

Executive Summary

The Keowee-Toxaway Hydroelectric Project (FERC No. 2503) is a Federal Energy Regulatory Commission (FERC) licensed hydroelectric Project that consists of the Keowee and Jocassee developments in upstate South Carolina and western North Carolina. Within the past five years there has been significant interest in residential development along the Project shoreline of Lake Keowee. Large tracts of property with significant amounts of shoreline have been purchased for development of residential communities on Lake Keowee. Lake Jocassee is the second and smaller development of the Keowee-Toxaway Project and is set in the mountains of South Carolina and a small portion within North Carolina. By contrast, Lake Jocassee and the surrounding land are relatively undeveloped and consist primarily of a natural forested shoreline included within the Jocassee Gorges - a state natural area. Because of the difference in development and private access interests between the two developments within the Keowee-Toxaway Project, Duke Energy chose to focus attention in 2006 to the development of a comprehensive Shoreline Management Plan (SMP) for Lake Keowee, which was approved by FERC on May 25, 2007. Duke Energy is now in the process of developing an SMP for Lake Jocassee.

The Lake Jocassee Shoreline Management Plan (Jocassee SMP) includes an array of information including, but not limited to: 2005 digital orthographic aerial photography; shoreline classification maps and lake use restrictions; Shoreline Management Guidelines; consultation results; process for challenges to shoreline classifications; Structure Renovation Process; examples of Private Facility, Shoreline Stabilization and Excavation program permit applications; lake construction contractor list; riparian zone management information; Shoreline Stabilization Technique Selection Process (SSTSP); regional general permits; Recreation Use and Needs (RUN) study; and Tribal Historic Preservation Office (THPO) lake use permit consultation process.

The development of the Jocassee SMP has followed closely and relied heavily upon the lessons learned by the Licensee in development of shoreline management plans for other FERC projects and developments including: Keowee-Toxaway Project (Lake Keowee (2006)), Catawba-Wateree Project (1994, 2001 and 2006), Tuckasegee East Fork, Tuckasegee West Fork and Nantahala Projects (2003), and the Buzzard's Roost Project (Lake Greenwood (2001)). The Jocassee SMP follows closely the model used for development of the shoreline classifications, criteria and lake use restrictions that are an integral part of the SMP classification maps developed for these other Projects and developments. Likewise, the developments that comprise the Keowee-Toxaway Project and the Catawba-Wateree Project have consistently had similar permitting guidelines to regulate the many construction, stabilization and excavation requests made by property owners who adjoin the Project boundary of these reservoirs. These guidelines and the criteria within each of the permitting programs have evolved over the past 20-plus years since implementation of both Projects.

The development of an SMP for Lake Jocassee will allow Duke Energy to effectively evaluate and regulate uses within the Project. Likewise, as Licensee, Duke

Energy has recognized the need to better understand the recreation demands that are placed upon the Project and its ability to absorb those often competing demands. The need to develop an SMP for Lake Jocassee will also allow the Licensee to more effectively understand and evaluate any future requests for use of the Project for the construction and utilization of lake access facilities along the 92.4 miles of shoreline of Lake Jocassee. All applicants requesting permits on Lake Jocassee in South Carolina will need to have prior approvals through the South Carolina Department of Health and Environmental Control and the US Army Corps of Engineers. Lake Jocassee is not included in the current General Permit issued to Duke Energy in South Carolina. While Duke Energy will continue to evaluate lake use requests for private access by individual adjoining property owners, Duke Energy does not consider non-Project Use applications for multi-slip Residential Marina and Commercial Marina facilities on Lake Jocassee. The Licensee, therefore, respectfully requests the Commission accept the Jocassee SMP as an adequate plan to allow continued public and private access to the Project while protecting the Project's scenic, recreational, cultural and environmental values.

1.0 Introduction

1.1 Project Area Description

The Keowee-Toxaway Hydroelectric Project (FERC No. 2503) consists of two reservoirs: Lake Keowee and Lake Jocassee. The Jocassee Dam impounds the Whitewater River, Toxaway River, Horespasture River, Thompson River and several streams and creeks. Lake Jocassee is the upper reservoir for the Jocassee Pumped Storage Hydroelectric Station built in 1973 and the lower reservoir for Duke Energy's Bad Creek Pumped Storage Project, (FERC Project No. 2740) built in 1991. The full pond contour elevation of Jocassee is 1100 feet above mean sea level (msl). Lake Keowee is the lower reservoir for the Jocassee Pumped Storage Hydro Station.

1.1.1 Location and Development Works

The Jocassee Development consists of a reservoir, dam, two saddle dikes, and a powerhouse. The development is located on the Keowee River approximately 20 miles north of Seneca, South Carolina. The Jocassee Development is located in Oconee and Pickens Counties, South Carolina, and Transylvania County, North Carolina.

1.1.2 Completion Date

Commercial operation of hydro units 1 and 2 began in 1973. Commercial operation of hydro units 3 and 4 began in 1975.

1.1.3 Reservoir

The Jocassee reservoir full pond elevation is 1,100 feet above mean sea level with a maximum drawdown of 30 feet. At full pond, the surface area is 7,980 acres with 92.4 miles of shoreline and total storage of 1,160,298 acre-feet. The drainage area for the Jocassee Development is 147 square miles with an average inflow of 400 cubic feet per second (cfs).

1.1.4 Dam

The Jocassee Dam is a zoned earth and rockfill structure approximately 385 feet high and 1,800 feet in length. The dam includes two circular structures with eight openings that divert water to the generating units. The spillway is concrete ogee with 2 Tainter gates. Each Tainter gate is 38 feet wide and 33 feet in height.

1.1.5 Powerhouse, Turbines and Generators

The Jocassee Powerhouse is an outdoor type powerhouse located adjacent to the Jocassee Dam. The Powerhouse contains four Allis-Chalmers vertical reversible pump-turbines each rated at 152,500 kilowatts per unit as a generator and 170,000 kilowatts per unit as a pump. The total hydraulic capacity (i.e. maximum flow through the turbines) is 27,720 cfs. At an operating head of 310 feet, each unit can generate 1 MW with 45 cfs, conversely as a pump each unit can pump 40 cfs consuming 1 MW.

1.2 Goals and Content of the Shoreline Management Plan

The primary goals of the Lake Jocassee Shoreline Management Plan (Jocassee SMP) are to:

1. Provide for public and private access while appropriately managing the Project's natural and cultural resources and protecting the Project's primary function which is the production of electricity.
2. Comply with the Land Use Article (i.e., Article 49 in the Keowee-Toxaway Project) issued by the Federal Energy Regulatory Commission (FERC or Commission).
3. Ensure that the existing and future public recreational needs of the Jocassee Development are addressed.

To support these primary goals of the Jocassee SMP, the Licensee will:

- Utilize a methodology based upon the experience gained through the development of previous Shoreline Management Plans for Lake Keowee (FERC No. 2503), Catawba-Wateree Project (FERC No. 2232), Nantahala Area Projects (FERC Nos. 2694, 2692, 2686, 2698, 2603, 2601, 2619, and 2602), and the Buzzards Roost Project (FERC No. 1267).
- Build upon the foundation that was set by the implementation of the Shoreline Management Guidelines that have been in effect at Lake Keowee since October 1987.
- Utilize the most current data available (e.g., Shallow Water Fish Habitat Survey data, Recreation Use and Needs study results, digital aerial photography and revised Shoreline Management Guidelines) to guide decisions regarding all types of access within the Project boundary.
- Provide a factually based document that can and will be used by the Licensee, the resource agencies and the Commission for reviewing requests for utilization of the Project and its resources.
- Address issues of primary importance identified in the preparation of other SMPs and SMP updates, namely:
 - Consult with appropriate resource management agencies regarding:
 1. Specific non-Project development proposals;
 2. Identification of environmentally valuable aquatic and terrestrial species shoreline habitats, and protect such habitats by methods determined necessary, such as limiting development in these areas; and
 3. Protecting important cultural and tribal resources.
 - Include documentation of consultation.
 - Include copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, municipalities and other stakeholders.

- Include specific descriptions as to how the agencies' and other stakeholders' comments and recommendations are accommodated by the plan, and project specific reasoning if a recommendation is not adopted.

To develop the SMP, the Licensee has undertaken various resource studies and inventories to obtain current information and data. These resource studies and inventories include:

- Recreation Use and Needs (RUN) study (developed/conducted/completed 9/06-12/06-11/07)
- Shallow Water Fish Habitat Survey (SWFHS) (2008)
- Geographical Information System (GIS) for Lake Jocassee
- Contour elevation and Project boundary mapping for Lake Jocassee

The Licensee developed the SMP maps and shoreline classifications based, in part, on the information obtained from these studies and consultation with resource agencies and a representative group of stakeholders through an open forum, while drawing on the experience gained in development of SMPs for other FERC projects.

1.3 Relationship of the SMP

Duke Energy uses a 3-step review process for all lake use permit activity requests. Each request is evaluated based on review of the applicable Lake Use Policy Statements (LUPS), the SMP maps (where applicable) and associated lake use restrictions, and compliance with the Shoreline Management Guidelines (SMG).

Step One: Review the Lake Use Policy Statements (LUPS)

The first step of the lake use permit process is a review of the applicable LUPS. The LUPS delineate the types of access and activities that may be allowed on all reservoirs owned or managed by Duke Energy based on license requirements (for all licensed hydro reservoirs); federal, state, and/or local regulations; and specific business management objectives. These policy statements apply to all reservoirs owned or managed by Duke Energy, including those in the Keowee-Toxaway Project. Due to the strategic business sensitivity of the LUPS, these documents remain internal to Duke Energy. Specific license or other regulatory requirements that are also a part of these policies are publicly available.

The LUPS allow for review of four basic types of lake access: 1) Private Access; 2) Public Recreational Access; 3) Public Infrastructure Access; and 4) Business/Industrial Access on the reservoirs with existing private and business development. Public infrastructure and business/industrial access will be allowed in accordance with the FERC's standard Land Use Article included in the license for the Keowee-Toxaway Project.

Step Two: Review the Shoreline Management Plan (SMP)

If a proposed lake use activity is in compliance with the LUPS, the next step of the review process is to review the SMP to determine if the activity is allowed in the general region of the shoreline. The SMP contains a set of maps showing various types and uses of the shoreline including areas protected for environmental or habitat values, areas of existing development and areas of potential development. The SMP also includes lake use restrictions associated with important shoreline characteristics. The SMP and associated lake use restrictions were developed in consultation with state and federal resource agencies and other stakeholders.

Step Three: Review the Shoreline Management Guidelines (SMG)

The final step of the process is review of the SMG to determine if a requested use may be allowed in a specific location along the reservoir's shoreline within the Project boundary. The SMG are a set of detailed procedures and criteria that regulate activities within reservoirs owned or managed by Duke Energy. The development of these guidelines for permitting activities within the Project boundary is required by Duke Energy's FERC license in its Standard Land Use article. Duke Energy reserves the right to make minor alterations to these guidelines without public notice, resource agency, or FERC review to ensure permitting flexibility in the continuous monitoring and regulation of lake use permitting activities. Duke Energy expects to make major revisions to the SMG periodically with input from resource agencies, local governments, and other interested stakeholders using a stakeholder team. Duke Energy will convene this stakeholder team prior to making major revisions to the SMG. Additionally, the FERC may order modifications to the guidelines as provided for in the FERC's Standard Land Use Article (49) in the FERC license.

1.4 Contents of the SMP

Section 2.0 provides a brief description of the Access Area Improvement Initiative (AAII) and the development of this initiative for both the Keowee-Toxaway Project and the Catawba-Wateree Project (CW).

Section 3.0 provides a brief description of the Recreation Use and Needs (RUN) study for the Keowee-Toxaway Project and the proposed recreation demand and boating assessment process.

Section 4.0 describes the methodology and planning process for development of the SMP, including:

- Use of the CW SMP as a model for shoreline management planning
- Shoreline classification and Shallow Water Fish Habitat Survey (SWFHS) mapping process, contour and Project boundary mapping process

- Shoreline Stabilization Technique Selection Process (SSTSP), Lake Shoreline Stabilization (i.e., riparian management information), and Fish-Friendly Pier information.

Section 5.0 provides a brief discussion of the history and consultation process associated with development of the Shoreline Management Guidelines (SMG) and SMP for Lake Jocassee.

Section 6.0 provides a description of the Jocassee SMP distribution process.

Section 7.0 includes a summary of the implementation process and future updates to the Jocassee SMP.

Section 8.0 is a brief description of additional management activities that have been initiated on Lake Jocassee or will be initiated as part of the implementation of the SMP and revised SMG.

2.0 Access Area Improvement Initiative

Duke Energy initiated the Access Area Improvement Initiative (AAII) in 1998 based on recommendations from development of the Recreation Management System (RMS) for Duke Energy reservoir access areas. The RMS evaluated existing access area development and leasing practices and provided an organized and focused approach for promoting and enhancing cooperative access area partnerships. The RMS identified state and local government entities, private sector individuals, and non-government organizations as potential partners for enhanced development and long-term operation and maintenance of public recreation facilities at existing access areas and islands.

Prior to implementation of the AAII, no land cost public recreation leases had already been executed with state and local partners for four Keowee-Toxaway Project access areas, including:

- High Falls County Park (Keowee), 46 acres – leased to Oconee County, February, 1971
- South Cove County Park (Keowee), 76 acres – leased to Oconee County, April, 1973
- Mile Creek County Park (Keowee), 130 acres – leased to Pickens County, February, 1981
- Devil’s Fork State Park, including Double Springs Campground (Jocassee), 572 acres – leased to the South Carolina Department of Parks, Recreation, and Tourism (SCDPRT), State Park Service, August, 1989

These four pre-AAII access area partnerships have been successful in helping to meet Project public recreation needs by providing the land base for lakefront parks at no land cost to these state and local agencies. Duke Energy’s partners continue to improve

existing facilities, provide additional facilities and enhance opportunities at these public recreation venues.

Based on recommendations from the RMS in the success of the early access area partnerships, Duke Energy notified local governments adjacent to the reservoirs' Project boundary as well as state recreation and resource management agencies of the new AAI opportunity to lease one or more of the access areas and/or islands in their jurisdiction at no land cost. Duke Energy staff met with representatives of the following agencies to provide detailed information on the AAI:

Keowee-Toxaway Project

- SC Department of Parks, Recreation and Tourism
- SC Department of Natural Resources
- Oconee County, SC
- Pickens County, SC
- NC Wildlife Resources Commission
- NC Department of Environment and Natural Resources, Division of Parks and Recreation

Catawba-Wateree Project

- NC Wildlife Resources Commission
- NC Department of Environment and Natural Resources, Division of Parks and Recreation
- SC Department of Parks, Recreation and Tourism
- SC Department of Natural Resources
- Alexander County, NC
- Burke County, NC
- Caldwell County, NC
- Catawba County, NC
- Gaston County, NC
- Iredell County, NC
- Lincoln County, NC
- Mecklenburg County, NC
- McDowell County, NC
- Chester County, SC
- Fairfield County, SC
- Kershaw County, SC
- Lancaster County, SC
- York County, SC
- City of Belmont, NC
- Great Falls Hometown Association
- City of Mount Holly, NC
- Town of Sawmills, NC

- Lake Norman Marine Commission, NC
- Mountain Island Lake Marine Commission, NC
- Lake Wylie Marine Commission, NC and SC

Duke asked these potential partners to provide a letter of interest to help Duke assess the level of partnership interests in leasing, developing, and managing existing public access areas. By the end of 1998, throughout the Duke Energy system, one state agency, 12 out of 16 counties, and three municipalities responded with letters of interest. Duke Energy also received 12 letters of interest from the private sector and non-government organizations.

Duke Energy requested that these potential partners prepare and submit initial conceptual site plans and development schedules for the sites. One state agency (for all of the North Carolina islands), four counties (for six sites and some islands), and two cities (for two sites) submitted plans and development schedules.

Since the Oconee County and Pickens County leases were executed, Duke Energy and the county administrations have periodically discussed opportunities for leasing additional Lake Keowee access areas. Over time, county interests have peaked and subsided with changing administrations. However, consistent with the direction of the AAI and Duke Energy's FERC License, Duke Energy has continued the AAI commitment to work with these local partners to consider additional AAI lease opportunities.

Consideration of future governmental and private sector AAI partnership opportunities for the Keowee-Toxaway Project will be informed by the results of the Recreation Use and Needs (RUN) study described in Section 3.0 of this report. Representatives from Oconee County, Pickens County, the Friends of Lake Keowee Society (FOLKS), Clemson University, the SCDNR and the SCDPRT are active members of the RUN Study Team. The results of the study have been submitted to FERC and will be used to develop the Recreation Management Plan (RMP) that will be filed with the FERC in 2009. The RMP will provide recommendations with up-to-date guidance for future development of public recreational and Project-related public recreation facilities.

3.0 Recreation Use and Needs Study

Duke Energy filed its Recreation Use and Needs (RUN) study for the Keowee-Toxaway Project (Lake Keowee and Lake Jocassee) and filed the study with the FERC on May 28, 2008. The previous comprehensive assessment of Project-related public recreation needs was conducted as a part of the original FERC license in the mid-1960s. The current FERC license expires in 2016, and Duke Energy will re-evaluate public recreation use and needs as part of the formal relicensing process. However, existing and proposed shoreline development and demand for enhanced public recreation opportunities, especially on Lake Keowee, indicate that a comprehensive reassessment is needed sooner to help Duke Energy manage Project recreation resources and create an effective

benchmark to help accurately assess current and future public recreation use and needs at the Project.

The purpose of the RUN study is to provide information to better understand how the public currently uses the Project's public recreation resources and to estimate future public recreation needs on and around Project lands and waters to support Duke Energy's management of those resources throughout the remainder of the existing Keowee-Toxaway FERC Project license.

Data collection for the RUN study covered a one-year period from December 1, 2006, through November 30, 2007. The Study Plan was developed in consultation with a study team consisting of representatives from state and federal resource agencies, adjacent county governments, non-governmental organizations (NGOs), and recreation planning professionals. The study area included Lake Jocassee and Lake Keowee (including Duke Energy-owned islands) within the FERC Project boundary, existing developed and undeveloped Duke Energy access areas, state and municipal parks, and commercial recreation facilities within and adjacent to the Project, all of which provide or affect water and land-based recreation opportunities for the general public.

Public recreation areas at Lake Jocassee include one South Carolina state park, one South Carolina natural resource management area, one North Carolina state park, three Duke Energy-owned boat-in Foothills Trail access areas, and three Duke Energy-owned undeveloped access areas identified in the current FERC License. Lake Keowee public recreation areas include seven Duke Energy-owned public access areas, one South Carolina state natural area, three county parks, and three commercial marinas or campground facilities.

Additionally the Jim Timmerman Natural Resources Area at Jocassee Gorges surrounds Lake Jocassee and is maintained by South Carolina Department of Natural Resources to preserve its scenic and natural characteristics and to provide recreational opportunities supporting this goal.

Data collection methods for the study included a literature review of existing recreation use information; site inventory assessments of the existing public recreation areas; public recreation area interviews (1,024 interviews), spot counts (1,054 counts), traffic counts (4,015 counts), and trail counts (415 counts); boat counts (aerial photographs were taken on 11 sampling days); and mail surveys, including shoreline and back-lot property owners (1,100 surveys mailed, and 415 were returned completed); regional residents (sampled residents within Oconee and Pickens and adjacent counties) (1,100 surveys mailed, and 74 were returned completed); agency, commercial recreation providers, and NGO representatives (34 surveys mailed, and eight were returned completed). Key findings of the RUN study include:

Visitors to Lake Jocassee and Lake Keowee are predominately from Pickens and Oconee counties (39 and 37 percent respectively) followed by Greenville (11 percent) and Anderson (8 percent) counties.

Participants were asked whether they accessed Lake Jocassee from North Carolina, or recreated in the North Carolina portion of Lake Jocassee during a trip to Lake Jocassee. About 40 percent of the interview respondents indicated they had accessed Lake Jocassee from North Carolina or had recreated on adjacent North Carolina lands with their primary means of access provided by motorboat, 4-wheel drive, hiking/walking, or canoe/kayak. Only eight respondents to the shoreline and back-lot property owners and the regional residents surveys indicated they had accessed Lake Jocassee through North Carolina or recreated in North Carolina, with access provided by boat, car, hiking, and 4-wheel drive.

The total recreation visitation at the Keowee-Toxaway Project for the study period was estimated at 2,584,341 recreation days (defined as a visit by a person to the Project for recreational purposes during any portion of a 24-hour period).

Primary activities were boat fishing (49 percent), visiting beaches/swimming (38 percent), sightseeing (36 percent), picnicking/family gatherings (34 percent), motor boating (30 percent), water skiing/tubing (22 percent), walking (19 percent), bank/dock/pier fishing (18 percent), and pontoon boating (18 percent).

For shoreline and back-lot property owners and regional residents, the weekends at Lake Keowee were perceived as being the most crowded. This contrasts with the public recreation area visitors who rated the weekends as having few people at the public recreation areas. The shoreline and back-lot property owners and regional residents felt there were too many boats, while the public recreation area visitors felt there were an average number of boats during the peak use weekends.

Almost all (over 98 percent) of the respondents felt that the aesthetic quality of the lakes and shorelines was “attractive” or “okay,” with slightly higher ratings at Lake Jocassee compared to Lake Keowee. Both shoreline and regional residents identified attributes associated with development as the greatest detractors from the aesthetic resources.

All but one of the interview respondents and 86 percent of the shoreline and back-lot owner respondents indicated they felt safe at the public recreation areas. Ninety-five percent of the public recreation area visitors indicated they were either “safe” or “very safe” on the water. The majority of situations where respondents did not feel safe on the water were related to the number, speed, or unsafe operation of boats or personal watercraft.

More than 95 percent of the respondents interviewed and 70 percent of the shoreline and back-lot owners that returned questioners and regional residents were satisfied or very satisfied with the physical condition of the public recreation areas. Respondents that were dissatisfied indicated the need for additional litter control and maintenance measures.

For both lakes combined, more than 70 percent of the respondents were satisfied with the number and type of recreation facilities. However, for Lake Keowee, 57 percent of the

public recreation area visitors indicated satisfaction with the number and type of facilities.

Based on the assessment of the data, primary recreation facility recommendations are as follows:

- Lake Jocassee – Pursue opportunities to ensure naturally appearing shoreline, and assess the potential for additional boat ramp facilities and additional hiking trails.
- Lake Keowee – Assess the potential for additional beaches/swimming areas, hiking trails, restroom facilities, courtesy loading docks, picnic shelters, and fishing piers. Enhance litter control and maintenance measures.

For Lake Jocassee additional site recommendations included additional boat fueling facilities, additional boat ramps, trails, food services, and parking. For Lake Keowee additional site recommendations included food services, additional restrooms, marinas, boat fueling facilities, boat docks/courtesy dock, and boat ramps.

FERC has directed, in the May 25, 2007 Order Modifying and Approving Shoreline Management Plan, for the Keowee-Toxaway Project that Duke Energy Carolinas, in consultation with local, state, and federal agencies, tribes, and local NGO's develop a comprehensive Recreation Management Plan (RMP) for the Project. An invitation to participate in this process was sent to the RUN study team members as well as those identified by the FERC. The forthcoming RMP will contain site specific recommendations supported by the information reported in the RUN study and in consultation with federal, state, and local governmental and public interest entities as specified by FERC.

4.0 Methodology and Planning Process

4.1 Lake Keowee and Catawba-Wateree as Models

The development of classification maps for Lake Jocassee was modeled upon the development of the Lake Keowee, Catawba-Wateree and other projects' SMPs. During the development of the CW SMP, Duke Energy and the state wildlife agencies developed a classification system of significant shallow water fisheries habitats. Duke Energy also conducted a survey of all undeveloped shorelines to identify areas of key importance for fish spawning and rearing and established appropriate lake use restrictions for those areas. This was the basis for development of the Jocassee SMP Shoreline Classifications and Lake Use Restrictions.

The set of symbols and colors for identifying the Existing Use classifications in the Lake Keowee SMP maps and the Catawba-Wateree 2001 SMP (CW SMP) maps were utilized to develop the Existing Use classifications for the Jocassee SMP. The Shallow Water Fish Habitat Survey classification definitions were incorporated into the nomenclature previously utilized in the Lake Keowee SMP and CW SMP to ensure a consistent

classification system for those familiar with utilizing the SMP maps for permitting activity review. The same numbering system and symbols from the Lake Keowee SMP and CW SMP were also used for the Future Use, Existing Use and habitat classifications in the Jocassee SMP. An exception is there will be no Existing Use or Future Use Commercial or Residential Marina classifications on Lake Jocassee since this type private marina access is not allowed based on the Lake Use Policy Statements.

The Future Use classifications in the Jocassee SMP are based on the suitability of the shoreline to support access to the reservoir from the associated upland development. Actual facilities must also occur in accordance with the existing Shoreline Management Guidelines (see Appendix B).

Roads, hydrography, political boundaries, transmission line corridors, etc. were incorporated into the Geographical Information System (GIS) from several sources for general information. Also, the precise limits of classifications and other areas were determined by a combination of field-located Geo-Position System (GPS) transition points, surveys and visual observation.

Minor data fluctuations are to be expected in any version of the Jocassee SMP maps as a result of technological advancements such as the use of digital aerial photography, satellite imagery, GPS and GIS. These maps are valuable planning tools. They do not, however, have the accuracy of a physical metes and bounds-type land survey and should not be treated as such.

The shoreline classification definitions and lake use restrictions were developed in consultation with the appropriate resource agencies. Both the Existing and Future Use classifications of the shoreline included in the Jocassee SMP maps are taken from data at a specific point in time and therefore, can not be expected to represent nor anticipate all uses within the Project that may occur.

The shoreline classification IMZ-Developed (Impact Minimization Zone) was developed to identify construction or shoreline stabilization activity in areas classified as IMZ during the SWFHS. The Jocassee SMP maps only delineate that development has occurred in these areas. The GIS must be queried to differentiate the specific type of development that has occurred. Since only Residential and Public Recreation access facilities are allowed, the Commercial Marina and Residential Marina classifications were not included in the Jocassee SMP.

LAKE USE RESTRICTIONS - No boat ramps except those required for Public Recreation and no excavation. Construction within these areas may have specific mitigation requirements imposed by the federal, state or local resource agencies. Shoreline stabilization within the Project boundary must adhere to the Shoreline Stabilization Technique Selection Process.

The stakeholder teams and resource agencies reviewed the Classifications and Lake Use Restrictions document developed as part of the CW SMP and Keowee SMP for

application to the Jocassee SMP. One revision to the Jocassee SMP was the addition of Rock to the Classifications and Lake Use Restrictions document for the Jocassee SMP.

4.2 Shoreline Classification and Mapping

Duke Energy classified the entire reservoir shoreline within the Project boundary of Lake Jocassee to reflect current development of the shoreline, to include the results of the SWFHS, and to provide guidance for consideration of future lake use requests. The following section describes the Shoreline's Classification, associated lake use restrictions and the SWFHS.

4.2.1 Shoreline Classification

Duke Energy enlisted the services of its own fisheries scientists and Lake Services personnel to complete the Shallow Water Fisheries Habitat Survey (SWFHS) field data collection. The field data collection team surveyed the entire shoreline by boat utilizing a handheld GPS unit and data logger.

Duke Energy and the state and federal wildlife agencies cooperatively developed, as part of the development of the Keowee SMP, the shoreline habitat classifications: Vegetated Areas/Coves with Stream Confluence, Stable Sand/Gravel/Cobble, Clay, etc. Final negotiations with the wildlife resource agencies and a representative group of interested lake stakeholders were not completed until November 15, 2005. A total of four meetings were held with these agencies to finalize the lake use restrictions, including two meetings with the more widely interested stakeholder team. During the development of the Jocassee SMP the resource agencies were consulted during the development of the Shoreline Habitat Classifications on December 10, 2007. Stakeholder groups and resource agencies were given an opportunity to comment on the Shoreline Classifications at the Jocassee Open House forum on May 28, 2008.

Prior to review of the preliminary SWFHS mapping data, staff in each county was contacted and where available, digital tax parcel data was obtained for the waterfront parcels that border Lake Jocassee in Pickens County. Digital parcel data was not available from Oconee County, SC or Transylvania County, NC.

The aerial photography, contour data and other data layers were analyzed by Duke Energy personnel and the GIS contractor to identify and delineate all shoreline development within the Project boundary by:

- a. Identifying the type and extent of the development along the shoreline;
- b. Delineating Duke Energy hydro properties within the Project boundary;
- c. Delineating adjoining properties that are in public ownership or otherwise preserved.

The mapping effort lasted from January through May 2008, and primarily consisted of four-hour sessions for multiple days each month to review and populate the GIS database. During these sessions, multiple data layers including the aerial photography, county

parcel data, multiple contour elevations, etc. were available to the review team. During the review sessions, preliminary edits were made to GIS layers and notes were kept to document all modifications including corrections to any mapping errors. Final edits to the database were completed by a contractor off-site.

The following outlines the process Duke Energy used to classify the reservoir's shoreline in the Jocassee SMP:

- The SWFHS GPS point location data was used as the base information for developing the Jocassee SMP maps. All shoreline, including all island shoreline, was inventoried to delineate the environmentally valuable shallow water fish habitats, areas with significant characteristics that limit the ability to allow access, undeveloped shoreline with no critical habitat, and shoreline with existing development. The environmentally valuable shallow water fish habitat areas were designated as Environmental or IMZ. Areas with characteristics that make most types of development inside the Project boundary undesirable from an overall lake management standpoint (e.g., significant shallow water) were classified as Natural Areas on the Jocassee SMP maps.
- Existing Use shoreline areas (identified previously as Developed in the SWFHS) were added to the SMP after the habitat data was included. Areas of the shoreline with an Existing Use classification in the Jocassee SMP are those areas with some type of lakeward construction or structure (e.g., shoreline stabilization, pier).
- All Duke Energy-owned islands and peninsulas falling within the Project envelope, as identified in the Exhibit K, were then classified for Future Public Recreation, except for those shoreline areas designated in one of the shallow water fish habitat classifications or that had other unique features worthy of protection.

The Future Public Recreation classification was assigned to specific Duke Energy-owned land acreage to provide for future public recreational opportunities throughout the planning horizon.

In sizing and labeling these areas, emphasis was placed on:

- Expanding existing access areas;
- Long range usability of boat launching facilities;
- Distribution of recreation opportunities around the lake;
- Physical characteristics (e.g., topography, vehicle access, shoreline); and
- Proposed public access to privately-owned and publicly-owned land.

All shoreline, lakeward of lands currently managed for public recreation but not owned by Duke Energy, was also classified as Future Public Recreation. At the completion of this step, the property boundaries for the privately and publicly owned non-Project recreational land were delineated from a variety of sources including park boundary surveys, site plan maps, access area boundary surveys, etc. Lands for future public

recreation that are not owned by Duke Energy are distinguished from Project lands on the Jocassee SMP maps by color shading.

The remaining shoreline areas were then classified as Future Residential since they were determined not to be needed for future public recreational needs. Shoreline management policies and specific lake constraints were applied to this shoreline to ensure that future development could occur without affecting important natural or cultural resources, infringement on the aesthetic or recreational values of the Project, or power production operational flexibility. Some of the specific considerations included:

- Areas subject to quickly changing and significant flow rates below operating hydro stations were classified as Project Operations and more specifically designated as Downstream Clear Zones. This limits development to maintenance and rebuilds of existing structures.
- Shoreline areas that were cut off from direct boating access to the majority of the Project were delineated as Natural or Environmental unless there was significant shoreline and surface acreage to support development (e.g., piers) and recreational boating within the cutoff area.

To ensure consistency throughout the modification/review process, a Rules Document (see Appendix C) was developed that identified typical modification scenarios and the basis for the modification. These rules or standards were applied during the entire mapping process to ensure all areas were evaluated and classified consistently over the entire shoreline of Lake Jocassee.

All GIS work was done using Environmental System Research Institute, Inc. (ESRI™) Arc/Info or ArcView software. All data was created in a format and coordinate system that is compatible with Duke Energy's existing GIS database structure and computing platform. The standard map format remains the Shoreline Management Plan (SMP) map sheets. Standard data modifications are expected over time and these typically include any modification or change to the GIS database that involves changes to the existing databases. Examples of these types of edits include shoreline boundary changes, changes to shoreline classifications, base data changes, changes to map annotation, and changes to other existing data layers. Additional changes and modifications may also occur as technologies change and improve.

4.2.2 Shallow Water Fish Habitat Survey (SWFHS)

The SWFHS inventoried the entire shoreline including both the developed and undeveloped portions of the shoreline. Development of the SWFHS information therefore required the shoreline to be classified as Developed only if there was some type of lakeward construction or structure (e.g., stabilization, pier). During development of the Jocassee SMP maps, lakeward construction was a prerequisite to identifying a portion of the shoreline as having an existing use. Designation was not based on activities outside the Project boundary (e.g., proposed residential subdivision development or residential

home construction) and lakeward construction activities were not anticipated. Duke Energy evaluated all the shoreline under the SWFHS classification criteria that did not have some type of lakeward construction or structure.

The SWFHS identified various habitat and management classifications; Vegetated areas/coves with stream confluence, Natural, Stable Sand, Gravel/Cobble, Rock and Clay. All other areas were inventoried as Developed without any specific differentiation between development types. The Developed shoreline areas identified during the SWFHS were re-examined during the development of the SMP maps to determine the specific type of shoreline development. This evaluation process utilized aerial photographs, transmission line data, state and county road maps, FERC Exhibit K maps and Duke Energy permitting databases.

The classification system designations for the SWFHS were revised slightly to more appropriately mimic the designations used in other SMPs developed by the Licensee (e.g., the Vegetated with Stream Confluence designation was assigned the Environmental designation while the Stable Sand and Gravel/Cobble designation was assigned the Impact Minimization Zone (IMZ) designation). Although these designation changes were deemed necessary to provide a degree of consistency for those accustomed to using other SMPs developed by the Licensee, the actual habitats identified and the criteria utilized to determine these habitats remained the same in the Jocassee SMP maps as inventoried in the SWFHS. The Jocassee SMP maps include not only the important habitat area data from the SWFHS (e.g., Vegetated area/cove with Stream Confluence, Stable Sand, and Gravel/cobble) but also the other Existing Uses (Residential, Business/Industrial, Project Operations, Public Recreation, and Public Infrastructure, IMZ Developed) and Future Residential and Future Public Recreation classifications (see Appendix P).

The classifications for the entire Lake Jocassee shoreline is at a scale of 1 inch equals 1,000 feet., The classification system was developed with input from the Catawba-Wateree relicensing process in combination with input from local stakeholders and resource agencies during the Open House forum for Lake Jocassee. The classification system along with the lake use restrictions, help ensure that valuable aquatic environmental habitats are protected while facilitating improved permitting consistency. Each Jocassee SMP map includes a classification key with a tabular summary of each classification based on shoreline miles and as a percentage of the total shoreline. Each map is numbered and a location key of map numbers and their coverage is provided to assist in map orientation on Lake Jocassee.

4.2.3 Contours and Parcel Boundary Information

4.2.3.1 Development of 2 Foot Contours between Elevation 1110 Feet and 1120 Feet

Because the aerial photography data gathering process only provided a digital terrain dataset suitable for the generation of the digital ortho-photos, it was necessary to supplement the data with additional vertical control points. In addition to the vertical control points, the digital terrain model (DTM) data was enhanced through

photogrammetric stereo compilation by adding masspoints and breaklines. Softcopy stereocompilation was used to compile these masspoints and breaklines. These graphic elements were used to form a DTM for the generation of the contours at two foot intervals to meet or exceed National Map Accuracy Standards (NMAS) for the 1"=200' map scale and contour interval. Every fifth contour was labeled as an index contour. Additional one foot contours were interpolated between the 2 ft contours to provide continuous contours between the 1110 ft and 1120 ft elevations. The contour data will be delivered in ESRI™ shapefile format. Each contour line has the correct elevation attached as an attribute or as an actual elevation value.

4.2.3.2 Data Conversion of Parcel Ownership

The property boundaries for parcels adjoining the Project Boundary Line (PBL) were used to develop a digital property base map. The Exhibit K drawing was geo-referenced by using the “best-fit” method. The “best-fit” method can be described as follows: Rotate, scale and modify the existing tax map drawings to match visible boundaries and features such as roads and hydrography in the digital Ortho-photo. In the areas where parcel boundaries have measurements (distance or angles), they were used to anchor the parcels to the digital ortho-photos. The existing digital ortho-photos with a 0.5 foot pixel resolution were used as the base for the “best-fit” method.

Below is an example of the Exhibit K which was used for PBL reference and to create an Original Ownership layer that links to the Duke Energy’s existing property files.

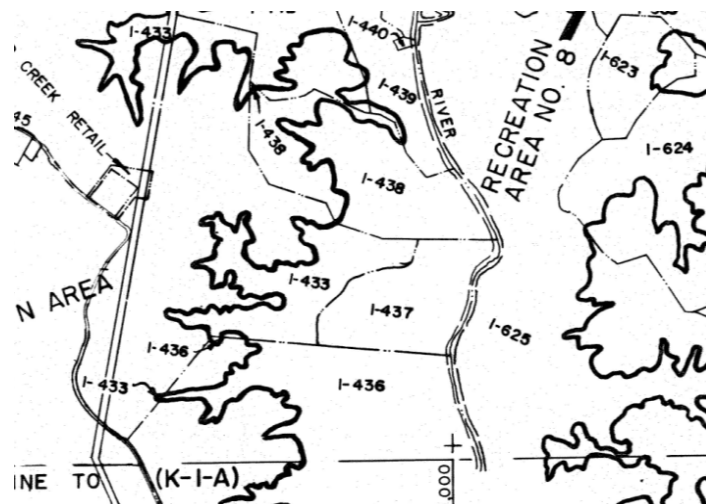


Figure 1: Example of the Exhibit K drawing.

The “best-fit” method was applied to geo-reference the parcel data to the digital ortho-photos. The following methods were utilized when making graphic element adjustments: rotation and/or linear movement of a subdivision, rotation and/or movement of a group of parcels, adjustment of individual parcel lines based on observation of physical features indicating ownership on the digital ortho-photos. The contract GIS service provider has

experience with the judgmental aspects of tax parcel compilation and is accustomed to utilizing all available information sources for properly locating parcels that have incomplete documentation.

After each parcel was properly located and geo-referenced, a node was placed near the center of the parcel. This node was attributed with the data supplied and listed in the Licensee's property files.

All parcel data was incorporated in either graphic elements or a tabular data form. The tabular data was included as part of the ArcGIS[®] file as a table for queries and sorting and in an ESRI[™] personal geo-database format. It was essential that all parcels for this project match for the final conversion. This was accomplished by the GIS service provider that is familiar with, and has an understanding of, the importance of having all tax records coordinated exactly between the Parcel Identification Number (PIN) and the tabular database.

4.2.4 Archaeological

In consultation with the Eastern Band of the Cherokee Indians Tribal Historic Preservation Office (THPO), the South Carolina State Historic Preservation Office (SHPO), the North Carolina SHPO, and the Catawba Indians THPO, Duke Energy retained TRC Inc. to conduct an archeological survey of the shoreline of Lake Jocassee in January 2007. All shoreline was visually inspected and shoreline with both soil and less than 15% slope was shovel tested. Three sites and one isolated find were identified. These sites were determined to be ineligible for the National Register of Historic Places.

4.3 Aerial Photography

In the early spring of 2005, the Licensee contracted to have a qualified vendor collect digital aerial ortho-photography for the entire Keowee-Toxaway Project. The digital aerial photography of the Keowee-Toxaway Project utilized a series of individual photographs taken from multiple flight lines of each lake to produce a wide area ortho-mosaic that appears as a seamless image. A wide area ortho-mosaic comprises imagery from multiple image frames that have been ortho-rectified to a digital elevation model (DEM), geo-registered, combined to eliminate overlap, and radiometrically corrected. The imagery is collected in sets of multiple, parallel flight lines running either north-south or east-west. The final mosaic is a finely gridded (3-foot) 24-bit color image map constructed directly from digital aerial imagery. The color image and brightness of each mosaic pixel is determined by geometrically mapping that pixel to an image frame from the digital camera, with geometric corrections and radiometric corrections applied.

The aerial photography data was incorporated into the GIS system as a backdrop to allow the Jocassee SMP shoreline classification data to be edited to match the photography and the Project boundary. Other base level data was edited as necessary to establish the proper geographical relationships. The process for modifying the SWFHS data to match the digital aerial photography involved realigning the SWFHS data to match the approximate full pond contour for easily discernable shoreline areas.

The digital ortho-photos of the Project area around Lakes Keowee and Jocassee were then scanned to produce color digital ortho-photos with a resolution of 0.5 foot per pixel. Airborne GPS and ground control was collected to support the digital aerial triangulation (DAT) and the ortho-photo generation. The digital ortho-photos were produced to meet NMAS for 1"=200' mapping. The standard projection is South Carolina SPCS NAD 83 U.S. survey foot; the vertical datum is NAVD88. Each individual tile measures 7,500 feet (E-W) and 6,250 feet (N-S) direction. Each tile is completely covered with color digital ortho-imagery.

The basic file format for each ortho-photo tile is GeoTIFF file format with world file. Compressed MrSID images by tile are derived from the original GeoTIFF file format.

The Digital Terrain Model (DTM) was developed for the generation of the digital ortho-photos as masspoints and breaklines and was incorporated into the GIS as Arc 3D shape files.

The digital aerial photography of the Keowee-Toxaway Project is available to the resource agencies, municipalities and others via the Licensee's Data Release Process. The aerial photography is only viewable using ESRI™ Arcview software. The Licensee has included the aerial photography on CD in the final version of the Jocassee SMP to be filed with the FERC. The aerial photography on CD is available to the public for purchase by contacting Duke Energy Lake Services at 1-800-443-5193.

4.4 Shoreline Stabilization

While shoreline stabilization helps prevent soil erosion, stabilization may not be necessary or allowed in certain areas. The Licensee requires all applicants desiring to stabilize shoreline or plant shoreline or aquatic vegetation to contact Duke Energy and obtain written authorization prior to beginning any activity/construction inside the Project boundary or on the Licensee's non-Project property.

4.4.1 Shoreline Stabilization Technique Selection Process (SSTSP)

The Licensee uses the Shoreline Stabilization Technique Selection Process (SSTSP) to evaluate shoreline stabilization requests. The Licensee developed the SSTSP as an alternative to a set of engineering criteria, to provide an easier process for an applicant to understand, and to enable more consistent field implementation when considering the need for shoreline stabilization. The SSTSP encourages applicants to consider utilization of bioengineering techniques or landscape plantings first. If neither of these options is sufficient to control the erosion, applicants may then consider the use of rip-rap with a seawall as the option of last resort. The Licensee may, depending upon the characteristics of the site proposed for stabilization, require an engineering justification for the use of seawalls. Utilization of less-hardening stabilization techniques (e.g., *bioengineering*, *landscape plantings*, *rip rap*, etc.) may be a requirement instead of the use of seawalls.

SHORELINE STABILIZATION TECHNIQUE SELECTION PROCESS

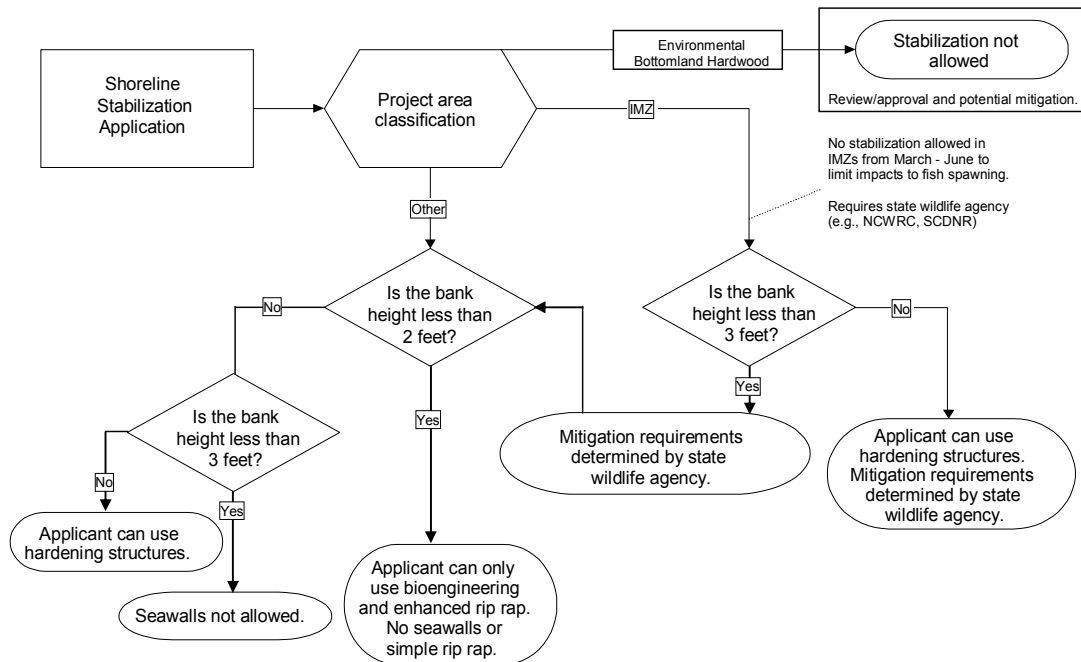


Figure 5A-1

4.4.2 General Conditions for Shoreline Stabilization

1. All seawalls must have Class B or larger rip-rap extending 6 feet lakeward from the base.
2. Considering current lake level operating targets and variability and the desire to prevent unnecessary impacts, rip-rap must be confined to the area between 6 feet below full pond elevation and no more than one foot above full pond elevation to the maximum practicable extent. Potential exceptions include areas where entire placement is above the FERC Project boundary, where banks are already eroded above the full pond elevation or where severely eroded banks must be sloped back or terraced to provide minimum bank stability.
3. Seawalls are not allowed in areas with an average eroded bank height of less than 3 feet.

4. Proposals for stabilization where bank height is less than 2 feet can use approved bioengineering techniques, a stabilization approach that uses natural and living material, and enhanced rip-rap techniques only.
5. The bank height is the average height of the eroded shoreline (measured from the original lake bed to the top of the eroded bank) in the area to be stabilized.
6. Bioengineering techniques may include use of rip-rap with live stakes, rock filled gabions, live staked crib walls, bio-logs, and numerous other approaches.
7. Applicants can use bioengineering, rip-rap, seawalls or any combination of stabilization techniques where use of hardening structures are allowed.
8. Stabilization in an IMZ requires review/approval by the applicable state wildlife agency and reasonable mitigation requirements as determined through consultation with the state wildlife agencies.
9. Stabilization is not allowed from March 1 through June 30 in areas identified as IMZs in the SMP.
10. New or expanded stabilization activities (excluding bioengineering) may not be undertaken within the 50-foot Environmental Offset associated with an Environmental classification in the SMP.
11. Stabilization of eroded banks that are 3 feet in height or higher may be considered for bank reshaping by either cut or fill techniques provided:
 - a. The stabilized bank uses a combination of rip-rap (not installed any higher than one foot above full pond) and bioengineering techniques.
 - b. The cut or filled area, above the height of the rip-rap, is stabilized using vegetation in density and composition similar to other naturally vegetated areas in the vicinity of the stabilized shoreline.
 - c. The toe of the rip-rap is vegetated if the lower limit of the rock provides a stable beach-shelf at an elevation 2-4 feet below full pond.
 - d. The work can be conducted in accordance with all applicable buffer regulations.
 - e. The amount of cut or fill does not substantially alter the full pond contour, is strictly limited to only that necessary to provide a stable angle for rip-rap and revegetation, and is specifically quantified in the written authorization from Duke Energy Lake Services for the project.
12. Stabilization in areas classified as Natural due to the presence of significant cultural resources may not involve ground-disturbing activities.
13. Applicants are encouraged to avoid activities (including stabilization) that could have an adverse impact upon existing water willow beds. Rip-rap installed below the normal lake level elevation and associated with water willow beds must be limited to one layer deep to allow spaces between the stone for water willow recruitment.

4.5 Riparian Management Information

The Licensee provides a condensed information pamphlet titled “Lake Shoreline Stabilization,” included in Appendix E. The “Lake Shoreline Stabilization” pamphlet is also included in all lake use permit application packages.

For those wanting to enhance fish habitat, the Licensee provides an informational piece promoting fish-friendly pier design as a fish habitat enhancement technique. The Fish-Friendly Pier pamphlet (see Appendix F) is also currently included in all lake use permit application packages for private facility and shoreline stabilization applicants.

5.0 History and Consultation

The development of the Jocassee SMP was greatly influenced by the experience of the Licensee in developing and implementing the Keowee SMP and the CW SMP. The Jocassee SMP uses the Shoreline Classifications and Lake Use Restrictions originally developed for both Keowee and CW SMPs with the addition of the Rock classification.

The CW SMP was originally developed in 1994 with major modifications to the shoreline classifications in 2001. In conjunction with the relicensing of the CW Project in 2006, the lake use restrictions and shoreline classifications were modified yet again utilizing a robust stakeholder interest-based negotiation process. Given the amount of resource agency and public participation in the development of the CW SMP over a number of years, the state resource agencies and the larger Lake Keowee Stakeholder group participating in the development of the Keowee SMP agreed by consensus to use the CW SMP as a foundation for the Keowee SMP Shoreline Classifications and Lake Use Restrictions

The Jocassee SMP was developed in the same manner as the Keowee SMP in using the previous research and consultation conducted for the CW SMP and the Lake Keowee SMP as a model. Duke Energy also used the Shoreline Classifications and Lake Use Restrictions similar to those used in the Keowee SMP, with the addition of the Rock classification.

The Shoreline Management Guidelines - an integral part of any shoreline management program - were developed initially in the mid-1980s and have been consistently applied to both the Keowee-Toxaway Project and the Catawba-Wateree Project. A major revision of the SMG was implemented on June 1, 1996, for both Projects. During the time since implementation of this revision, there have been modifications to the programs and specific criteria within the permitting programs to better protect and enhance the values associated with these two Projects. Soon after implementation of the revised guidelines in 1996, Duke Energy solicited input from stakeholders by conducting a series of focus group meetings and workshops in an effort to better understand the impact of the 1996 SMG revisions and to begin to assemble comments and input for future revisions of the criteria within the permitting guidelines. These focus groups and workshops included

stakeholders and agencies with interests in both Projects. Information regarding these meetings has been included in other Duke Energy sponsored SMP updates and is included in the Keowee SMP (see Keowee SMP, Appendix J) and Jocassee SMP (see Appendix I) to provide additional background regarding these previous opportunities for public input into the SMP.

Specifically for development of the Jocassee SMP, Duke Energy referenced a series of informational meetings with state and federal resource agencies and an array of other interested stakeholders that discussed the methodology and criteria associated with the Keowee-Toxaway and CW SMP Shoreline Classifications and Lake Use Restrictions and the SMG. Additionally, Duke Energy will provide copies of the Jocassee SMP on CD to the US Army Corps of Engineers, US Fish and Wildlife Service, South Carolina Department of Health & Environmental Control, South Carolina Department of Natural Resources, South Carolina Department of Archives and History, South Carolina Institute of Anthropology and Archaeology, Eastern Band of Cherokee Indians, Pickens County, Oconee County, the surrounding municipalities and the Executive Director of the Friends of Lake Keowee Society for a 30-day review and comment period. The draft SMP is also included on the Licensee's website located at:

<http://www.duke-energy.com/shoreline-management/jocassee.asp/>

Comments on the Jocassee SMP and the Licensee's response to comments received will be included in the Jocassee SMP to be filed with the FERC on or before December 31, 2008.

Duke Energy made the Jocassee SMP available to the appropriate resource agencies, the Executive Director of the Friends of Lake Keowee Society (FOLKS), and municipalities on CD and also via the internet to facilitate distribution of the document. The Jocassee SMP has been available since July 31, 2008, at the Duke Energy website for viewing and providing comments.

The intent of utilizing the website and CDs is to use the latest technology available to assist in the distribution of the Jocassee SMP to a variety of resource management agencies and other interested stakeholders. The availability of having the document on the website and the ability to print copies of the whole document including maps or a portion of the document should be seen as an improvement over conventional means of distribution.

The Recreation Use and Needs (RUN) study findings have been incorporated into the Jocassee SMP (see Section 3.0 and Appendix A).

5.1 Background & History: SWFHS, SMP Mapping, and 2001 CW SMP Update and the 2007 Keowee-Toxaway Approval

Fall 1996-Spring 1997: The Licensee met with representatives from the NCWRC and SCDNR to cooperatively develop the shallow water fish habitat classifications and to observe these habitats in the field.

Spring - Early Summer 1998: Evaluated shallow water fish habitat classifications that were surveyed by the Licensee's consultant with input in the field from NCWRC and SCDNR.

Early Spring – Fall 1998: A total of six meetings were held with representatives from the Licensee, USFWS, NCWRC and SCDNR to finalize the Lake Use Restrictions associated with the SMP habitat classifications.

On August 26, 1998, the Licensee provided revised SMP maps to 44 agencies for review and comments. An additional 6 municipalities and the NC Clearinghouse, inadvertently omitted from the original filing, were also provided the SMP mapping information for review and comments. The Licensee filed the two separate Catawba-Wateree mapping projects (SWFHS and SMP revisions) with the FERC as one filing. The SMP mapping revisions were provided to 48 agencies for review and comment.

Winter 1998: An additional meeting between the Licensee, NCWRC, USFWS and SCDNR was conducted to finalize the Lake Use Restrictions associated with the Impact Minimization Zone (IMZ) SMP classification.

Spring 1999: The Licensee provided information regarding an amendment to the original and supplemental filings of the SMP mapping revisions to the 51 identified SMP resource agencies. The Licensee submitted the amendment to the Commission on May 27, 1999.

Early Summer 2000: To facilitate the involvement of stakeholders in the development of the SMP Update for the Catawba-Wateree Project, the Licensee formed a focus group. The goals of focus group sessions were twofold: (1) to provide an opportunity for the Licensee to share information on how the SMP Update is being developed; and (2) to provide a mechanism for the focus group participants to provide input into the SMP Update. The Licensee developed a comprehensive list of potential stakeholders representing fish and wildlife, recreation and safety, economic development, water quality, and preservation and land use issues. Over fifty representatives of these entities (see Appendix I for a list of participants) were invited to the Focus Group session on May 30, 2000. Those attending included representatives of the U.S. Fish and Wildlife Service (NC), the NC Wildlife Resources Commission, the SC Parks Recreation and Tourism, Burke County Planning Director, the Catawba River Foundation, the Lake Wateree Homeowners' Association (WHOA), the Catawba-Wateree Water Users Association, Mecklenburg County Environmental Protection, Charlotte-Mecklenburg Utilities Department, NC Department of Parks and Recreation, the Western Piedmont Council of Governments, Crescent Resources, and others. The focus group session was recorded and copies of the presentation materials were provided to those who were invited but were not able to attend.

Fall 2000: A second Focus Group to receive input and comments on the draft CW SMP was conducted, using the previously identified lake stakeholders, on October 6, 2000, (see Appendix I for a complete list of all participants of the October 6th meeting.)

2004 – Spring 2006: Study teams comprised of resource agencies and other interested stakeholders reviewed and modified the Catawba-Wateree 2001 SMP Update map classifications and lake use restrictions and the Shoreline Management Guidelines as part of the process for relicensing the Catawba-Wateree Project. These meetings included agencies and stakeholders representing both North Carolina and South Carolina. There were a total of 30 meetings specifically related to the CW SMP and SMG conducted over this timeframe (see Appendix I for a list of meeting dates and team participants.)

Fall 2005: A series of meetings with resource agencies and interested lake stakeholders specifically related to Lake Keowee were held for the purpose of providing input into revisions of the classifications and lake use restrictions that had been developed as part of the relicensing process for the Catawba-Wateree Project and used as the foundation for the Shoreline Management Plan mapping work for Lake Keowee. These meetings occurred on September 16, 2005; October 6, 2005; and October 19, 2005 and November 15, 2005.

During each of these meetings, the Licensee made presentations to the stakeholder teams to introduce the concept of shoreline management planning and the important components of a plan, especially the development of mapping to identify the important habitat types, and existing and future uses along the shoreline of Lake Keowee. The Licensee also explained the usefulness of utilizing the existing classifications and use restrictions developed as part of previous SMPs and their applicability to the shoreline of Lake Keowee. Explanation and refinement of the classification criteria were also accomplished in field site visits with the resource agencies, specifically, the SC Department of Natural Resources (SCDNR) on September 7, 2005, and biologists from both the SCDNR and US Fish and Wildlife Service on October 11, 2005. In order to develop the Jocassee SMP as efficiently and in as timely a manner as possible, the Licensee proposed utilizing the existing information developed as part of the CW SMP and Keowee SMP as the foundation for mapping on Lake Jocassee to allow field inventory to begin in early May 2008. This issue was presented at each of the stakeholder meetings; the stakeholders agreed in consensus with this approach.

5.2 Background & History: Keowee Shoreline Management Guidelines

Fall 1987: The Licensee conducted an initial inventory of all existing Private Facilities (e.g., piers, slips, boathouses, etc.) on Lake Keowee and Lake Jocassee. There were approximately 800 facilities on Lake Keowee and approximately 20 facilities on Lake Jocassee. The Licensee developed and distributed a brochure, “Living with Our Lakes,” describing the policies and requirements for facility construction, shoreline stabilization and excavation. This information was provided to all those requesting lake

construction/stabilization/excavation activities within the Project boundary of the Keowee-Toxaway Project and Catawba-Wateree Project.

1988: The Licensee entered into two separate regional General Permits with the US Army Corps of Engineers (Charleston District) and the SC Budget and Control Board (implemented by the SC Water Resources Commission and later issued and implemented by SC Department of Health and Environmental Control.) These general permits provide a consistent set of criteria for review and approval of lake use construction/stabilization/excavation activities and apply to Lake Keowee, the Catawba-Wateree Project lakes and other Project lakes in South Carolina. Typically, these general permits are renewed on a 3-5 year basis.

circa 1990: The Licensee revised the initial permitting criteria based upon changing development patterns, regulatory requirements, business needs and lessons-learned since implementation of the initial permitting programs in 1987. The revised policies and requirements were described in a brochure, "Safe and Attractive Lakes Are Everyone's Job." This information was provided to all those requesting lake construction/stabilization/excavation activities within the Project boundary of the Keowee-Toxaway Project and Catawba-Wateree Project lakes.

1994: The Licensee revised the existing policies and requirements on January 31, 1994, and again on October 1, 1994.

Summer 1996: The Licensee revised the existing policies and requirements and included this information in a more comprehensive document referred to as the Shoreline Management Guidelines. Shoreline Management Guidelines were revised and implemented on June 1, 1996, and were in place with only minor modifications until replaced with the current revised guidelines on September 1, 2006. These guidelines included application procedures, criteria, caution statements and consequences for violations for each of the six lake use permitting programs (i.e., Commercial Facilities, Private Facilities, Shoreline Stabilization, Excavation, Conveyance, and Miscellaneous Reservoir Uses.)

2004 – Spring 2006: Study teams comprised of resource agencies and other interested stakeholders reviewed and modified the Catawba-Wateree 2001 SMP Update map classifications and lake use restrictions and the Shoreline Management Guidelines as part of the process for relicensing the Catawba-Wateree Project. These meetings included agencies and stakeholders representing both North Carolina and South Carolina. There were a total of 30 meetings specifically related to the SMP and SMG conducted over this timeframe (see Appendix I for a list of meeting dates and team participants.)

Fall 2005: A series of meetings with resource agencies and interested lake stakeholders specifically related to Lake Keowee were held for the purpose of providing input into revisions of the Shoreline Management Guidelines that had been developed as part of the relicensing process for the Catawba-Wateree Project. These meetings occurred on

September 16, 2005; October 6, 2005; and November 15, 2005 (see Appendix I for a list of meetings and participants.)

Spring 2006: The Licensee, along with representatives from the SC Department of Natural Resources and the SC Department of Health and Environmental Control, participated in a forum on March 2, 2006, sponsored by the Friends of Lake Keowee Society. This forum allowed each of the organizations represented to provide information of particular importance to Lake Keowee and also allowed those in attendance to develop questions that were posed to the participants by a moderator (see Appendix I for a scanned version of the forum sign in sheet.)

Summer 2006: The Licensee sponsored a series of meetings for lake construction contractors and Open House-type forums specifically targeted to Lake Keowee and the other lake regions on the Catawba-Wateree Project. These contractors meetings and Open Houses occurred during May and June, respectively. A total of six of these events were conducted with two of those six specifically dedicated to Lake Keowee. These events occurred on May 23, 2006, and June 6, 2006 (see Appendix I for a list of attendees for all six of these events.)

November 2006: The Licensee will sponsor an additional Open House-type forum at the Oconee Nuclear Station's World of Energy on November 2, 2006. The public is invited to learn more about development of the SMP and its components, have the opportunity to discuss issues with individual members of the Lake Services team and its consultants, and provide comments on the overall plan or any component of the plan.

May 2008: The Licensee sponsored an Open House at the Oconee Nuclear Station's World of Energy to provide the opportunity for stakeholders and Resource Agencies to provide input to the Lake Services team on the Jocassee SMP.

June 2008: The Jocassee SMP Draft Maps were made available for agency and stakeholder commenting and review on Duke Energy's website.

July 2008: The entire Jocassee SMP was made available to the agencies and stakeholders for commenting and was also posted on Duke Energy's website.

6.0 SMP Distribution

The primary means of distributing the Jocassee SMP will be via the Internet. The Licensee will provide written notification to the municipalities in the vicinity of the Project or whose boundaries or extra-territorial jurisdictions adjoin the Project boundary, the Executive Director of the Friends of Lake Keowee Society (FOLKS), and the resource agencies that the SMP is available for review via the Internet at: <http://www.duke-energy.com/shoreline-management/jocassee/.asp>. Other interested stakeholders will be notified of the availability of the Jocassee SMP by releases to local media outlets and the Licensee's website.

The Licensee will distribute copies of the SMP in a CD-ROM format to resource agencies, the Executive Director of the FOLKS, and municipalities. Others may request a copy of the SMP on CD for a nominal fee. Requests for hard copies of the complete SMP will be handled by providing a CD copy from which copies can be printed. The Licensee will provide hard copies of the SMP Classification Maps to the resource agencies upon request and will be available to others through the Licensee's GIS consultant for a nominal fee. Those interested in hard copies should contact the Licensee at 1-800-443-5193 for information regarding map availability.

The Jocassee SMP will be finalized in a two-step process. The first step will involve distribution and notification of the availability of the draft Jocassee SMP for review and comment. This will be accomplished by making the draft Jocassee SMP available to resource agencies, municipalities, and other interested stakeholders on CD and/or the Internet for a 30-day review and comment period. The second step will involve the consideration by the Licensee of comments submitted and revision of the SMP as appropriate. The Licensee will then file the final Jocassee SMP with the FERC on or before December 31, 2008. In the final Jocassee SMP that is filed with the Commission, the Licensee will address the comments provided during the 30-day review period including providing Project-specific reasons for comments that were not incorporated into the Jocassee SMP filed with the FERC.

7.0 SMP Implementation Process

The Licensee began utilizing the SMP classification maps and lake use restrictions as the preliminary mapping data became available. This was necessary to ensure that the Licensee was fulfilling its obligations under the License to protect and enhance the Project's scenic, recreational, cultural and other environmental values. Complete lake use permit applications mailed to the Licensee and postmarked before June 23, 2008, will be processed under the Land Use Article (Article 49) standard in the Project license, and the revised Shoreline Management Guidelines (SMG) implemented September 1, 2006.

8.0 Additional Management Activities

The Licensee has undertaken numerous management activities since implementation of the lake use permitting guidelines in 1987. These activities include but are not limited to:

- Submittal of the Excavation Programmatic Agreement (November 15, 1998) to ensure compliance with the license for activities not covered under the Land Use Article (Article 49). The agreement was developed in consultation with the resource agencies and assured the Licensee's excavation permitting process complied with all applicable Federal, State, and local regulations. This PA was the basis for the criteria included in the current Shoreline Management Guidelines for the Excavation Program.

- Conducted a series of Focus Group meetings (July 28, 1997, August 26, 1997, September 30, 1997, and October 14, 1997) to receive input into revisions of the Shoreline Management Guidelines from a representative group of lake stakeholders on both the Keowee-Toxaway Project and the Catawba-Wateree Project. (see Appendix I).
- Ensured permitted structures are maintained in good repair and do not pose a hazard to public safety and navigation through implementation of the Structure Renovation Program (1995-Present) (see Appendix G).
- Developed the Procedure for Addressing Challenges to Shoreline Management Plan Mapping Accuracy (see Appendix H).
- Applicant prepared environmental assessment information (see Appendix J).
- Developed a comprehensive website found at: (<http://www.duke-energy.com/environment/water-quality/shoreline-management.asp>) to provide readily available information on the SMP and SMG for the Nantahala, Catawba-Wateree and Keowee-Toxaway projects.
- Coordinated with the SC Department of Health and Environmental Control (SCDHEC) in the development, revision and implementation of the SCDHEC Regional General Permit (see Appendix K).
- Publication and distribution of the Access Book (Lake Facts and Maps) which provides lake access information of all access areas and maps of each lake (see Appendix F). And availability of this information via the website at: (<http://www.duke-energy.com/lakes/facts-and-maps.asp>).
- Distribution of the Private Facilities permit application package containing miscellaneous safe boating and water safety information available through Duke Energy's membership in the National Safe Boating Council.