MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Water Quality, Fish and Wildlife RCG Meeting

August 26, 2015

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ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Randy Mahan (SCE&G)
Brandon Stutts (SCANA)
Caleb Gaston (SCANA)
Pace Wilber (NOAA)
Jaclyn Daly (NOAA)
Fritz Rohde (NOAA)
Byron Hamstead (USFWS)
Rusty Wenerick (SCDHEC)
David Eargle (SCDHEC)
Bill Stangler (Congaree Riverkeeper)
Gerrit Jobsis (American Rivers)
Lorianne Riggin (SCDNR)
Dick Christie (SCDNR)
Bill Marshall (SCDNR)
Lynn Quattro (SCDNR)
Ross Self (SCDNR)
Jim Bulak (SCDNR)
Bill Post (SCDNR)
Chad Holbrook (SCDNR)
Hal Beard (SCDNR)
Ron Ahle (SCDNR)
Henry Mealing (Kleinschmidt)
Alison Jakupca (Kleinschmidt)
Shane Boring (Kleinschmidt)
Kelly Miller (Kleinschmidt)

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

Henry opened the meeting with introductions and an overview of the agenda. The purpose of the meeting was to review Article 39 of the current FERC License, discuss downstream peaking limitation requests, and discuss proposed modifications to the Reservoir Fluctuation Study Plan.

Article 39

Ray gave a presentation on the history behind Article 39 of the current Parr Hydro Project License. Ray explained that it was left up to SCE&G and the board of consultants to determine how flood flows should be defined. A backwater study was completed by USGS and based on the results of this study, SCE&G purchased additional property upstream of the Project for backwatering purposes. When flows reached 40,000 CFS, low lying areas began to be inundated upstream and downstream of the Project. For this reason, flood flows were defined as flow reaching or surpassing 40,000 CFS. When natural flows increase, discharge from Fairfield Pumped Storage Development (Fairfield) is gradually reduced, so as not to exceed 40,000 CFS downstream. When natural flow reaches 40,000 CFS, all units at Fairfield are shut down and all crest gates are fully lowered. Henry asked if Parr Reservoir is available for flood control, and Ray said no, the reservoir does not have enough storage to control floods.

Dick said he wanted to know how a flood was defined. Ray said that 40,000 CFS was when the river left its natural banks and started inundating things it shouldn't. The flood flow was set at 40,000 CFS to protect personal property and structures such as roads located downstream.

Downstream Flows

Dick said that the SCDNR's major concern is that Project flows vary enough that they could affect spawning of several fish species downstream. He said initially SCDNR didn't think there was a big effect downstream in the Congaree area, however after high flow events this spring, high fluctuations were recorded at the Congaree gage. Although this may not happen often, the occurrence of flow fluctuations of approximately 15,000 CFS was concerning to SCDNR. Bill Post and Jim Bulak with SCDNR presented information on various fish species and how these fluctuations may affect their life cycles.

Bill Post presented his research collected through the Accord on shortnose sturgeon spawning. Bill said that they found that fish traveled to known spawning grounds in 2012-2015, no matter what the flows were. However, this doesn't mean that spawning was successful each year. He doesn't know if and to what degree fluctuating flows affect spawning. Henry asked if Bill had an idea of what magnitude of fluctuations might cause effects, since there will always be natural fluctuations in the river that SCE&G can't control. Henry said that SCE&G can only control flows under 40,000 CFS, and that some of the fluctuations recorded are due to the gates being dropped at Parr in an attempt to control upstream flooding. Ray said that SCE&G doesn't lower the gates to prepare for a pumped storage discharge; instead they only drop gates in an effort to keep the reservoir at the right level. Ray said that they can't automate the gate operations because there are so many variables involved including safety.

Gerrit said there is a goal of passing more fish through the Columbia Fishway downstream of Parr Shoals Dam. He asked Bill P. if the spawning effects upstream of the fishway have been assessed. Bill P. said not to the level they have been downstream, since the majority of fish weren't making it up that far. He said SCDNR is planning to repeat their studies in 2016-2017. Bill P. said that they know the sturgeon are there and spawning, but they don't know how successful the spawns are, and what role the fluctuations may play in unsuccessful spawning years.

Jim Bulak then presented information that was learned during the Saluda Hydro Project relicensing on striped bass. He said that temperature was the key to successful striped bass spawning. An abrupt drop in temperature of 2-3 degrees would stop spawning quickly. Jim said that it is known that striped bass respond to changes in flow, but temperature seems to be the most important factor for this species. Does peaking offer the chance for warm water to occur in the Congaree? Also, due to the fish passage at St. Stephens and Columbia, striped bass and robust redhorse now occupy waters in the Broad River immediately downstream of Parr Shoals Dam. How are the flow fluctuations affecting these species? Henry said that the IFIM study results will provide some answers. Henry reminded that there will always be some fluctuation occurring, but the question is can it be reduced and if so, how much reduction would be acceptable?

Fritz asked if high flow pulses would push eggs downstream faster and farther than they need to be pushed, and Byron similarly asked if there is a chance for eggs to be stranded during low flows. Jim said that during high flow years, fish spawn higher up in the system, and the eggs are pushed to the same area to hatch as they would during a low flow years. Jim also said that during low flow

years, there is still enough flow to move eggs downstream, since striped bass eggs are semi-buoyant.

Henry suggested that SCE&G investigate if they can possible reduce the frequency and magnitude of the fluctuation events. Even though SCDNR doesn't know the specific "best flows", a change may improve spawning of fish species downstream of the Parr Dam and in the Congaree.

Hal asked if there would be any effects from the addition of the two new units at the V.C. Summer Nuclear Plant. Bill A. said that Fairfield will be used more frequently than it is currently used. There will be no discharge into Monticello Reservoir, but there will be a small discharge into Parr Reservoir. Ron asked if base load would be used for pump back, and if so would that affect water temperature on Monticello Reservoir. Ray said yes, base load would be used to pump back. He said that an extensive temperature study was performed in anticipation of the installation of the new units. Brandon Stutts will follow up with Steve Summer on the results of that study.

**Prior to distribution of these meeting notes, Steve Summer provided some information on this question. Steve noted that current thermal studies for VCSNS Units 2 & 3 focused on Parr and not Monticello. However, heated water discharge to Monticello is very small (normal 21 cfs - with a resulting small thermal plume) and would be insignificant compared to the volume of water exchanged between the two reservoirs with Fairfield operation. So thermal discharges from VCSNS Units 2 & 3 should not impact the overall temperature of Parr Reservoir or Monticello Reservoir. It is not clear if increased pumping would have an effect on Parr or Monticello temperatures. Since Parr tends to be colder than Monticello in winter months, Monticello may be cooled slightly by increased pump back volume and frequency. Also, since Parr tends to be warmer than Monticello in the summer, perhaps the southern end of Monticello could be warmed slightly in the summer.

Dick recapped that the SCDNR is most concerned about striped bass, shortnose sturgeon, and robust redhorse spawning both downstream of Parr Dam and in the Congaree River. He asked if anyone else had any other concerns.

Gerrit said there was a study performed in the late 1980s using egg nets to see if peaking operations washed sturgeon eggs off beds. The results of the study showed that this does happen. He asked if there has been a similar study for robust redhorse. Ross said he doesn't think there has been a study done on this. He said the main issue for robust redhorse is not having egg beds flushed, but instead having them exposed during low flows. Shane said that study site 3 of the IFIM study, located directly below Parr Shoals Dam, is known to be a staging area for robust redhorse. He said that three transects were located in this area, so the results of the study should offer lots of information regarding robust redhorse. Shane added that, although not an official IFIM study site, extensive velocity mapping was also conducted using ADCP at the robust redhorse site recently confirmed by SCDNR in the east channel below Parr Dam.

Rusty asked how all of this might affect mussels. Byron said that the IFIM study targets several shallow highly productive areas in the downstream reach (in particular Study Site 3). The results of the study will indicate what habitat is available at various flows.

Henry said that the various fish species mentioned and mussels are already in the Project area. The focus needs to be on how SCE&G can potentially improve and enhance what is already there.

Byron said that SCDNR has mentioned limiting fluctuations would benefit species of concern, and that the Project has obvious effects on flows downstream in the Congaree. At this meeting, target species identified include shortnose sturgeon, American shad, striped bass, and robust redhorse. The target area was identified as the Broad River downstream of Parr Shoals Dam to the Congaree River at Highway 601. Target times include January through April for sturgeon spawning and April through May for striped bass spawning. The group agreed that the Fisheries TWC should take this information and then work toward identifying the specifics of how Parr operations could be changed to better benefit fish and mussel species.

Reservoir Fluctuation Study Plan

Henry explained to the group that since the Reservoir Fluctuation Study Plan was developed, SCE&G' Recreation group collected digital photography on Parr and Monticello during a drawdown. A review of the photography and the use of photogrammetry is accurate enough to produce 2 foot contours on the exposed substrates. SCE&G proposes to use this data in GIS to accomplish the same goals as those outlined in the original study plan with better accuracy and less field work. Byron asked if we still want to have priority areas, as described in the original study plan. Henry said that we will quantify the entire shoreline, but will still focus on the priority areas already identified. Byron said that he recalls the sites selected as priority areas were chosen because they were unique habitat types or because they were representative sites. He said that the priority areas that were chosen because of their uniqueness should still be examined closely.

Edits were made to the study plan during the meeting. The comments and edits on the study plan will be addressed and reissued to the Fisheries TWC.

ACTION ITEMS:

- Kleinschmidt and SCE&G will gather the flow record for 2010-2015 from Carlisle, Tyger, Enoree, Alston, Saluda downstream of Lake Murray, and the Congaree River and compare all flows from January through May. Spikes in flow that may have been caused by Parr Hydro operations will be identified and quantified.

- The Fisheries TWC will review flow record data and identify a proposal of how Parr operations could be changed to better benefit fish and mussel species.

- Kleinschmidt will make edits to the Reservoir Fluctuation Study Plan and reissue to the Fisheries TWC.