revised Recreation Report Filing			★						★						★
Shoreline Management Plan	408	Review and update GIS database as necessary	●.....→														
	408	SMP Preparation	✓	✓													
		SMP Review/Approval by FERC		★													
	408	SMP Review							✓						✓		
	408	Solicit working group review & comments as necessary							✓						✓		
	408	Modify/update plan (as necessary) file with FERC									★						★

Legend

- Coordination & Review Activities 
- Ongoing Coordination & Review 
- FERC Submittals 

12.0 BIBLIOGRAPHY

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APPENDIX A

SUMMARY OF SHORELINE MANAGEMENT RESPONSIBILITIES

Proposed Action within Project Boundary(1)	Permitting or Consulting Agency/Organization									
	Energy	ACOE	SHPO	ADEQ	Department of Health	AGFC	ADOT	Garland County Sheriff	Hot Springs County Sheriff	FERC
Docks & Piers										
Non-Commercial piers, landings, boat docks (less than 10 watercraft) serving single family type dwellings	X	X		X						
Commercial piers, landings, boat docks	X	X	X	X		X				X
Bank Stabilization										
Rip-rap	X	X	X	X		X				
Bioengineering	X	X	X	X		X				
Seawalls/Retaining walls	X	X	X	X		X				
Bulkheads	X	X	X							X
Fill/Excavation/Dredging	X	X	X	X		X				
Infrastructure Improvements/Construction										
Roads, Bridges, Culverts	X	X	X	X			X			X
Stormwater drains	X	X	X	X	X					
Sewers (not discharging into project waters)	X	X	X	X	X					
Sewers (discharging into project waters)	X	X	X	X	X					X
Waste water treatment maintenance	X		X	X	X					
Water Mains	X	X		X	X					
Phone/gas/utility distribution lines	X	X	X							X
Overhead transmission lines (no support structures w/in project boundary)	X									
Overhead transmission lines (requiring support structures w/in project boundary)	X	X	X	X		X				X
Submarine/overhead/underground cables (60kV or less)	X									
Water Intake/Pumping facilities (<1million gals/day)	X	X	X	X	X	X				
Water Intake/Pumping facilities (>1million gals/day)	X	X	X	X	X	X				X
Other land uses(5 acres or less;all land w/in 75' of project waters)	X	X	X							
Septic system installation	X	X	X	X	X					
Modifications of Existing facilities	X	X	X							X
Fuel Storage/Dispensing	X			X						X
Landscape Activities/Enhancement										
Buffer Management										
Maintenance of existing conditions & removal of vegetation	X									
Creation of new buffer strips	X					X				
Habitat Enhancement	X					X				
Timber Harvesting	X					X				
Fish Eradication Projects	X					X				
Aquatic Plant Control	X					X				
Activities Potentially Subject to Enforcement										
Recreational Boating										
moorings	X									
no wake zones						X		X	X	
speed limits								X	X	
rental operations	X					X				
licensing								X	X	
bouys & navigational aids - Garland County/Lake Hamilton								X	X	
bouys & navigational aids - Hot Springs/Lake Catherine								X	X	
Recreational Fishing										
creel limits						X				
licensing						X				
Commercial Fishing										
creel limits						X				
licensing						X				
bait operations	X									
Campgrounds										
occupancy	X				X					
water supply	X				X					
Proposed Activities Outside Project Boundary										
Fill/Excavation										
Any above elevation 400' - Lake Hamilton		X	X							
Any above elevation 307' - Lake Catherine		X	X							
Shoreline Development										
Any above elevation 400' - Lake Hamilton		X	X							
Any above elevation 307' - Lake Catherine		X	X							

(1) At or below elevation 400' - Lake Hamilton; At or below elevation 305' Lake Catherine

(2) ACOE jurisdiction on any project will result in SHPO review and approval

Regulatory Authority
Note that all regulations listed below are current as of January 2003.
<p>Entergy:</p> <p>Lakes Hamilton & Catherine are part of Project 271, licensed by the Federal Energy Regulatory Commission (FERC). The pools of these reservoirs are managed by Entergy pursuant to a license granted by FERC. The license granted by the FERC to Entergy authorizes Entergy to issue permits for certain activities. Depending on the location, size and nature of the proposed facility, structure or activity, Specific approval of FERC may also be required. Generally Entergy owns property rights to the 400ft contour elevation on Lake Hamilton and to the 307ft contour on Lake Catherine. Also, in many locations, Entergy possesses flowage easements extending beyond Entergy's property ownership.</p>
<p>Army Corps of Engineers (ACOE):</p> <p>The ACOE is directed by Congress under Section 404 of the Clean Water Act (33 USC 1344) to regulate the discharge of dredged and fill material into all waters of the United States, including their adjacent wetlands. The intent of this law is to protect the nation's waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical, and biological integrity.</p>
<p>Arkansas State Historic Preservation Office (SHPO):</p> <p>Generally, any shoreline ground disturbance or alteration of structures 50 years or older requires review/comment by the SHPO. If the project is deemed jurisdictional for any reason by the ACOE, consultation with the SHPO is required through Section 106 - Protection of Historic Properties (36 CFR Part 800)</p>
<p>Arkansas Department of Environmental Quality (ADEQ): Requirements for the storm water control in Arkansas come from three different permits: The Industrial Permit, Construction Permit, and Municipal Separate Storm Sewer System (MS4) Permit. Under the terms of the Federal Clean Water Act and amendments as found in 40 CFR 122.26, operators of a wide range of construction and industrial activities must obtain NPDES permits for non-point source discharges of storm water. Conditions in the permit typically require the creation of a storm water pollution prevention plan (SWPPP), designed to control and reduce pollutants in storm water from these sites. Section 401 Water Quality Certifications are required prior to the issuance of federal permits and licenses to ensure that proposed projects will not violate the State's water quality standards. The decision to issue the Section 401 water quality certification rests with the Director of ADEQ and is based on compliance with Arkansas Pollution Control and Ecology Commission Regulation 2, Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas.</p>
<p>ADEQ & ADOH - Subsurface Wastewater Disposal Permits</p> <p>The State Permits Branch, in cooperation with the Arkansas Department of Health issues permits to facilities that utilize subsurface wastewater disposal such as septic tanks and leach fields. Regulatory jurisdiction of a subsurface wastewater disposal system depends on the type and volume of waste.</p> <p>Subsurface disposal of domestic wastewater ONLY with a flow rate less than 5000 gallons per day requires approval from the Arkansas Department of Health (no permit required from the ADEQ).</p> <p>Subsurface disposal of domestic wastewater ONLY with a flow rate greater than 5000 gallons per day requires a permit from the ADEQ and approval from the Arkansas Department of Health.</p> <p>Subsurface disposal of non-domestic wastewater ONLY (regardless of flow rate) requires a permit from the ADEQ. Non-domestic wastewater is any wastewater that is commercial, industrial or agricultural in origin, excluding food establishments. The most common types of facilities permitted for subsurface disposal of non-domestic wastewater are car and truck washes, slaughterhouses and laundromats.</p> <p>Subsurface disposal of combined domestic AND non-domestic wastewater requires a permit from the ADEQ and approval from the Arkansas Department of Health</p>
<p>Arkansas Game & Fish Commission (AGFC): AGFC enforces boating, fishing regulations, watercraft safety and operations as well as management of fish and wildlife species through fishing licenses, creel limits, and harvest regulations.</p>
<p>Arkansas Highway and Transportation Department (AHTD):</p> <p>Whenever access to State Highways is needed for residential or commercial purposes, an access driveway permit is required. These permits are issued by the Permit Officer for the District in which the driveway will be located.</p>
<p>Garland County Sheriff's Department & Quorum Court: County ordinances and state law.</p>
<p>Hot Springs County Sheriff's Department & Quorum Court: County ordinances and state law.</p>

APPENDIX B

**RESOURCE MAPS &
SHORELINE MANAGEMENT CLASSIFICATIONS**

Atypical Erosion – areas undergoing unusual or unanticipated erosion

Acre-feet (AF) - unit of measurement of the volume of stored water in an impoundment; equals one acre, one foot deep

Agriculture -includes cultivation of the soil, dairying, forestry, raising or harvesting any agricultural or horticultural commodity

Allowable use - facilities or activities which are appropriate or approved for particular areas

Appurtenant structure - a structure or machine which is related to or required of a hydroelectric plant

Best Management Practices (BMP) - construction or property maintenance activities, which minimize impact to environmental resources through special attention to erosion, air and water quality issues.

Bioengineering – also referred to as bio-stabilization; This approach to shoreline stabilization utilizes plantings (plugs, tubeling, stakes, wattles etc.) Maybe sometime be combined with hard engineering by using biodegradable logs or limited rip-rap, but must use plantings as well.

Boatable flows - predetermined water flow that will support recreational boating

Buffer strip - typically a vegetated or undeveloped area at the shoreline that maintains environmental or aesthetic integrity of an area.

Bulkhead - solid retaining structure often used for shoreline stabilization or dock installation

Cfs - cubic feet per second; a measurement of flow;

Commercial Areas- areas that exist primarily for activities related to conduct of business for profit

Dissolved oxygen - the amount of oxygen available within water bodies expressed as D.O.

Drawdown - the act of releasing water from an impoundment, resulting in the lowering of water levels

Easements - legal permission to cross or use property

Floor flow – minimum floor that has been determined to maintain adequate habitat for species located in or adjacent to the particular stream/river/waterbody in question.

Flowage easements - legal permission to inundate / cover property with water

Form 80 – Standard FERC recreation use analysis forms and process for licensed hydroelectric projects

General Use - Shoreline Management Classification for areas within the Project boundary with a significant to heavy level of existing shoreline development with few significant environmental or aesthetic resources.

Geographic Information System (GIS) - an electronic system of mapping; System of computer hardware, software and procedures designed to support the capture, management, manipulation, analysis, modeling and display of spatially reference data for solving complex planning and management problems.

Habitat enhancement - modification of areas to improve fish, wildlife habitat, or vegetation.

Hydroelectric - the production of electricity through waterpower

Impoundment - water held back by a dam forming a lake or pond.

Lakefront property owner – persons whose property abuts the Project Boundary as defined below

Licensee - Entergy

Limited Use - Shoreline Management Classification for areas within the project boundary, which because of the potential for impact to sensitive, unique or aesthetic resources will require special consideration for new facilities or activities. These include archaeologically sensitive areas, steep slopes, unique sensitive fish spawning and nursery areas, existing wetlands, and natural rock shorelines.

Msl - mean sea level, a measurement of elevation

MW - megawatt, measurement of energy production; one million watts; 1,000 kilowatts

Nuisance aquatic vegetation - invasive plant species found within waterbodies that could have a negative impact on environmental, aesthetic, and navigational resources.

Open Lands - Include undeveloped lands not forested; open wetlands; vacant lands; and major transmission line corridors.

Project boundary -identified by project owners through licensing - defines the structures, land water in which the FERC license applies; The project boundary encloses those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control or protection of environmental resources.

Public Areas- areas that area owned and/or operated by state, regional or federal agencies as well as the licensee, that are open to use by the general population.

Recreation days – Each visit by a person to a development for recreation purposes during any portion of a 24-hour period. Residential Areas- areas that consist primarily of homes– residential housing includes single family, multi family and condominiums, camps, and other private dwelling. Residential areas include subdivisions and any undeveloped lots within such areas.

Resource Management - Areas within the project boundary which have remained less extensively developed and are managed for public purposes such as state parks, forestlands, and recreational areas

Rip-rap - method of stabilization of a bank or slope through the placement of rock.

Steep Slopes - Areas with a gradient of 30% or greater.

Threatened or endangered - species (plant or animal) which because of limited populations are considered near extinction.

Use and Occupancy- in reference to Entergy owned/FERC regulated lands, utilization, or placement of structures within the Project boundary.

Variances - exceptions to established rules or regulations

Watt - measurement of energy

Wetlands - areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil condition. Wetlands generally include swamps, marshes, bogs, and similar areas.

APPENDIX C
GLOSSARY OF TERMS

APPENDIX D

LICENSE ARTICLES PERTAINING TO SHORELINE MANAGEMENT

APPENDIX E

**SMP TEAM MEETING MINUTES, COMMENTS RECEIVED ON THE SHORELINE
MANAGEMENT PLAN & ENTERGY RESPONSES TO COMMENTS**