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November 13, 2003

Mr. Mark Oakley
Duke Power, a Division of Duke Energy
P.O. Box 1006
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Charlotte, NC 28201-1006

Re: Catawba-Wateree Hydroelectric Project, FERC No. P-2232

Dear Mark,

The Catawba-Wateree Relicensing Coalition (CWRC) originally submitted comments on Duke's First Stage Consultation Document in a letter dated May 30, 2003. These comments were in the form of study requests. This letter is in response to Duke's proposed study requests that were developed after receiving public comment on the First Stage Consultation Document.

The CWRC appreciates this opportunity to re-frame certain study requests, and add some further specific requests to studies to be undertaken by Duke Energy. We understand that you are open to discussion and clarification of the study scope, methodology, and to adjusting them as necessary in order to comply with your obligations under the Federal Power Act. We also appreciate the comprehensive and inclusive work Duke has undertaken thus far in this important phase of the relicensing process.

However, we have two general concerns at this juncture. First, Duke distributed the final draft study plan to all stakeholders on Friday, November 7, and it set a deadline of Friday, November 14 for comment, preparatory to publication of the final study plan on November 21. That turnaround period for review and comment is inadequate, given the complexity of this project's operations and impacts¹. Seeking to limit stakeholders to five days for review and comment would substantially, and unnecessarily, increase the risk that unresolved disputes would interfere with the implementation of the study plan during the subsequent phases of consultation. Second, the study plan contains general descriptions of many of these studies. As a result, they are not ready for final comment or implementation. FERC's rules require "detailed descriptions" of data, method, and intended use of study results, as the result of this first-stage consultation. 18 CFR § 4.51(b)(1)(vii).

The following are intended to be in addition to, or to provide clarification of, requests and re-frames made at the last series of Relicensing Team meetings, and in other discussions with the Duke Relicensing Team.

We organize these comments in two parts. Part I reframes our May 30, 2003 study requests as appropriate in response to your August 12th matrix, Column F ("Comments"). Part II comments on the draft study plan.

¹ Study requests were filed on or about May 30, 2003, nearly six months ago. Duke prepared, and those stakeholders participating in resource groups subsequently discussed, prior drafts of the study plan. However, the November 7th final draft is the first that, to our knowledge, has been distributed to all stakeholders with a formal request for comment.

PART I. REFRAME OF MAY 30, 2003 STUDY REQUESTS

As Duke requested, we reframe our study requests which your August 12th matrix categorized as “Further Requester Action Needed.” We do so in a collaborative effort to resolve disputes that may otherwise affect the implementation of the study plan. However, we would like additional clarity regarding the future process for disputed studies. Under FERC’s rules, Duke must undertake all studies that are reasonably necessary for the licensing decision; and the license application must “fully” explain any decision not to undertake study requests requested by resource agencies. *See, e.g.*, 18 CFR § 4.38(b) (5) (v), (c). Since Duke and the Coalition, and other stakeholders interested in a given reframed study may disagree whether that study is reasonably necessary for the licensing decision, we respectfully request a continuing collaborative effort to resolve any such dispute, in order to prevent the necessity for a referral to the OEP Director under 18 CFR § 4.38(b) (5), or a new study or information request in the second-stage consultation.

As a general matter, many of your comments supporting reframe involve two legal issues. First, Duke objects to studying certain past or continuing impacts of the original license. Your matrix states that FERC considers existing conditions to be the environmental baseline for this proceeding. Of course, we agree. Our requests instead go to the cumulative impact of the new license, which (as defined in 40 CFR § 1508.7) includes the past and continuing impacts of the original license. In other words, FERC will make a decision in this proceeding whether to mitigate the blockage of fish passage or other similar impact that, while caused by the original license, continues today. While we will not seek in the settlement to restore pre-project conditions, FPA section 10(a) plainly authorizes FERC to enhance the environmental baseline. Second, your matrix objects to study requests involving facilities or activities of third parties, even where the third party has a substantial nexus with the project lands or waters. An example is Crescent Resources which, as another division of Duke Energy, owns lands originally acquired by Duke Power for the purpose of the original license. Many of these lands are proximate to project works and may be useful for mitigation of otherwise unmitigated project impacts. Another example is discharge of pollution by recreational users, lessees and others who use project lands or waters with your permission. Again, cumulative impact is defined to include the synergistic impact of the licensee and such a third party. We are just asking Duke to design a study plan which includes indirect and cumulative impacts, as well as direct, since all are potentially relevant to our settlement negotiation or FERC’s decision.

Re-frame Request 01; Reference numbers: 27, 32, 34, 36, and 37

CWRC 27 - Floodplain Inundation Evaluation.

We do not believe a reframe is needed. The Floodplain Vegetation Assessment (Terrestrial 02) and Instream Flow Assessment (Aquatics 04) studies can be appropriately designed to address the information needed to assess floodplain inundation. Specific comments to those plans are found below.

CWRC 32 - Sediment Regimen and Sediment Transport Studies.

We do not understand the need for a reframe, except that Duke may consider this study as a request for assessing pre-project conditions, which it is not. There is no doubt that project operations affect the sediment regimen and sediment transport. It is likely these impacts will continue during future operations. Project operation has resulted in sediment loading at reservoir headwaters and where tributary streams flow into the reservoirs. Effects of the project on sediment movement and deposition is information needed to determine how the project affects boating and fishing recreation, stream and wetland habitats, and water quality of the reservoirs and tributary streams. Because project reservoirs trap

sediments and block sediment transport, stream segments below project dams are sediment starved which increases stream bed scouring, availability of suitably substrates for spawning and stream bank erosion.

Of particular interest are Project effects on substrate requirements for spawning fishes, including shortnose sturgeon (a federally endangered species) found downstream of the Project, native fishes of the Catawba River below Lake Wylie, trout found in the Bridgewater section; and freshwater mussels. We continue to recommend this study be conducted.

CWRC 34 - Evaluate River Flow Unimpaired by Project.

At our October 17, 2003 meeting with Duke Energy representatives, it was agreed that this reframe request was based more on semantics rather than the objectives of our original study request. We reframe this study by replacing the word “unimpaired” with “unregulated” (i.e. Evaluate River Flow Unregulated by Project). To simulate unregulated conditions, project operations must be analyzed under simultaneous run-of-river operations at every dam while maintaining constant lake levels (i.e. no storage) at all reservoirs. With this rewording, Duke should no longer consider this study an analysis of pre-project conditions which was a concern expressed at our meeting.

CWRC 36. Habitat Enhancement Study.

We believe Terrestrial 05 would benefit from two additional changes to the current study plan. Terrestrial 05 should be expanded to estimate how shoreline habitat loss associated with new and expanded access areas, pier permitting, shoreline stabilization and other permitted activities within or in close proximity of the project boundaries will affect bird populations. Secondly, the affect of current and future recreation activities, such as boating usage, on migratory and wading bird populations should also be assessed. This second component could be addressed at least in part through a literature review.

CWRC 37. Flow Regime Study.

Recreation 02 provides a good plan for examining optimal flow ranges for a variety of recreational activities. However, we see no mention of how the safety of recreationists, particularly below the hydroelectric plants will be addressed as originally recommended. Of particular concern are rapidly rising water levels as peaking operations occur. Duke needs to study to how operational alternatives, e.g. ramping rates, capping peak flows, run-of-river operations, would protect public safety.

In addition, we recommend that Duke study options for warning people recreating in tailrace areas below dams to impending water releases. An examination of what other utilities have employed to warn recreationists to improve safety conditions should be examined. A stakeholder or focus group approach should be employed to recommend the implementation of particular safety improvements for specific tailrace areas.

Another area pertaining to safety that does not appear to be addressed in any current studies deals with sand and sediment bars that exist within the project boundary and pose potential hazards to boaters. These areas should be identified and mapped so areas eligible for no-wake buoys or similar types for safety markings can be installed. We recommend that Duke work closely with the NC WRC, SC DNR and other interested parties to identify these areas and develop plans for improving boater safety.

CWRC 38. Catawba and Wateree River Corridor and Tributaries Public Access Study.

We are pleased that Recreation 01 has been expanded to include developing an economic assessment of recreation associated with this project. We are also pleased that Recreation 01 now explicitly states that both water and land-based recreation uses and needs will be evaluated.

We are concerned with the lack of current access along the riverine sections of the Catawba-Wateree. We acknowledge that Recreation 01 is structured to examine present recreation demand in these areas as well as future demand. We assume that future demand estimates will be derived largely from projections based on current usage. However, we have concerns that the current lack of access along these riverine areas, which influences usage, will contribute to an artificially low estimate for future recreation needs along these same riverine areas. We request that Duke Power examine the number, size and types of facilities currently present on several comparable rivers to determine if existing facilities along the Catawba-Wateree are adequate. If better public access and recreational facilities along the riverine portions of the Catawba-Wateree are found to be needed, then necessary improvements should be determined based on current and future demand estimates.

CWRC 41. Aquatic Weed and Mosquito Control/Eradication Program.

We are aware that Duke Power has a program currently in place that includes surveying aquatic plant populations and cooperatively working with state agencies to manage noxious aquatic plant infestations. Our primary concern is that over time one or more state agencies may decide they can no longer allocate funds for aquatic plant management on the Catawba-Wateree lakes. Should this happen, this would leave the status of the current program in doubt. Because many of these exotic plant populations when left unchecked can impede recreation, impair or reduce habitat for desirable fish and wildlife species, and affect public safety by providing habitat for snails and mosquitoes that transmit diseases to humans, this is an important issue. Duke should develop a plan that would address how present plant management activities would continue in the future in the absence of state agency participation.

Re-frame Request 02; Reference numbers: 03, 18 Shoreline Management Plan & Guidelines

These requests are combined and are re-framed as follows:

We request a study be conducted which evaluates alternatives to the current Shoreline Management Plan, including its classification system and guidelines. The current plan is resulting in the majority of shoreline miles being developed with hard seawalls and/or rip rap excluding terrestrial and aquatic species from some spawning and foraging areas. In addition, the destruction of natural buffers contributes to degradation of water quality and exacerbates soil erosion and sedimentation. Projections for population growth in the region call for increased shoreline recreation facilities, and the need to protect viewsheds. Therefore continuing this aspect of project operations will result in increased negative impacts.

If the shoreline is fully developed according to current classifications, guidelines and enforcement, there will be a continuing negative impact on fish spawning habitat, terrestrial and riparian habitat, water quality, aesthetic value and potential lands available for recreation. We request a study be done to assess current impacts, and a trend analysis to predict future impacts if no changes are made to the SMP. This study should be done in conjunction with other studies involving fish and wildlife, recreation, cultural resources and water quality.

The second phase of the study is an evaluation of scenario alternatives to determine revisions that may be necessary to the SMP in order to protect water quality, fish and wildlife habitat, potential recreation lands and other non-power values.

This study relates to direct impacts of project operations since the creation of and operation of the SMP are part of the licensee's obligations and are part of its operations inside the project boundary. Licensee has control over shoreline activities and construction within the project boundary. Alternatives to how this control is used should be evaluated to improve project resources.

Re-frame Request 04; Reference number 15 – Regarding Buffers

Pursuant to 18 C.F.R. 4.51(f)(6)(iv), the applicant must prepare a statement including an analysis of costs and other constraints to providing a buffer zone around all or any part of the impoundment for the purpose of ensuring public access to project lands and waters, and protecting the recreational and aesthetic values of the impoundment and shoreline.

Therefore we request that Duke conduct a study which will determine the existence of shorelands suitable for buffer areas, and the feasibility of either acquiring them, gaining conservation easements on them, or otherwise devising methods for preserving them in as natural a state as possible.

The licensee has direct control over construction within the project boundary which can provide at least a minimal buffer up to the full pond level. In addition, its decisions regarding construction activities within the project boundary predictably influence upland activities. Further, the licensee has access to large tracts of undeveloped lands through its subsidiary, Crescent Resources, and is able to acquire those lands through internal corporate transfers if needed for project operations which may include fulfilling license obligations. Finally, Duke's obligation to protect the non-power resources of the project, including access to the project and wildlife habitat, may require Duke to re-purchase lands that abut the project and are now necessary to fulfill the duties of its license.

Re-frame Request 06; Reference numbers: 12, 19, 21, 24, 25, and 40

CWRC 12 - Determine sources of non-point pollution, especially nutrients and sediment.

Water Quality 02 will use the CE-QUAL/W2 model to provide information about reservoir water quality. It will be necessary as part of this modeling exercise to determine allochthonous and autochthonous sources of loading. We request Duke sample reservoir tributaries for nutrients (TP, O-PO₄, TKN, NO₃-NO₂, NH₄), major cations (Na, K, Ca, Mg), major anions (HCO₃-CO₃, CL, SO₄, Si), solids (TOC, TSS, AFDW, turbidity, Chlorophyll a), metals (Al, Cu, Fe, Hg, Mn, Pb, Zn) and oxygen demand (BOD₅, COD) in order to determine allochthonous loading and to facilitate calibration of the CE QUAL/W2 model with real data as part of the Water Quality 02 Study.

CWRC 19 – Relationship between shoreline classification and upland development.

The SMP is currently part of the license and is therefore a component of project operations. It allows over 80 % of some reservoir shorelines to be developed. During the relicensing process, the licensee must evaluate impacts of project operations. We request a study that assesses the impacts of increased shoreline development on terrestrial, wetland and riparian habitats. We also recommend analysis of recreational effects on terrestrial, wetland and riparian habitats, as well as the effects of the SMP on future recreational opportunities and the quality of those experiences.

CWRC 25 – Analysis of methods used to acquire lands for project operations.

In the Pit River Relicensing, the agreed upon studies include in the cultural resources studies, CR-4 History of Early Project Land Transactions. Thus, other licensees have found that the history of land transactions is certainly within the scope of relicensing. We request a third cultural resources study to report on the history of early project land transactions.

PART II. ADJUSTMENTS AND CLARIFICATIONS TO DRAFT STUDY PLANS

I. Terrestrial

Terrestrial 02 – Floodplain Vegetation Assessment.

This draft study plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan. If properly designed, this study would address the information needs we addressed in CWRC 27 - Floodplain Inundation Evaluation. Specific comments follow:

- (1) Study objective 3 needs to be restated because this study should be designed to provide *quantitative* not qualitative information. Additionally it is not only the existing hydroperiod that needs to be addressed, but also the full extent of hydrologic regimens possible under alternative project operations, including run-of-river operations. Study objective 3 should be worded, “*Quantify* the relationship among floodplain vegetation, the hydrologic regimen under existing project operation and under alternative operations.”
- (2) We appreciate the addition of the Old Catawba River channel under the study scope.
- (3) Task 1 of the Methodology section does not list several counties in South Carolina that need to be studied. These are Chester, Fairfield, Richland and Sumter counties. Richland and Sumter counties include the majority of the Wateree River floodplain, which is the most extensive floodplain area affected by project operations.
- (4) Task 1 of the Methodology section lists “wildlife” habitat assessment, but does not include assessment of floodplain habitat for fish and other aquatic organisms. This assessment needs to be included because when inundated, floodplains provide important spawning, nursery and foraging habitat for aquatic fauna. Floodplain habitat assessments for aquatic fauna need to be included as part of the final study plan.
- (5) Task 1 of the Methodology section states that signs of inundation (e.g. silt stained leaves and rafted debris) will be used to determine the range of operational influence. While such signs may be useful in scoping study locations, they are not dependable for developing the quantitative relationship needed for assessing the effects of current operations and potential future operations. This study must determine the wetted perimeter versus discharge relation and inflection points for various floodplain cross sections to develop a quantitative relationship that can be used in evaluating the effects of different flow scenarios for future project operation alternatives.
- (6) Task 2 of the Methodology section is not clear as to the location, number and selection criteria to be used for “representative transects” nor how inundation magnitude, duration and frequency will be determined. How these and other study components are conducted will make the difference between a flawed study and one that is adequate to provide needed information. The final study plan must provide detailed information as to how transects will be selected and how analyses will be conducted.
- (7) Task 2 of the Methodology section states that only one 10 meter radius plot will located on each transect for gathering information on tree and shrub species. One plot will certainly not be adequate to collect this information for the 5 floodplain zones to be covered by each transect. The final study plan should state that multiple 10-meter plots will be established for tree and shrub species within each floodplain zone and must provide detailed information as to how plots will be selected and how analyses will be conducted.

(8) Task 2 of the Methodology section states that “nested plots of four meters radius” and “a one meter radius plot” will be used to sample shrubs and herbaceous vegetation. As stated in (7) above, this is not be adequate to collect this information for the 5 floodplain zones to be covered by each transect. The final study plan should state that multiple four-meter plots and one-meter plots will be established within each floodplain zone and must provide detailed information as to how plots will be selected and how analyses will be conducted.

(9) Task 3 of the Methodology section needs to include run-of-river operations in its assessment of how potential future operation scenarios will affect floodplain areas.

II. Aquatics

Aquatics 01 – Fish Community Survey and Assessment.

This draft study plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan. Specific comments follow:

(1) It is our understanding from stakeholder meeting discussions that the “bypass reach downstream of Fishing Creek” is synonymous with the Great Falls bypass reach. To avoid future confusion, we recommend consistently referring to this segment as the “Great Falls bypass” as done in Aquatics 04.

(2) Task 1 of the Methodology section does not identify the methods or criteria to be used for evaluating data gaps and determining if existing data are sufficient. The methods or criteria for such evaluations should be clearly detailed in the final study plan. Whatever methods are to be used, we recommend it include collaboration with and review by reservoir and stream fish community experts from the region.

(3) Task 3 of the Methodology section suggests that “small non game fish species” would, for some reason, not normally be considered part of the fish community. We do not understand how the game or non-game status of a fish species would be considered important to fish community analysis. The final study plan for fish community analysis needs to focus on species guilds, trophic levels, diversity indices and comparisons to the expected fish community (e.g. IBI and MesoHabSim). We recommend all reference to game and non-game species be deleted from the final study plan.

(4) Task 3 of the Methodology section states that tailwater fish communities would only be sampled in the spring and summer and that fish communities of bypass and “appropriate regulated” reaches only be studied in the spring. Both of these sampling plans miss the Fall which in an important period for assessing the fish community, especially for young-of-year fishes. Fall months are also important for evaluating the effects of project operation (i.e. discharge of water low in dissolved oxygen) on the fish communities. We recommend that tailrace communities be sampled in the spring, summer and fall. Bypass and “appropriate regulated” reaches need, at a minimum, to be sampled in spring and fall.

(5) The Use of Study Results section provides no detailed information as to how this information will be used and what analyses will be made. As addressed in (3) above, detailed information on how the effects of project operation will be assessed must be included in the final study plan.

Aquatics 02 – Reservoir Fish Habitat Assessment.

This draft study plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan. Specific comments follow.

(1) The draft study plan evaluates only one component of project effects (reservoir fluctuations) on fish habitat. It does not address several key components of project operation which were clearly stated in our study recommendations. Adequate near-shore and shallow-water habitats are needed to maintain/enhance fish, macroinvertebrates, reptiles, amphibians, mammals and avian fauna that are dependent on shallow-water/riparian habitats, not just fish communities. Specific issues not addressed in this draft plan include:

- The study needs to include effects of lake fluctuations on nesting, nursery and foraging habitats for birds, sediment deposition in shallow coves/environmentally sensitive areas, and water quality.
- The effects of shoreline fragmentation on habitat availability and utilization by fish, birds, amphibians and reptiles.
- The benefits of natural vs. developed shoreline for aquatic habitat, near-shore terrestrial habitat, water quality protection, etc.
- Assessing the effects of full development allowed for in current SMP on the quality and quantity of shallow water habitats of each reservoir and how that would affect fish, birds, amphibians and reptiles dependent on these habitats.
- How much undeveloped shoreline is needed to provide sufficient near-shore and shallow-water habitat for each reservoir (e.g. 35%, 50%, 65% of total shoreline) and how wide a buffer zone is required to maintain those values.
- Assessing potential measures to avoid/minimize impacts to shallow water habitats and potential mitigation measures for new and ongoing impact to shallow water habitats needs to be part of the final study plan.

Aquatics 03 – Diadromous Fish Studies.

This draft study plan may be the most comprehensive framework of those offered for Aquatics studies. However, it still lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan. Specific comments follow:

(1) Sampling and modeling to meet study objective (c) needs to be conducted under varying stream flows and reservoir levels to assess the full range of habitat quantity and quality available under all operational alternatives. These flows and levels need to be clearly laid out in the final plan.

(2) The historical occurrences study needs to include review of “*The Common Right of Mankind*”; *Subsistence, Shad and Commerce in the Early Republican South*, H.L. Watson, *Journal of American History*, Vol. 83, Issue 1, pages 13-43., which cites the 1764 *Laws of North Carolina* to include a ban on a type of shad fishing in certain North Carolina rivers, including the Catawba.

(3) The study plan needs to clearly state that regardless of historical ranges of diadromous fishes (pre-project conditions), the objective of this study is how best to enhance diadromous populations in the basin under existing conditions and anticipated future conditions including alternative project operations.

Aquatics 04 – Instream Flow Assessment.

In contrast to Aquatics 03, this draft study plan is perhaps the least comprehensive framework of those offered for Aquatics studies. The draft plan recognizes this in the Methodology Section where it states that it is “too early in the consultation process to determine the exact methodology” and refers to the draft plan as an “outline” to reach a decision on the method(s) to be used. The draft plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan. Specific comments follow:

(1) Despite not having completed the consultation process, IFIM transects have been selected and microhabitat data already collected for the Bridgewater section of the Catawba River. The draft study plan does not include the criteria used to select the transects, the number and location of transects nor the methods used for data collection. Due to this lack of information, we cannot endorse the work conducted to date, nor that the IFIM study is adequate to determine instream flow needs. Detailed explanation of work conducted to date and that it was conducted without full stakeholder participation should be documented in the final study plan. The final plan also needs to provide for additional transects and collection of additional microhabitat data if deemed necessary.

2) Methodology Subsection (a) does not include mapping of floodplain habitats. Floodplains are a key habitat for many aquatic species and how project operation affects these habitats needs to be included in the instream flow assessment.

(3) The draft study plan contains little detail on how the study will be conducted and does not include how many of the objectives in our study request will be addressed. These include:

- Assessing flow requirements of rocky shoals spider lilies in the Great Falls, Landsford Canal and other applicable river reaches.
- Assessing seasonal base-flow needs, flows for fish passage, and high flows needed for channel maintenance and morphometry.
- Assessing interaction between water quality parameters (e.g. temperature and dissolved oxygen), instream habitat quality and project operations.

(4) We agree with Methodology Subsection (h) that a draft and final study plan must be developed for each study reach. This study plan should not be considered final until that has occurred.

Aquatics 05 – Fish Entrainment Evaluation.

This draft study plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan. Specific comments include:

(1) We do not agree that fish entrainment should only be studied if reservoir fish community studies indicate a problem. Loss of fish via entrainment is a loss of public resources that should be avoided, minimized or mitigated. Basic information as to the magnitude of entrainment, species affected and mortality rates is needed for the study plan.

(2) It is unclear how Duke will compare the fish communities of project reservoirs to those of other reservoirs within the region. How will the effects of entrainment at those other reservoirs be addressed? Will a theoretical fish community without the effects of fish entrainment at those reservoirs be developed? How these comparisons will be made needs to be clearly stated in the final study plan.

(3) If any comparison of fish communities among reservoirs is conducted, stringent criteria should be developed for each project reservoir. The vulnerability of species in a small reservoir (e.g. Great Falls/Dearborn and Stumpy Pond) to fish entrainment would be different than that of a larger reservoir (e.g. Lake Norman, Lake Wateree). If Duke plans to conduct fish community comparison, detailed criteria as to how those comparisons will be made need to be included in the final study plan.

(4) A key component of the fish entrainment study relates to diadromous fish restoration. The final study plan needs to address how vulnerable diadromous species will be to entrainment, estimated mortality rates and how this will affect diadromous fish enhancement goals for the basin.

(5) We strongly recommend against using entrainment studies (or better put, the lack of studies) conducted at Santee-Cooper as part of this assessment. Fish entrainment studies at Santee-Cooper have been controversial and none of the stakeholders have endorsed the methods employed by Santee-Cooper and their consultants.

(6) Task 3 - Desktop Analysis is an appropriate starting point for assessing fish entrainment at project reservoirs. A detailed study plan should be developed in full consultation with the stakeholders before this study is begun.

Aquatics 06 – Mussel Survey.

This draft study plan contains a good framework from which to develop a detailed study plan. However, it still lacks sufficient detail to be considered a final plan from which to conduct this study. Specific comments follow:

(1) It is our understanding from stakeholder meeting discussions that the “bypass reach downstream of Fishing Creek” is synonymous with the Great Falls bypass reach. To avoid future confusion, we recommend consistently referring to this segment as the “Great Falls bypass” as done in Aquatics 04.

(2) Detailed study plans need to be developed for each sampling reach that will include consideration the width and length of the reach, the sites for and numbers of sampling locations within each reach, the downstream extent of sampling, specific habitats to be sampled, etc.

Aquatics 07 – Macrobenthic Survey Study.

This draft study plan contains a good framework from which to develop a detailed study plan. However, it still lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Specific comments follow:

(1) It is our understanding from stakeholder meeting discussions that the “bypass reach downstream of Fishing Creek” is synonymous with the Great Falls bypass reach. To avoid future confusion, we recommend consistently referring to this segment as the “Great Falls bypass” as done in Aquatics 04.

(2) Methodology Subsection (2) states that assessment of biomass and downstream community gradients will only be conducted below Bridgewater and Wylie dams. Wylie is stated to be representative of all tailwaters except Bridgewater. No details are given as to the criteria used to evaluate the similarity of Wylie and other tailwaters. This evaluation was apparently based on “professional opinion”. If Wylie is to be used to represent all other tailwaters, then a detailed comparison of the Wylie tailwater to other tailwaters, including Fishing Creek, Oxford, Wateree, and Great Falls, needs to be made to determine if Wylie is representative. Criteria should include comparisons of the magnitude, duration and frequency of discharges and of poor water quality events, tailwater velocities, substrate types and abundance, etc. If Wylie is determined not to be representative of all other tailwaters, then additional sampling will be needed.

(3) Detailed study plans need to be developed for each sampling reach that will include consideration the width and length of the reach, the sites for and number of sampling locations within each reach, the downstream extent of sampling, specific habitats to be samples, etc.

III. Recreation

Recreation 01 - Recreation Use and Needs Study.

- 1) Separate shoreline miles into two categories: “true” shoreline miles which run along the mainland and are accessible by land based means; and island shoreline miles. While we appreciate that island shoreline miles can and do provide habitat for fish and wildlife, and recreational opportunities for boaters, they do not provide habitat for non-swimming, non-flying species, nor do they provide recreation opportunities for non-boaters. The true shoreline miles must be sufficient to support land-based wildlife and land-based activities such as bank fishing, swimming, hiking and gazing at the viewshed. Therefore, all studies and resulting interpretations and assessments must distinguish between the two types of shoreline.
- 2) We have concerns regarding the accuracy of predictions for future recreation needs. A complete evaluation of survey techniques that will yield the most comprehensive and reliable data from the population to be served should be undertaken.
- 3) Similarly the Carrying Capacity methodology should be chosen with rigor to avoid unrepresentative data that can result from flyovers and other techniques used in the past.
- 4) We also want to ensure that both State Recreation Plans will be given adequate consideration with particular attention to the future needs for parks such as the Lake James, Lake Norman, Landsford Canal and Lake Wateree State Parks and their desired expansion as evidenced in agency master plans and general management plans. Shoreline classifications should better reflect projected needs for parks.
- 5) Negative impacts resulting from wave action in protected areas should be evaluated. Even though cove heads may be environmentally protected, when surrounded by hard seawalls and boats, disruption occurs to wetland areas, sedimentation and turbidity increase, spawning areas are degraded and erosion is exacerbated. The interplay between boat wakes and shoreline should be evaluated.

IV. Shoreline Management Plan

SMP 01 - Shoreline Management Plan.

- 1) This study should add a specific analysis of lakeward development in narrow coves. The Catawba Riverkeeper Foundation, The Catawba-Wateree Relicensing Coalition, and the Lake Marine Commissions, as well as several residents have repeatedly cited problems with allowing multiple pier slips and marinas to be constructed in narrow coves. Duke itself has noted that such commercial development should be precluded in narrow coves (page 16 of the 2001 SMP revisions). The negative effects of hard shoreline stabilization, boat traffic, gasoline spillage, wave action and habitat fragmentation are all increased in these coves and they deserve special attention in studying the effects of the current SMP and in evaluating future revisions.
- 2) This study should also be adjusted to better reflect plans and needs of counties, municipalities, states and their parks. Planning documents such as county recreation plans, trail systems or open space plans should be reflected in shoreline classifications and uses. State Park plans should be taken into consideration and shoreline classifications should be consistent with those plans unless there is an overriding reason not to do so. Comprehensive plans such as the Lake Norman State Park plan and the Overmountain Victory National Historic Trail plan should be studied so that adjustments to the shoreline plan can be made to encourage fulfillment of these plans that have been created for the benefit of the public. Past and current Shoreline Management has resulted in the thwarting of at least one State Park expansion plan. Had the shoreline classifications been consistent with the State Parks needs, the Park

could have realized a significant part of its Masterplan at no cost to Duke Energy. A study of current plans is necessary to prevent this from happening again.

3) The outcomes of SMP 01, SMP 02, SMP 03 and Rec 01 and Rec 02, as well as other studies, may determine the need to limit development along parts of the shoreline in order to provide habitat or recreation opportunities. We would therefore add a study to assess the feasibility of suspending shoreline development in suitable areas that may be needed pending the outcomes of those studies.

V. Cultural

Cultural 01 and 02. Or, add a new study plan: Cultural 03, Cultural 04.

In addition to studying project effects on resources eligible for National Register of Historic Places, the Cultural Resource Studies should include identification and preservation of other historically significant areas and resources such as the Overmountain Victory National Historical Trail, trading paths, locks, canals, or old railway beds that intersect the project boundary and can provide important cultural heritage opportunities for the public.

VI. Operations

Operations 01-Enhancement of existing reservoir operations model for scenario evaluation.

This draft study plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan. We are particularly concerned that the CHEOPS model will not be ready to run scenarios until 2005. The following information was provided at October Piedmont Advisory Group meeting by Duke Power:

*"Operations 01- This study includes the development and enhancement of a reservoir operations model-CHEOPS. It will cover the entire Catawba-Wateree Project. While other models are very detailed and look at several water quality parameters, this model looks at water flow through the system. This model will tell stakeholders what happens if you maintain a certain reservoir level. The version of the CHEOPS model that we currently have is pretty old and data is not complete. We are going to upgrade the coding of the model by adding two important components to the old CHEOPS mode: 1) all the current **and predicted** water withdrawals in the basin and 2) a more robust historical record. Lake Norman significantly changed the Catawba system. We don't see much value in using data before 1964. The CHEOPS upgrade and debugging won't be complete until late 2004. A best case would have stakeholders analyzing scenarios in 2005 but I'm not sure that is realistic."*

The CHEOPS model upgrades are necessary and appropriate. However, if the CHEOPS model won't be ready to use until mid to late 2005 then a second method of analyzing flow scenarios that gives stakeholders ample time to evaluate those scenarios should be considered for use until the CHEOPS model is ready. Or perhaps more resources should be allocated towards upgrading the CHEOPS model faster. An operational readiness target date of October 2004 is preferred because it will provide stakeholders and resource agency's more time to evaluate run-of-river and other scenarios, as well as provide a critical analysis of whether or not the CHEOPS model is sufficient.

As it stands now, if there are major problems with the following items:

- 1) Acquisition of reliable data accurately projecting future water use by industry, cities, towns and counties;
- 2) The upgrade of the computer programming for the CHEOPS model;
- 3) Calibration of the model with real data; and
- 4) The operation of the new and improved CHEOPS model;

then there is no backup plan for how stakeholders will evaluate various flow regimes through the dams. We request you find a way to begin run-of-river modeling exercises with stakeholders much sooner than is currently scheduled, preferably in the fall of 2004.

Additionally the final study plan needs include that (1) model development will occur in an open and public process that incorporates input from all participants including the USFWS, NMFS, North Carolina and South Carolina state agencies, the CWRC, and other stakeholders, (2) that it will be readily understood with user friendly operations, (3) that the model will allow for easy assessment of various flow and reservoir operation scenarios put forth by the many different parties to this relicensing, and (4) that stakeholders will be able to use the model to aid in the development of their flow and reservoir management recommendations.

Operations 03 - Trash Management Plan (Trash Rack 01).

This study would benefit from including an evaluation of trash management practices regarding biodegradable debris as well as non-biodegradable debris. This is because there are some large tree limbs and trunks, as well as dock boards that cause a considerable safety hazard when/if released from the dams. This is exacerbated if accumulated debris is released at once. The feasibility of removing these items, or otherwise mitigating the hazard should be evaluated.

VII. Water Quality

Water Quality 01 – Water Quality of the Riverine and Bypass Reaches of the Catawba River

This draft study plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan.

An existing riverine model will be utilized to assess temperature and dissolved oxygen levels below the James, Wylie and Wateree tailraces. While other water quality data will be collected, modeling will focus on dissolved oxygen and temperature. First Stage consultation documents (Table 5.3.1-9 Hydro tailrace average monthly dissolved oxygen concentrations, 1995-2001) indicate exceedances of North and South Carolina dissolved oxygen standards below the tailraces of Bridgewater, Rhodhiss, Oxford, Lookout Shoals, Wylie, Fishing Creek, Great Falls, Rocky Creek and Wateree. The tailrace water quality study should model all the tailraces where water quality standards are routinely violated, not just James, Wylie and Wateree. If the riverine model is not applicable to selected tailrace sections, then another study methodology should be proposed.

Excerpted from Study Plan Revision 3:

“These low dissolved oxygen concentrations, and the water quality constituents which influence them, e. g. BOD and COD are primary water quality considerations downstream of the projects.” We disagree. Primary water quality concerns extend beyond just oxygen levels. Phosphorus is huge concern in Lake Rhodhiss, Lake Wylie, Fishing Creek, Great Falls, Rocky Creek and Lake Wateree. Because the dams deliver a portion of the phosphorus load to the reservoirs downstream, it is of critical importance to determine phosphorus loading passed through the dams. Phosphorus is a grave concern as it relates to the

likelihood of future nuisance algae blooms that lead to fish kills. Therefore, we request detailed analysis of the effect of project operation on phosphorus levels below the tailrace of every dam.

Water Quality 02 - Water Quality of the Catawba-Wateree Reservoirs

This draft study plan lacks sufficient detail to be considered a final plan from which to conduct a study of this magnitude and importance. Instead, this proposal must be viewed as a basic framework for the study plan.

Excerpted from Study Plan Revision 3:

1) *“I. Study Objective: The second objective of this study is to utilize existing data and information to provide a calibrated hydrodynamic and water quality computer model (CE-QUAL-W2) of the major Catawba River Reservoirs (Lake James, Lake Rhodhiss, Lake Hickory, Lake Norman, Mountain Island Lake, Lake Wylie, Fishing Creek Reservoir, and Lake Wateree) and the subsequent releases to....”*

Of particular concern to us is the phrase, “...utilize **existing data and information** to provide a calibrated hydrodynamic and water quality computer model.....:”

It appears as if the assumption has already been made that existing data is sufficient and new data will not be used to calibrate the model. We believe it is highly probable that there will be data gaps in the existing

pool of information that will necessitate the collection of new data, particularly storm water runoff sampling data to determine the allochthonous loading. The final study plan needs to include protocol for assessing data gaps, determining if additional information is needed, and for collection of that data.

We request that the study objective be changed to:

*“The second objective of this study is to utilize **new and existing data and information** to provide a calibrated hydrodynamic and water quality computer model (CE-QUAL-W2) of the major Catawba River Reservoirs (Lake James, Lake Rhodhiss, Lake Hickory, Lake Norman, Mountain Island Lake, Lake Wylie, Fishing Creek Reservoir, and Lake Wateree) and the subsequent releases to....”*

2) Lake Lookout Shoals has been omitted from the reservoir water quality modeling study plan. If it is determined that neither the CE-QUAL-W2 water quality model nor the riverine model can effectively model Lake Lookout Shoals, then another study methodology needs to be designed for Lake Lookout. The water quality of all the Catawba-Wateree Reservoirs should be analyzed and studied; no reservoir should be left out of the relicensing study process.

3) Figure 5.3.1-2 on page 5-45 of the First Stage Consultation Document illustrates median summer surface concentrations of total phosphorus concentrations, chlorophyll a and turbidity as measured at reservoir forebays in July and August, 1995-1999 by Duke Power. Total phosphorus levels for Fishing Creek, Great Falls and Rocky Creek were .13, .16 and .12 mg/L, respectively. The South Carolina state standard for phosphorus in lakes is .06 mg/L. Thus, the phosphorus levels at these reservoirs were two times higher than allowed by state law. The first consultation document only provided total phosphorus data for the forebays of the dams. Mid lake stations and tributary arms of the Catawba River lakes tend to have higher phosphorus levels than forebay stations. Phosphorus levels throughout the reservoirs needs to be studied. If there are phosphorus exceedances at the forebays, where water quality is usually excellent, then it indicates a strong probability that there are much greater phosphorus problems throughout the reservoirs.

The reservoir water quality monitoring studies as currently proposed, focuses predominantly on dissolved oxygen. They completely fail to focus appropriately on other known water quality standard exceedances

like phosphorus. We request a third water quality study that is specifically focused on studying phosphorus levels in the reservoirs and modeling the impact of project operations on phosphorus for the next 30-50 years.

4) “II. Basis: The CE-QUAL-W2 model incorporates allochthonous and autochthonous loadings of organic and inorganic nutrients to calculate dissolved oxygen concentrations.....In addition, dissolved oxygen sources within the reservoir (e. g. photosynthesis) and dissolved oxygen loss within the reservoir (e. g. sediment oxygen demand and chemical oxygen demands) are also determined for each reservoir segment.”

Modeling the impact of project operations on dissolved oxygen levels is a good first step. But the reservoir water quality study should not be limited to an analysis of only one water quality standard. Water quality standards related to eutrophication, like chlorophyll A, turbidity and nutrients, should also be modeled. The study should answer the question, what are the impacts of project operations on several water quality criteria, not just one.

The water quality working group of the Catawba Wateree Relicensing Coalition has specific concerns about water quality and the rate of eutrophication in the reservoirs for the next 30 to 50 years or the term of the next license. The lower Catawba River impoundments are already on the 303(d) list of impaired waters. The state of NC considered adding Lake Rhodhiss to the list this year. Because nutrients, algae, sedimentation and eutrophication are such a strong concern, we request the scope of the reservoir water quality modeling study be broadened to model future eutrophication trends. This needs to include the effects of project operations on reservoir water quality (e.g. different assimilative rates for impounded versus free flowing waters) and, given the trends in eutrophication, how continuing impoundment of the river will affect water quality.

We also recommend the following change in the study plan language:

II. Basis: “In addition, *turbidity, nutrient, chlorophyll A and* dissolved oxygen sources within the reservoir (e. g. photosynthesis) and *turbidity, nutrient, chlorophyll A and* dissolved oxygen loss within the reservoir (e. g. sediment oxygen demand and chemical oxygen demands) *will also be* determined for each reservoir segment.”

Statistical Analysis and Testing for Significance

We complement Duke that this most recent study plan iteration is substantially more detailed compared to the original study documents. One area that still lacks specificity, however, regards data analysis and testing for significant differences. Before the study plans are approved, each plan should describe in detail how data (existing and newly collected as part of these studies) will be analyzed. Additionally, if data are to be statistically tested to identify significant differences (e.g., spatial, temporal, etc) then the alpha level should also be specified. In brief, an account of how data will be treated and analyzed should be part of each study plan.

If you have any questions concerning these comments please feel free to contact either:

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Catawba~Wateree Relicensing Coalition

We are pleased that Duke has expressed a willingness to incorporate stakeholder concerns expressed through the Advisory Groups (AGs) and State Relicensing Teams (SRTs) established in both North and South Carolina to improve the design of these studies. CWRC requests a collaborative effort to resolve any study plan disputes going forward through 2003 and 2004, if necessary.

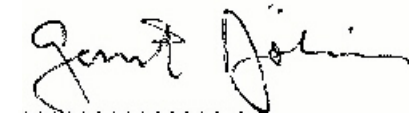
Regards,



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Cc: Federal Energy Regulatory Commission (FERC)
Kearns and West

The mission of the CWRC is to facilitate a process to protect, enhance and restore the natural, cultural, recreational and economic resources of the Catawba~Wateree River basin.