

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO/COLUMBIA PROJECT RELICENSING
Water Quality Meeting**

**SCE&G's Lake Murray Training Center
January 16, 2008**

Final jms 2-29-08

ATTENDEES:

Bill Argentieri, SCE&G	Reed Bull, Midlands Striper Club
Alan Stuart, Kleinschmidt Associates	Ron Ahle, SCDNR
Jeni Hand, Kleinschmidt Associates	Dick Christie, SCDNR
Shane Boring, Kleinschmidt Associates	Milton Quattlebaum, SCANA Services
Gerrit Jobsis, American Rivers	Dan Tufford, USC
Mark Giffin, SCDHEC	Steve Bell, Lake Watch
Vivianne Vejdau, SCDNR	Joy Downs, LMA
Rick Kidder, LMA	Roy Parker, LMA
Jim Ruane, REMI	Andy Sawyer, REMI

NEXT MEETING

TBA

ACTION ITEMS

- Correct typos on the Applications of the CE-QUAL-W2 Model Appendices. Send out corrections to committee members in a word document.

Andy Sawyer

- Send out Water Quality Report as an information resource to committee members.

Shane Boring

- Provide lower Saluda River minimum flow recommendations to Jim Ruane.

Alan Stuart

- Provide a tracking sheet to the RCG of all recommendations for the operations model and send to Jon Quebman.

Kleinschmidt

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These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

Alan Stuart of Kleinschmidt Associates opened the meeting at approximately 9:30 AM and meeting attendees introduced themselves. Alan noted that the focus of the meeting would be to discuss: (1) results of the Lake Murray sediment assessment considering the winter minimum pool elevation; (2) presentation distribution of Appendix 1 of the CE-QUAL-W2 model applications report; (3) findings from W2 modeling; (4) proposed presentation at the Quarterly Public Meeting on January 17th; and (5) set date, develop agenda and assign action items for the next TWC meeting.

Considerations about raising the winter minimum pool elevation-supplemental assessments; Jim Ruane. The presentation may be viewed at the following website:
<http://www.saludahydrorelicense.com/MeetingSummaries.htm>

Jim noted that he gave this presentation at the last water quality meeting, but explained that since the last meeting a sediment assessment and analysis was conducted on Lake Murray in November of 2007. Jim briefly explained each of the 21 sample location on Lake Murray. The sample locations were located in the Little Saluda River and Camping Creek embayment as well as the Saluda River embayment and every mile down river until the confluence of Rocky Creek. Shealy Environmental analyzed the sediments for nitrogen, phosphorus and carbon. Jim explained that the sediments were collected with an Eckman's dredge and the top "ooze" layer was removed for analysis. Jim noted that the "ooze" is the decaying material in the sediments, which is known as the active material.

Jim presented the results of the analysis and noted that sediment samples are known to have a good amount of outliers in the data. Two inflow stations had zero ooze, and no ooze was observed on the exposed shoreline sediments. He added that the first location downstream from the inflow points increased in TOC, P, and TKN showing that there would be more accumulation of organic matter near the surface of the lake unless the pool drops more and allows this matter to redeposit deeper into the lake. Jim explained that from the data, the sediments seem to increase from inflow sites to downstream sites (towards the Lake Murray dam). The ooze found in the sediment samples was very labile or active. Jim briefly explained the ratios of carbon, nitrogen and phosphorus for Lake Murray.

Jim discussed the effects of sediment processes on water quality and noted that sediment/water interface usually is the area of highest rates for biochemical process and explained that shallow water areas are impacted more than deep water areas due to less volume of water over the sediments. Jim noted that organic matter that is created by algal growths and aquatic weeds settles in the sediments where it decomposes and releases phosphorus and nitrogen back into the water

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column. Jim explained that because the upper part of Lake Murray is labile, the biochemical process were higher.

Steve Bell enquired as to how the previous drawdowns over the years in Lake Murray have effected these results. Jim briefly explained that he thinks that there may be a delta located upstream of the Lake Murray dam, which is trapping a lot of the sediments moving downstream. Jim further explained that when a drawdown occurs, such as in 2003 and 2004, the delta is cleaned out and the sediments are washed downstream. Jim displayed hydrographic data used to develop bathymetry of Lake Murray showing possible sediment accumulation upstream from Rocky Creek. Jim explained that it is probable that this delta formed during times when the pool elevation was at 354 ft and when high flows occurred like in the year 2003.

Jim focused the groups attention to discussing considerations about raising the winter minimum pool for Lake Murray. Jim noted that when examining the inflow data from 1929 to 2003 half the time the elevation was at 350 ft and the other half of the time the pool level was at 354 ft. Jim noted that if the minimum pool is raised to 354 ft in the winter aquatic weeds will likely take root in some areas and may not be controlled by winter freeze conditions. He also explained that sediment would likely accumulate in these areas since deposition would be increased and erosion would be reduced, especially those areas where tributaries enter the lake. Finally he explained that algal growths would also likely increase in embayments because more phosphorus would be released from the lake sediments, especially in the spring. In summary, Jim noted that considering that summer pool elevation can drop to approximately 350 ft even when the May-June elevation starts at 358 ft due to low inflows, evaporation, and minimum inflow provisions, aquatic plants could take root at elevation ~350-352 ft when summer pools are low. Therefore, he explained that the minimum winter pool should be dropped to about elevation 350 ft periodically to freeze these plants. Dick Christie noted that SCDNR will insist on drawing down the lake to control aquatic weeds. Joy Downs noted that Lake Murray Association feels that the lake should not be dropped any lower than 354 ft during winter months. On behalf of Midlands Striper Club, Reed Bull noted that he was concerned with having a minimum lake elevation of 354 ft year around. He explained that from the information that Jim Ruane has presented, he feels that there may be potential negative impact on water quality and fish habitat in Lake Murray if the lake elevation remains at 354 ft year around.

Gerrit Jobsis noted that the group should use this information to manage lake levels. However, he noted that we should not base decisions on data recently collected because we have not had normal operations in recent years. Gerrit recommended developing an initial management plan on lake levels to control aquatic weeds and sediment transport. Jim Ruane noted that the answer maybe drawing down the lake every two years. He explained that this is what SCE&G has been doing in the past and it seems to be working. He noted that sediment transport is most beneficial when a fast drawdown occurs, because it allows sediment to move out quicker. Jim recommended drawing down the lake quickly in December and let it fill back up with winter rains in January. Ron Ahle noted that once we have a better understanding of minimum flows for the lower Saluda River and

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operational decisions, then we should come back and address this issue to help make management decisions. Alan noted that all recommendations made for the operations model will be put in a tracking sheet and submitted to the RCG for review and once approved, recommendations will be given to Jon Quebman to run the operations model. Jim noted that before he made recommendations for winter minimum pool, he would first need to examine flow recommendations for the lower Saluda River.

Presentation/Distribution of Appendix 1 of the CE-QUAL-W2 Model Applications Report

Andy Sawyer distributed Appendix 1 of the CE-QUAL-W2 Model Applications Report. Andy lead the group in great detail through the context of Appendix 1 through 5 of the report.

Review of Findings from W2 Modeling, Especially Results Presented at the Meeting on November 6, 2007

Jim briefly explained the W2 model and noted that the Water Quality Technical Working Committee have recommended evaluating the following:

- The causes of striped bass fish kills reported in previous years, especially factor related to Saluda Hydro operations;
- The effects of Unit 5 operations on striped bass and entrainment of blueback herring;
- Determination of operational changes that might increase habitat for striped bass and blueback herring;
- Assessment of pool level management alternatives; and
- Track any impacts that could occur to the tailwater cold-water fishery due to potential operational changes.

Jim noted that the W2 report and calibration report was sent out for review and comment. The group noted that there were no questions on the report at this time.

Review of Proposed Presentation at the Quarterly Public Meeting on January 17, 2008.

Jim noted that he will be presenting the presentation he gave today at the January 17, 2008 Quarterly Public Meeting. He noted that in addition to discussing sediment assessment in Lake Murray, he will also be discussing turbine venting below the Saluda Hydro Dam. Reed Bull asked if dissolved oxygen enhancements have improved fishery in the lower Saluda River. Jim noted that he's not sure if dissolved oxygen enhancements have really changed the fishery a whole lot. He noted that this will be one of the issues discussed at the Quarterly Public Meeting.

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Alan noted that SCE&G is considering potential upgrades for the Saluda Hydro Project. He explained that they are considering installing a minimum flow unit in one of the lower units. The group discussed how the new minimum flow units may potentially affect the striped bass and trout fishery. Ron noted that he was concerned that this would worsen Lake Murray's striped bass habitat and lower Saluda River trout fishery. Ron specifically noted that he was concerned that SCE&G would not be able to provide cold water if unit 5 was not used during summer months. Jim noted that generally, low flow years usually provide plenty of cold water. He explained that it's the high flow years that effect striped bass during the months of April and May, which would be in question.

Set Date, Develop Agenda and Assign Action Items for Next TWC Meeting

Alan noted that the only outstanding item for the Water Quality Technical Working Committee is the temperature study. He explained that the report would be sent out as an information resource. Alan noted that once minimum flow recommendations are made for the lower Saluda River, we will provide this information to Jim so he can run them in the W2 model. Once these items have been completed we will set a date for the next meeting.