

## Catawba-Wateree Hydroelectric Project (FERC No. 2232)

**Study Plan Name:** Shoreline Management Plan (SMP) revision

**Study Plan Designation:** SMP 01

**Study Short Description:** Update the shoreline classification maps in the SMP to account for lakeward development (e.g. piers, shoreline stabilization, intakes, commercial marinas, etc.), navigational hazards identified by the wildlife resource agencies and additional data gathered by other relicensing studies.

**Applicable Hydro Projects/Developments:** All Hydro Developments of the Catawba-Wateree Project (Project)

**Prerequisite Study Designation:** Aquatics 02, 03, 06 and 07; Cultural 01 and 02; Terrestrial 01, 02, 03; 04; and 06

The purpose of this document is to describe the study scope, methodology and uses for the results. Previous versions of the study scope document have been reviewed and discussed by the resource agencies and other members of the Recreation and Shoreline Management Resource Committee or Study Team and based on these discussions appropriate methodologies have been added. This document is intended to be the final Study Plan for SMP 01.

### **I. Study Objective**

Utilize the most current data available (e.g. results of the Aquatics 02 study plan, Recreation 01 study plan, digital aerial photography, etc.) by building upon the foundation that was set by the SMP that has been in effect on the Catawba-Wateree Project since July 2001 to guide decisions regarding all types of access within the Project boundary. Continue to develop the SMP so that it is a tool that can be used by Duke Power in coordination with Company policies and permitting guidelines that benefit the Project. Provide a factually based document that can and will be used by Duke Power, the resource management agencies and the Federal Energy Regulatory Commission (FERC) for reviewing requests for utilization of the Project and its resources.

### **II. Basis**

The purpose of the SMP is to provide for public and private access without destruction of the Project's natural resources or without compromising the Project's primary function, which is the production of electricity. Licensees have a responsibility to ensure that activities that are permitted within the project boundary are consistent with project license requirements, purposes and operations. The 2001 SMP Update, because it was filed during the term of the existing license, is a factual and established comprehensive plan to manage the multiple resources and uses of the shoreline of the Project. The proposed SMP update that will be conducted as part of relicensing will focus primarily on refining the classification maps. This will include evaluation of the existing shoreline classifications and the lake use restrictions associated with these classifications and possible development of revised classifications/lake use restrictions. The study plan team will consider potential lake use restrictions that include offsets along the shoreline for specific lake use permitting activities adjacent to identified critical habitat areas (e.g.

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Environmental, Natural Areas and Impact Minimization Zones). These offset requirements may also be included in revisions to the Shoreline Management Guidelines (SMG). The revised SMP maps along with the other information (e.g. cultural resource, fisheries, water quality, recreation, etc.) collected as part of relicensing, will continue to enhance the information base accumulated in developing previous SMP's for the Project. The information collected as part of this study plan (i.e. SMP 01) will be included in and compatible with the existing Geographic Information System (GIS) developed for previous versions of the mapping component of previous SMP's. Additionally, information from various other studies will be included in additional data layers in this GIS. Information (excluding proprietary information (e.g. cultural resource site locational data)) included in the GIS will be available through Duke Power in accordance with the Duke Power Public Data Release process. This information and the associated GIS will continue to be a vital tool for use by the licensee, resource management agencies, adjacent property owners and the FERC for review and consideration of approved activities within the Project. Locational information (point data) will be included of navigational hazards identified by the state wildlife resource management agencies. Significant shallow areas as defined by the Natural Area classification definition will be re-evaluated to ensure the entire extent of these shallow areas are identified where they occur in association with the project boundary. Only those areas identified with buoys by the wildlife resource agencies will be identified within the reservoirs. A Final Environmental Assessment (FEA) for the C-W 2001 SMP Update has been prepared that addresses the potential environmental effects of implementing the existing SMP.

### **III. Geographic and Temporal Scope**

The study area for revising the classification maps will include the entire existing Project boundary shoreline and potential navigational hazards identified by the wildlife resource agencies within the reservoirs. Acquisition of aerial photography to delineate development along the shoreline within the Project boundary is best if obtained during the leaf-off (Nov.-March) timeframe. The digital aerial photography will include the entire Project boundary, the regulated river stretches below the Bridgewater, Oxford, and Wylie developments, and extend up to one-quarter mile landward of the Project boundary. This additional aerial photography coverage will provide a visual representation of the development activity that has occurred outside but in the vicinity of the Project. This information will provide an indication of the level and extent of land disturbing activities adjacent to the Project when compared with the aerial photography obtained in 2000.

### **IV. Summary of Existing Data**

The digital aerial photography of the Catawba –Wateree Project 2001 SMP Update utilized a series of individual photographs taken from multiple flight lines of each lake and the riverine portions between lakes to produce a wide area orthomosaic that appears as a seamless image. A wide area orthomosaic comprises imagery from multiple image frames that have been orthorectified to a digital elevation model (DEM), georegistered, 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 specifications for the photography are as follows:  
Digitally Orthorectified wide area mosaic; True color.  
Exceeds National Map Accuracy Standards at a 1:10,000 scale.  
3ft. ground sample distance (GSD), finely gridded with 24-bit color.  
Registered to North Carolina State Plane coordinate system, NAD83.

Software Used:  
Windows NT Arc/Info 8 to perform all GIS editing of data.

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MrSid (Multi-Resolution Seamless Image Database) to compress images for viewing through ArcView. ArcView 3.2 for viewing of images.

### V. Methodology

#### **SMP Mapping:**

Once the updated digital aerial photography is obtained, the current classification of the Project boundary will be depicted with the updated aerial photography as a backdrop. Duke Power Lake Management personnel will analyze the current classifications and: 1) delineate any discrepancies as a result of shoreline development within the Project boundary by identifying the type and extent of the development along the shoreline; 2) delineate Duke Power hydro properties; 3) delineate adjoining properties that are in public ownership or otherwise preserved; 4) correct any known mapping errors; 5) identify by point data the location of any potential navigational hazards identified by the wildlife resource agencies; and 6) identify other areas for special consideration as a result of other relicensing studies. This information will be transferred to a set of base maps of the Project boundary. The base maps will be quality assured by random field inspection and by comparison with permitting databases.

Once revised base maps are produced and the data entered into the GIS, then a comparison of development activities can be undertaken to evaluate the amount and extent of the various types of development within the Project boundary. Comparison of the 2000 and the newly acquired aerial photography will provide a visual reference for the level and extent of land disturbing activities within one-quarter mile of the Project boundary. The study plan team will provide input into other areas along the shoreline for special consideration and protection/enhancement activities as a result of the other relicensing studies. The study plan team and stakeholder teams will negotiate any additional protection/enhancement activities and lake use restrictions associated with these areas.

#### **Buildout Scenarios:**

Duke Power will utilize the shoreline classifications developed for the 2001 SMP to account for construction activities (i.e. Existing Uses classifications) and undeveloped (i.e. Future Uses classifications) shoreline within the Project boundary. Utilizing this current information, Duke Power will investigate three (3) scenarios based upon varying levels of potential lake use permitting activities associated with the current shoreline classifications. The three (3) scenarios include and are described as follows:

Scenario 1 -No private access from shoreline classified in a Future Use.

Scenario 2 –Complete instantaneous build out at the highest level allowed by the SMP for private access from shoreline classified in a Future Use.

Scenario 3 –Complete build out based on the level and type of private access the Project has experienced since the 2000 data was acquired.

The study team will be provided the reasonable assumptions (e.g. average length of shoreline per private lot, maximum numbers of slips per length of shoreline as required by the current SMG, etc.) that must be made for each scenario. Although the evaluation of impacts that results from investigation of these three (3) scenarios will be limited to recreational carrying capacity impacts, other impacts may be identified from other studies and potential mitigation and enhancement activities, including but not limited to, land preservation or changes to lake use restrictions will be considered as a point of negotiation in development of a final stakeholder team agreement.

#### **Land Use and Zoning:**

The existing and newly developed GIS will be available to the interested counties and municipalities bordering the project boundary to enable them to produce a comparable GIS-based map that includes land

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use and local zoning classifications adjacent to the Project boundary. This map and any delineated inconsistencies with the allowable Future Use classifications of the SMP will be utilized as a point of negotiation in development of a final stakeholder team agreement.

### VI. Schedules and Required Conditions

Revised digital aerial photography of at least 3 ft resolution (preferably leaf off) will be obtained no later than Winter of 2003-2004. Transfer of the updated classification data to the GIS will be accomplished by May 27, 2005. Draft versions of the classification maps and draft lake use restrictions associated with the areas for special consideration, and build out scenario evaluation information will be available to the State Relicensing Teams (SRT) and the Advisory Groups (AG) by June 24, 2005. Incorporation of the existing and future use development classifications along with the shallow water fish habitat and terrestrial habitat data layers into a single hardcopy map document will be completed by August 1, 2005. Final revisions to the classification maps and lake use restrictions as a result of stakeholder input will be complete by May 31, 2006.

### VII. Use of Study Results

The study plan will result in an update of the development activities that have taken place within the project boundary since the previous versions of the SMP including the 2001 SMP Update have been in place. This update of the classification maps in addition to inclusion of the habitat data collected as part of other relicensing studies (i.e. Aquatics 02, 03, 06 and 07; Cultural 01 and 02; Terrestrial 01, 02, 03, 04 and 06) and potential navigational hazard point data will build upon the existing SMP data and further enhance the SMP Maps as a tool to be used by Duke, the resource management agencies, adjoining property owners and the FERC in evaluating the impact of additional lake use requests. The mapping information will provide the baseline data to allow members of the study team and the relicensing teams (SRT's, RC's, and AG's) to provide input and make recommendations into any additional areas for special consideration and protection.

### VIII. Study Participants

	<u>Name</u>	<u>Organization</u>	<u>Phone #</u>	<u>E-Mail</u>
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**IX. List of Attachments**

**X. List of References**

- 2001 SMP Update (CD)
- Guidance for Shoreline Management Planning at Hydropower Projects (pdf file)