

Exhibit E-1 Summary of Consultation cont.

APPENDIX A

**STAKEHOLDER CONSULTATION AND CORRESPONDENCE
PART 3**

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

January 28, 2015

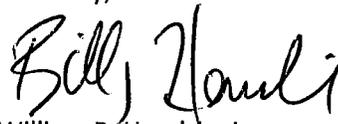
Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way
Mail Code A221
Cayce, South Carolina 29033-3701

Re: Relicensing FERC Project 1894

Dear Bill:

Pursuant to our last meeting, I have requested and received from FERC a copy of the Final Report of the Board of Consultant's for the above-referenced project. After reviewing the document, I still have some questions and would ask that you please help clarify them for me. The only report I see referenced is a report prepared by Gibbs and Hill entitled, "Lower Reservoir Operation Study," dated May 1978. Is this the same report as the "USGS Study" that you referenced in our last meeting as well as in the materials presented in your Companies meetings of September 19 and December 4, 2012? I would also ask that you confirm our conversations in our last meeting that the land acquisition for this project was based on an USGS Study. Finally, I would ask that you please provide me copies of these studies/plans.

Sincerely,

A handwritten signature in black ink that reads "Billy Hendrix". The signature is written in a cursive, slightly slanted style.

William B. Hendrix, Jr.



March 18, 2015

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated January 28, 2015

Dear Mr. Hendrix:

With this letter I am responding to your letter of January 28, 2015, in which you requested that South Carolina Electric & Gas Company (Company), as the licensee for the Parr Hydroelectric Project, FERC Project No. 1894 (Project), provide you with certain information and materials concerning the basis upon which the Federal Energy Regulatory Commission (FERC) established the Project boundary line (PBL) in the upper reaches of the Parr Reservoir in the vicinity of a tract of land which you own. From public meetings convened in 2012 as part of the ongoing FERC relicensing of the Project and from individual conversations with you in 2014, we understand that you consider that the PBL need not be set between the 275.3- and 276-foot contours in the upper reaches of the reservoir near your property.

As detailed below and consistent with our prior oral discussions, the PBL along the full length of the reservoir was established in conformity with the specific obligations set forth in the Project's license, and has been approved by FERC. For these reasons, there is no reason to revisit the matter.

The placement of the PBL was established in accordance with the requirements of the current license for the Project as issued by the Federal Power Commission (FPC), the predecessor agency to the FERC, in *South Carolina Electric & Gas Co.*, 52 FPC 537 (1974). The FPC's order authorized, among other things, the redevelopment of the Parr Dam and Reservoir and the development of the Fairfield pumped storage facility with its associated Monticello Reservoir. Included in the redevelopment of the Parr Dam was the installation of crest gates that raised the height of the dam. For your reference, a copy of the FPC's license order is enclosed.

For purposes of your inquiry regarding the PBL, Article 6 of the license directed that, within five years from the issuance of the license, the Company was to acquire title in fee or the right to use in perpetuity all lands, except those of the United States, necessary or appropriate for

the construction, maintenance, and operation of the Project. 52 FCP at 555. This is a standard obligation of all hydroelectric licenses issued under the Federal Power Act. Then, in Article 48(b) the FPC established specific minimal conditions concerning the level of the boundary for the Parr Reservoir by stating that the “lands encompassed by the project boundary shall include, but not be limited to . . . [s]horeline lands up to the 270 foot contour or up to 50-feet, horizontal measure, from the 266-contour of the [Parr] reservoir . . .” 52 FPC at 564.

In order to determine what properties would be affected by the operation of the Parr Dam with its new crest gates and be in compliance with Article 48, the Company obtained the assistance of the United States Geological Survey (USGS) to study the backwater effect of the crest gates. Related to this assessment is Article 39 of the license, which requires the Company to operate the Parr and Monticello Reservoirs in such a manner that the releases from the Parr Dam during flood flows are not to be greater than flows which would have occurred in the absence of the Project. Based on the requirements of Article 39, a flow in the Broad River of 40,000 cubic feet per second (cfs) was applied as the benchmark to determine a combination of backwater effects from natural river flows, the drawdowns from the pumped storage facilities, and the crest gates being lowered.

Using that stream flow, the USGS determined that the backflow up the Parr Reservoir would produce flood waters rising well beyond the minimum 270-foot contour level, set by license Article 48, to approximately the 278-foot contour. The backflow data was reflected on two sheets entitled “U.S.G.S. Backwater Profiles: Parr Hydroelectric Project No. 1894: South Carolina Electric & Gas Company.” Copies of those two sheets are enclosed with this letter.

With regard to the property that you have identified to the Company, please note on Sheet 2 of 2 and the rising graph lines between the line captioned “Enoree River” and the line marked “End of Project’s Influence.” You will note that at a flow of 40,000 cfs, the projected flood level rises from the 275.3-foot contour to approximately the 278-foot contour, at which point the backwater effect ceases.

Based on the flood levels projected by the USGS, the Company secured the necessary property rights to the lands along the shores of the Broad River that would be inundated at the 40,000 cfs river flow. By the autumn of 1977, the Company had purchased fee title to the lands lying on either side of the Broad River upstream from the confluence of the Broad and Enoree Rivers. The Company then prepared and filed with the FERC on June 26, 1981 a list of the property acquisitions, designated as Exhibit F, and the property maps depicting the PBL, designated as Exhibit K to the Project’s license. By order date August 19, 1981, the FERC approved both exhibits.

For your records, I am providing you with the FERC-approved Exhibit K, Sheet 1 of 20 (an overall map of the Project Area) and Sheet 15 of 20. Sheet 15 covers the area of your concern. On Sheet 15, you will observe the flood levels as transposed from the USGS

Mr. William B. Hendrix, Jr.
Parr Hydroelectric Project, FERC Project No.1894
Response to letter dated January 28, 2015
Page 3

Backwater Profiles with the figures matching the USGS Station Numbers appearing on the upper left hand corner of Sheet 1 of Exhibit K.

In your letter of January 28, 2015, you inquired whether the Company could confirm that the report prepared by Gibbs and Hill, entitled "Lower Reservoir Operation Study," dated May 1978, is the same as the USGS study. While the Lower Reservoir Operation Study did include some consideration of possible flooding upstream of the Parr Dam, that study, undertaken in compliance with Article 39 of the license, was more concerned with the operation of the new crest gates and flooding downstream of the dam, all based on certain flooding scenarios. The study conducted by the USGS was concerned solely with the flooding above the dam. With regard for copies of those studies the Company has explored its archives and has discussed the matter with the USGS. That effort failed to locate any copies of the reports upon which the maximum power pool level was established, as reflected on Sheets 1 and 15 of Exhibit K.

As expressed at the beginning of this letter, the Company considers establishment of the PBL fully resolved. The Company has acquired all property rights along the shores of the Parr Reservoir and its tributaries which remain necessary for the operation and maintenance of Project No. 1894. The FERC has approved the placement of the PBL, and the Company does not see any need to revisit the issue at this time. Moreover, even if the Company were to see a need in the future to reexamine the placement of the PBL, any such change that might be approved by the FERC does not mean that the Company would necessarily convey such lands then outside of the PBL as excess property. Article 48 of the license, quoted above, does not preclude, but, in fact, recognizes the possibility of acquisition of lands beyond the minimal requirements of the license.

The Company appreciates your interest in the relicensing of the Project, and trusts that this letter has responded to the matters posed in your letter. If you have any further questions concerning the PBL, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,



William Argentieri, Manager Civil Engineering
Fossil/Hydro Technical Services

Enclosures

c: H. E. Delk/PH File
J. H. Hamilton/ J. Stuckey

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Before Commissioners: John N. Nassikas, Chairman; Albert B. Brooke, Jr., Rush Moody, Jr., William L. Springer and Don S. Smith.

SOUTH CAROLINA ELECTRIC & GAS COMPANY, PROJECT NO. 1894

ORDER ISSUING NEW LICENSE (MAJOR), AUTHORIZING PROJECT REDEVELOPMENT, PERMITTING USE OF PROJECT WATERS FOR CONDENSER COOLING PURPOSES, VACATING HEARING ORDER, AND PERMITTING WITHDRAWAL OF INTERVENTION

(Issued August 28, 1974)

On July 26, 1972, South Carolina Electric & Gas Company (Applicant) of Columbia, South Carolina, filed an amended application for new license requesting: (1) a new license under Section 15 of the Federal Power Act (Act) for the existing 14.9 megawatt (mW) Parr Hydroelectric Project No. 1894, (2) authorization to construct a 518.4 mW pumped storage development (Fairfield Pumped Storage Facility) which would utilize the enlarged Parr Reservoir as the lower pool, and (3) authorization to use the upper pool (Monticello Reservoir) of the Fairfield facility as a cooling impoundment for a proposed 900 mW nuclear steam-electric generating facility, known as Unit 1 of the V. C. Summer Nuclear Complex, for which a construction permit was issued by the Atomic Energy Commission in A.E.C. Docket No. 50-395 on March 21, 1973.

This amended application supersedes parts of the original new license application for the existing hydroelectric project filed June 19, 1969, and amended February 27 and November 16, 1970, as well as parts of a subsequent application filed September 30, 1971, and revised March 1, 1972, which embraces the concept of project redevelopment to include the Fairfield Facility and the use of water from the Monticello Reservoir for cooling purposes in connection with the V. C. Summer Nuclear Complex. Public notice of the June 19, 1969, new license application was issued January 14, 1971, with March 3, 1971, as the last day for filing protests or petitions to intervene. Notice was published in the *Federal Register* on January 23, 1971 (36 Fed. Reg. 1171). No protests or petitions to intervene were filed in response to such notice. Public notice of the amended application was issued November 1, 1972, with January 8, 1973, as the last day for filing protests or petitions to intervene. Notice of the amended application was published in the *Federal Register* on November 8, 1972 (37 Fed. Reg. 23750).

Petitions to intervene out-of-time were tendered for filing by Robert A. and Martha M. Westbrook on April 9, 1973, as amended August 3, 1973, and by W. R. Robinson on March 6, 1974. By orders issued October 4, 1973, and April 23, 1974, the respective petitions to intervene were accepted for filing and granted.

On September 7, 1973, W. R. Robinson and Robert A. and Martha M. Westbrook were served with a copy of the Draft Environmental Impact Statement and a copy of Commission Order No. 415-C, 18 CFR § 2.81 (1974), 48 FPC 1442. No comments were received in response to the Draft Environmental Impact Statement from the intervenors.

By our order issued in this proceeding on August 9, 1974, we set a hearing on the application and permitted the withdrawal of the petition to intervene filed by W. R. Robinson. Subsequent to our order of August 9, 1974, John D. McLeod, attorney for intervenors Robert A. and Martha M. Westbrook, by a telegram dated August 16, 1974, requested that the Westbrook's petition to intervene be withdrawn. On August 19, 1974, Applicant filed a motion for reconsideration of our order of August 9, 1974.

We believe that Robert A. and Martha M. Westbrook should be permitted to withdraw their petition to intervene. In so doing, we realize that the controversy which formed the basis of our previous order providing for hearing in this proceeding is no longer present. Therefore, we are also vacating those portions of our order of August 9, 1974, which provided for a hearing.

Notice of Availability of Commission Staff's Draft Environmental Impact Statement was issued on August 31, 1973, and published in the *Federal Register* on September 7, 1973 (38 Fed. Reg. 24418). Notice of Availability of Commission Staff's Final Environmental Impact Statement was issued on March 13, 1974, and published in the *Federal Register* on March 20, 1974 (39 Fed. Reg. 10486). On March 20, 1974, 10 copies of the Staff's Final Environmental Impact Statement were transmitted to the Council on Environmental Quality.

The redeveloped project will be located in Newberry and Fairfield Counties, South Carolina, on the Broad River a navigable water of the United States, approximately 26 river miles upstream from the City of Columbia, South Carolina. The project will affect lands of the United States within the Sumter National Forest. The project will include the existing and redeveloped works of the 14.9 mW Parr hydroelectric development which consists of a steel-frame brick powerhouse containing 6 generators rated at 2,480 kilowatts (kW) each, and provision for 2 additional units; a 2,715-foot-long dam composed of a 300-foot integrally constructed powerhouse section, a 300-foot earth dike, a 90-foot non-overflow section, and a 2,000-foot concrete overflow section, 35 feet high, with crest at elevation 257.0 feet mean sea level (m.s.l.), surmounted by Bascule gates; a, 4,400-acre reservoir at maximum controlled surface elevation 266 feet, m.s.l., at the dam, extending upstream for 13 miles, having a useable storage capacity of 29,000 acre-feet in a drawdown of 10 feet, providing water for operation of the conventional hydroelectric development and serving as the lower reservoir of the Fairfield facility; and transmission and appurtenant facilities hereinafter described. The project further includes works of the Fairfield Pumped Storage Facility comprising the reservoir of the 14.9 mW Parr hydroelectric development heretofore described; the 6,800-acre Monticello Reservoir having a total capacity of 400,000 acre-feet at the 425-foot, m.s.l., maximum pool elevation, and a useable storage capacity of 29,000 acre-feet in an operating drawdown of 4.5 feet; four random-fill dams impounding Monticello Reservoir having lengths of 5,000, 3,400, 1,700, and 900 feet, each with crest at elevation 434 feet m.s.l.; a 400-foot-wide, 600-foot-long, intake channel in the south abutment of the 5,000-foot-long dam; a gated intake structure with invert at elevation 375 feet m.s.l. and four 800-foot-long, 26-foot-diameter, surface penstocks bifurcating into eight 18-foot-diameter concrete-encased penstocks; a semi-outdoor generating station (Fairfield Powerhouse) housing 8 reversible pump-turbine units, each having a minimum capacity of 83,000 horsepower at the minimum head of 150 feet, to be operated by remote-automatic, local-automatic, or local-manual control option, directly coupled to 8 motor-generators, each with a nameplate rating of 64,800 kW in the generating mode and 100,000 horsepower when operated as a motor; and transmission and appurtenant facilities hereinafter described. Recreational features of the project comprise a boat launching area adjacent to the crossing of Heller's Creek by County Road 28 in Parr Reservoir; a 300-acre subimpoundment to be created in the northern end of Monticello Reservoir having a public boat launching area with parking and sanitary facilities on land acquired for recreational purposes; a scenic overlook on the eastern shore of Monticello Reservoir with parking, picnic, and sanitary facilities; and appurtenant facilities.

The South Carolina Pollution Control Authority issued a Water Quality Certificate, pursuant to Section 401 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. §§ 1251-1376, 1341, by letter dated January 11, 1973, which stated that, assuming the operation of the 900 mW Unit 1 of the V. C. Summer Nuclear Complex, there is reasonable assurance that the construction and operation of the Monticello impoundment and the Fairfield Pumped Storage Facility will not violate applicable water quality standards. By letter dated February 13 1973, the South Carolina Pollution Control Authority issued a permit for the dredging of a tailrace canal for the Fairfield Pumped Storage Facility along Frees Creek. By letter dated June 26, 1974, the South Carolina Department of Health and Environmental Control stated that there is reasonable assurance that the redeveloped Parr Hydroelectric Development will not violate applicable water quality standards and stated its intent to certify this development.

Study of the existing and proposed structures indicates that the project, its structures and appurtenant facilities will be safe and adequate provided proper materials and accepted construction practice and procedure are used.

With respect to economic feasibility, even before the recent escalation of fuel costs¹ and lack of supplies, studies show that estimated annual project costs of the redeveloped project to include authorization to use Monticello Reservoir for cooling the proposed 900 mW Unit 1 of the V. C. Summer Nuclear Complex compare favorably to costs for a gas turbine alternative and are more feasible than either nuclear or other fossil fuel alternatives. Estimated annual project costs of the redeveloped project to include use of Monticello Reservoir for cooling a second potential 900 mW nuclear unit would make the project more economically feasible than any nuclear or fossil fuel alternative. Studies show that no other conventional and pumped storage hydroelectric sites located within the Applicant's service area are as economically feasible for development.

Pursuant to Section 2.81 of the Commission's Rules then in effect, 18 CFR § 2.81 (1972), Applicant submitted an Exhibit W or environmental report. Based upon an independent analysis of information contained in this report, the Final Environmental Statement, Virgil C. Summer Nuclear Station of the Atomic Energy Commission dated January 25, 1972, and independent investigations by Commission Staff, Commission Staff compiled a Draft Environmental Impact Statement on the proposed project and circulated it among the interested Federal, State, and local agencies as well as to individuals and organizations for comment pursuant to Commission Order No. 415-C, issued December 18, 1972, 48 FPC 1442 (1972). After consideration and review of these comments, a Final Environmental Impact Statement was prepared by Commission Staff. On the basis of the information contained in the Staff Final Environmental Impact Statement and other data on file with the Commission, we believe that the beneficial effects to be derived from redevelopment of the Parr Project No. 1894 to include the use of Monticello Reservoir for cooling the 900 mW Unit 1 of the V. C. Summer Nuclear Complex, subject to the conditions hereinafter imposed, outweigh the adverse effects upon the environment. We discuss hereinafter the relevant environmental impacts which we have considered pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969, 42 U.S.C. § 4432 (2)(C).

Construction of the redeveloped Parr Project No. 1894 and the V. C. Summer Nuclear Station will result in the influx of a construction force of 1,800 workers,

¹ FPC Form 423 reports pursuant to 18 CFR § 141.61 (1974) show that fuel costs for the gas turbine alternative are more than twice as high as those costs used in the economic feasibility studies referred to in the Staff Final Environmental Impact Statement.

600 of which would be employed in connection with the construction of the Parr project. It is estimated that approximately 30% of the anticipated 1,800 workers are now living within a 25-mile radius of the project area. Since the majority of the remaining labor force would relocate in Columbia, South Carolina, the number of workers relocating in the project area will probably be small. Local area service facilities should absorb these workers without any great difficulty. After construction a small permanent increase in local population would result in connection with operation and maintenance of the project and the nuclear station. For the above noted reasons we do not believe that the disruption of local services and local businesses will be significant.

Disruption of traffic, schools, and school busing could occur during construction of the proposed project. State Highway 215 will be the primary road used in connection with construction. The Applicant has consulted with the South Carolina Highway Department and arranged for necessary improvements at two places of concern, the intersection of State Highways 213 and 215 and the entrance to the proposed nuclear station, to insure maximum highway safety. Furthermore, the Applicant has discussed with the School Bus Division of the South Carolina Department of Education, the need to arrange construction shift times and related travel in order to minimize conflicts with school bus schedules.

The major adverse impact on the area's human resources would result from the relocation of up to 25 families, 5 small cemeteries, and portions of State Route 215 and County Route 99 due to the inundation of 6,800 acres of land by the upper reservoir.

In the license this day issued, we are requiring Applicant to establish a relocation advisory service and to provide reasonable financial assistance for relocation purposes. With respect to the 5 cemeteries in the project area, we note that the Applicant has relocated and marked these cemeteries as stated in the South Carolina Department of Archives and History's letter dated October 20, 1972. While the relocation of State Route 215 and County Route 99 is unavoidable if the project is built, we note that County Route 99 will be relocated at Applicant's expense. Furthermore, we are requiring Applicant to provide access roads for those individuals not displaced by the project but adversely affected by the road relocations.

The inundation of the area within the proposed upper reservoir will result in the loss of 700 acres of agricultural lands. Agriculture is neither a major land use nor major source of income and constitutes only 17 percent of total land use in Fairfield and Newberry Counties. Furthermore, agricultural use has declined 4.3 percent in the period 1958 to 1967. Low fertility and high soil erodibility makes the land unsuitable for intertilled crops. Agricultural land is now used for small scale crop production or for pastureland.

In addition, 3,000 acres of pine plantations and 3,000 acres of mixed pine and bottomland hardwood will be lost by creation of the reservoir. The pine stands have commercial value as timber and pulp. The mixed pine and bottomland hardwood stands support commercial timber operations and provide wildlife cover and food. Fairfield County is the most heavily forested county in the State of South Carolina. Five major paper and pulp companies own 76,200 acres of forested land in Fairfield County. The Sumter National Forest comprises another 12,100 acres in Fairfield County. The volume of softwood harvested has increased considerably since the year 1958 while the hardwood harvest has decreased. Forestry is a major commercial resource adversely affected by the proposed project.

The installation of Bescule gates on top of the existing Parr dam will result in the inundation of 2,550 acres of bottomland hardwoods in Parr Reservoir. Additionally, 300 acres of national forest land presently used as a waterfowl management area would be lost. However, an existing quarry operation 10 miles upstream from the existing Parr dam would not be affected.

The proposed project would affect the Davis Plantation, a registered National Historic Site. The shoreline of the Monticello Reservoir would be 1,000 feet from the plantation at the nearest point. Views from the Davis Plantation would be changed from a view of rolling wooded hills to a view of water, which would include periodic mud flats, as noted below.

Two sites listed on the South Carolina survey of historic places, Fonti Flora and Monticello Church, will be in the area of the Monticello Reservoir. The South Carolina Department of Archives and History by letter dated October 20, 1972, stated that there would be no adverse effect on these historic properties. Four archaeological sites located in the project area would not be inundated. However, in view of the fact that some unknown sites may be inundated, we are providing for archeological survey and salvage excavations before construction and inundation.

The 4.5 foot daily fluctuation of the Monticello Reservoir would create mud flats when drawn down. However, less fluctuation and high water levels would be present on weekend days when the greatest recreational use would occur. More extensive fluctuation of water levels (10 feet) would occur on the Parr Reservoir. Mud flats of an average width of 375 feet would be created with the reservoir fully drawn down. This adverse visual impact would occur during early morning hours on weekdays and, more significantly, during the weekend period of greatest recreational use. However, the only views of the reservoir from roads would be at points where a secondary road crosses Cannon's and Heller's Creek. We believe the planting of selected species of plants will minimize the adverse visual impacts at both reservoirs and are so conditioning this license.

None of the species considered endangered in South Carolina by the United States Fish and Wildlife Service (America alligator, eastern brown pelican, southern bald eagle, Eskimo curlew, American ivory-billed woodpecker, Backman's warbler) are known to nest or reside in the project area. Some wildlife species, however, would be affected by the inundation of 2,550 and 6,800 acres for the Parr and Monticello Reservoirs, respectively.

Loblolly pine-hardwood forest and longleaf pine forest generally support 1 deer per 30 to 50 acres and 1 deer per 73 acres, respectively. South Carolina bottomland hardwoods, however, support 1 deer per 13 acres. Thus, the beneficial habitat and food producing characteristics of a bottomland hardwood environment are normally significant for whitetailed deer populations. We do not believe, however, that these general carrying capacities of South Carolina forests are representative of carrying capacities in the project area for the following reasons.

As noted in the Final Environmental Impact Statement, pine plantations, mixed pine-hardwood plantations, and hardwood forests are the three forest communities in the areas proposed to be inundated. The pine plantations contained a sparse understory. No shelter, forage, or browse is significantly available. Limited amounts of Walter's smilax, honeysuckle, blackberry, and dogwood are found; but no deer have been observed or trapped. Thus, the carrying capacity of the 3,000 acres of pine plantations to be inundated by the Monticello Reservoir is low.

The carrying capacity of the mixed pine and bottomland hardwood forest, on the other hand, is fair. Walter's smilax and sedge constitute the most abundant

browse for wildlife. Understory vegetation is diverse although none of the vegetative types can be considered abundant. This forest type, primarily located along Frees Creek, represents the best quality wildlife habitat in the project area and produces deer at or near the 1 deer per 30 to 50 acres carrying capacity heretofore noted.

The bottomland hardwood stands along the Parr Reservoir do not produce significant understory vegetation because these stands are mature and dense, thus restricting light penetration. Understory vegetation is most significant near railroad and transmission line rights-of-way, abandoned farm fields, and abandoned roads. However, these openings do not constitute a substantial portion of this area. The carrying capacity of this area is substantially less than 1 deer per 13 acres. Thus, the total number of white-tailed deer adversely affected by the inundation of Monticello and Parr Reservoirs will not be as great as would be expected on the basis of representative South Carolina standards.

Other game species found within the project area include rabbit, squirrel, quail, and dove. Wild turkeys were reintroduced into the adjacent Sumter National Forest during the years 1953 to 1956. Turkeys, singly and in small flocks, have been occasionally sighted in the project area. Opossum and raccoon were also noted in the project area. Populations of these species were low in the pine plantations. Only songbirds and small mammals (cotton mouse, golden mouse, short-tail shrew, pine vole) were observed. The mixed pine and bottomland hardwood areas contained opossum and raccoon. Small mammals were more abundant here than in the pine plantations. Songbirds were less abundant than in the pine plantations. The mature trees of the bottomland hardwood forest near Parr Reservoir produce an annual mast crop (acorns, seeds) which is primarily utilized by squirrel and turkey. Populations of other wildlife species do not appear to be significant due to the restricted light penetration previously noted.

Waterfowl have historically used the Broad River as a migratory flyway and meeting area. Fluctuations in the Parr Reservoir will not preclude use of the reservoir for feeding purposes either for resident or migratory waterfowl species.

Some wood duck nesting areas along Parr Reservoir will be eliminated by the 2,500-acre inundation. Wood duck is the only resident waterfowl species. The 10-foot daily fluctuation of Parr Reservoir will curtail successful shoreline nesting and rearing of wood duck young. More importantly, the inundation of lands in connection with Parr Reservoir will destroy 300 acres of Sumter National Forest used as a waterfowl management area, resulting in further loss of wood duck nesting habitat. The absence of suitable nesting habitat is a major limiting factor at present. Additionally, fluctuation of Parr Reservoir will adversely affect a small existing population of fur bearers.

We note that a memorandum of understanding between the Applicant and the South Carolina Wildlife and Marine Resources Department has been negotiated which provides for the dedication of 90 acres of suitable Broad River bottomland by Applicant for development as a greentree reservoir site. Additionally, Applicant has entered into an agreement with the United States Forest Service which provides for land exchanges between the parties, the dedication of a minimum of 90 acres for greentree reservoirs,² and the payment of money by Applicant to revise the Broad River Waterfowl Management Plan, with \$4,000 specified as the initial advance deposit. These agreements should minimize the adverse environmental impacts on waterfowl and furbearers.

The inundation of 2,550 and 6,800 acres for Parr and Monticello Reservoirs, respectively, will adversely affect wildlife populations to the extent that species migrating from the inundated areas could not be absorbed in adjacent areas. This

² A greentree reservoir, as defined in the agreement, is a reservoir with controlled fall and winter water levels surrounded by mast bearing hardwood forest species.

will occur if these areas have species populations at or near the carrying capacity of the area. If all adjacent areas have species population at or near the carrying capacity, species populations will be reduced by disease, starvation, or hunting pressure until a new ecological balance is established. In this context, we note that construction of the 1-mile-long Fairfield-Summer transmission tieline and relocation of a Duke Power Company Transmission line will also displace wildlife during the construction period. However, after the construction period, edge habitat management along these lines will provide a greater variety of food and cover for wildlife in these areas and thus mitigate to some extent adverse effects on wildlife. Furthermore, we note that extensive timber cutting operations in Fairfield and Newberry Counties will increase forest openings and understory vegetation. These operations increase the carrying capacity of the area for wildlife and increase the possibility that wildlife migrating from the project area can be absorbed in adjacent areas.

In the interest of further mitigating any potential adverse effects on waterfowl and wildlife, we are, however, requiring Applicant to file for Commission approval a waterfowl habitat mitigation plan as part of a revised Exhibit S in cooperation with the South Carolina Wildlife and Marine Resources Department and the United States Department of the Interior's Bureau of Sport Fisheries and Wildlife. We have also provided for the filing of a revised Exhibit S within 5 years after issuance of this license which shall set out a schedule for protecting and enhancing the fish and wildlife affected by the project. Finally, we are requiring Applicant to study the feasibility of constructing subimpoundments on Heller's and Cannon's Creeks for the purpose of providing recreational benefits, including additional waterfowl and wildlife habitat and to submit such study and any plans for implementation as part of its revised Exhibit R within one year after issuance of the license. These subimpoundments, if found to best serve public recreational needs, would be constructed in lieu of developing the 180.5 acre parcel on Heller's Creek and the 387 acre parcel near Fairfield Powerhouse for recreational purposes as proposed in the application. We believe the implementation of these memoranda of understanding and license conditions should mitigate most, if not all, of the adverse effects on wildlife and waterfowl heretofore noted.

The effects of proposed project operation on the aquatic environment include the effects of construction and operation of the Fairfield and Parr project components (water level fluctuations in both reservoirs; pumping operations) as well as the effects of operation of the V. C. Summer Nuclear Station. These effects are considered below.

During construction of the proposed project works, turbidity in the Broad River will increase and result in the reduction of rooted algae necessary to support higher food chain aquatic organisms. We are requiring Applicant to take reasonable measures to prevent soil erosion and stream siltation during construction of the project in order to minimize this short-term adverse environmental impact.

Operation of the proposed project is not expected to substantially increase soil erosion so as to result in siltation of Parr Reservoir. Such adverse effects will be more pronounced during the construction period and for a short time thereafter. The Applicant will be required to take all reasonable measures to prevent soil erosion and stream siltation caused by the operation and mainte-

nance of the project. Soil erosion should also be minimized by the planting of selected species of plants, heretofore noted.

Pumping operations at the Fairfield facility will cause an exchange of fish and associated aquatic organisms between reservoirs. A review of the species and populations of fish involved and, more importantly, the particular design of and operational mode for the pump-turbines shows that fish mortalities will not be substantial.

Daily fluctuations in the Parr Reservoir of the magnitude heretofore noted will adversely affect benthic organisms which are relatively immobile. Consequently, an increase in biomass and carrying capacity of Parr Reservoir will not be realized even though such an increase would normally be expected where 2,550 surface acres of aquatic habitat are created. Water level fluctuations in Monticello Reservoir will have a minimal effect on the spawning of nest building centrarchids. Spawning of largemouth bass and bluegill would be adversely affected by the decreased surface area caused by the 10-foot fluctuation of Parr Reservoir.

Operation of the Summer station will have a significant impact on the biota of Monticello Reservoir in the intake structure, heat exchangers, effluent discharge canal, and mixing zones. Impingement of fish on the cooling water intake screens will not be significant since approach velocities of water to and water velocities through these screens are sufficiently low. Fish impinged on the screen will be suffocated. Plankton and small fish will also be drawn through the screen. Thermal and mechanical stresses will be imposed on these organisms as they travel through the condenser system.

Significant mortalities will occur when reservoir temperatures are 80°F or higher. Such mortalities pose a serious threat to the viability of the reservoir's ecosystem where the volume of cooling water pumped through the condenser system is a significant part of that reservoir's volume. However, only approximately 0.5 percent of the reservoir's volume will be pumped through the condenser system daily. Assuming the worst possible temperature conditions and complete planktonic kills, this planktonic loss will be small when compared to the size of the reservoir's standing crop. We note that a mechanical cleaning system, rather than biocides, will be used to prevent condenser tubing fouling. This cleaning system will mitigate adverse impacts on plankton.

Thermal discharges from the Summer Nuclear Station will raise water temperatures in the discharge canal to a maximum of 113°F. The discharge canal and pond will occupy 40 acre-feet of water out of the 440,000 acre-feet volume of Monticello Reservoir. Surface temperatures in the mixing zone between the pond and the rest of the reservoir would be lethal to fish life, through subsurface temperatures in the mixing zone will be acceptable. Furthermore, fish will be able to avoid areas in the mixing zone with unfavorable temperatures.

Under the worst conditions of low water and high withdrawal rates, waters released from Monticello to Parr will be no greater than 3°F warmer than Parr Reservoir water. This temperature increment could alter the species diversity of aquatic organisms in Parr Reservoir in the vicinity of Frees Creek but will have no discernible impact on fish in Parr Reservoir or the Broad River downstream.

We note, however, a more serious potential problem with respect to thermal discharges. Fish are attracted to warm areas in reservoirs during the winter. Sudden decreases in temperature in these areas during the winter as a result of nuclear station shutdown on the Monticello Reservoir can result in significant fish mortality. Furthermore, these zones may adversely affect fish populations through changes in maturation time, disease resistance, behavior and metabolic

rates. Although the commercial and sport fishing in Monticello Reservoir is expected to be slight, we are providing that the Applicant monitor this particular aspect of the project operation for inclusion in the revised Exhibit S.

The adverse effects on water quality of chemical discharges from the nuclear station to Monticello Reservoir have been discussed in the Atomic Energy Commission's Final Environmental Statement. These chemical discharges were separated into the following categories: start-up wastes, floor drain and oil-contaminated wastes, ion exchange regenerant wastes, sewage and other sanitary wastes, and steam generator blowdown. We believe that none of these discharges would significantly alter water quality and adversely affect aquatic biota.

In light of these potential adverse environmental impacts on the water quality of project waters, we are requiring Applicant to monitor the water quality of Parr and Monticello Reservoirs at selected locations as set out in the Final Environmental Impact Statement. This monitoring program will be for a period of five years from the date of commencement of project operation. At the end of this period Applicant will be required to file a final report on the monitoring program, including recommendations for further monitoring and proposals for the maintenance and improvement of the aquatic environment.

Enlargement of Parr Reservoir will create conditions conducive to actinomycete growth and odor production by increasing the amount of organic nutrients. Odor problems in the Columbia municipal water supply were found by the U.S. Environmental Protection Agency to be caused by nutrients in the Broad River upstream from the Parr Reservoir. The maximum increase in temperature of water discharged through the Fairfield Facility will not greatly increase actinomycete development. As previously noted, this water temperature increase will be greatest in the vicinity of Frees Creek. This water will be diluted by waters of the Parr Reservoir so that no increase in water temperature and conditions conducive to actinomycete development would be apparent below Parr Dam. In any event, we are requiring Applicant to monitor odors in its water quality station downstream of Parr Dam and promptly alert the Columbia municipal water treatment plant personnel should musty odors be detected.

In addition, we are requiring Applicant to monitor dissolved oxygen, temperature, stream flow, conductivity, and pH at its water quality station downstream of Parr Reservoir on a continuous basis. We are also requiring Applicant to monitor turbidity and heavy metals on a monthly basis, or more often if found necessary.

Turning to recreational development, we are approving a 300-acre subimpoundment planned for the north corner of Monticello Reservoir. This subimpoundment will be only slightly affected by thermal discharges from the nuclear station and the periodic intermixing with turbid waters from the Monticello Reservoir. We note that the existing fishery in Parr Reservoir and the Broad River is classified as very poor due to turbidity. We are requiring Applicant to study and develop fish management plans to maximize the sport fishing potential of Parr Reservoir, particularly Heller's and Cannon's Creeks, and of the Monticello Reservoir subimpoundment. Development and implementation of satisfactory plans should offset any losses to the existing fishery.

We note that the 300-acre subimpoundment recreational facilities will be the first in Fairfield County. Problems may arise due to maximum use of the picnic area, and possible overuse of the fishing impoundment could occur within a short period of time. We are requiring the filing of revisions to the Exhibit R within one year from the date of the issuance of this license which will show

additional proposed recreational facilities. We believe recreational use of Frees Creek as proposed by Applicant will be inhibited by the combined effects of drawdown and rapid stream flow due to the operation of the Fairfield facility. However, as previously noted, we are further requiring Applicant to study the feasibility of constructing recreational subimpoundments on Heller's and Cannon's Creeks in lieu of developing the 180.5-acre recreational parcel on Heller's Creek and the 387-acre recreational parcel on Frees Creek near Fairfield Powerhouse. Required minimum flow releases averaging 800 cfs daily should adequately protect downstream public recreational use and development.

Construction and operation of the proposed project by Applicant will result in certain adverse effects which are considered unavoidable. The displacement of 25 families, the loss of 700 acres of agricultural and 8,550 acres of forest land, the influx of construction workers, and scenic and aesthetic changes are the primary unavoidable adverse impacts on the human environment. Approximately 9,400 acres of wildlife habitat will be lost. The extent and severity of the resulting displacement of wildlife to adjacent areas is presently unknown. As heretofore noted, we do not believe this adverse effect upon wildlife will be substantial.

Some unavoidable fish mortality will occur as a result of the operation of the Fairfield pump-turbines. Many aquatic organisms in the condenser cooling water for the V. C. Summer nuclear plant will be killed, especially in the warmer months of the year. However, as heretofore noted, we do not believe that the adverse impacts on aquatic organisms will be significant.

We have considered alternatives to the proposed project. The alternatives were: licensing of the redeveloped Parr project without allowing the use of Monticello Reservoir for condenser cooling purposes; licensing of the project with a smaller upper reservoir; denial of the application; Federal takeover of the project; power purchases from other systems; coal-fired and nuclear steamelectric plants; oil-fueled gas turbines; other conventional and pumped-storage hydroelectric projects; and conservation of energy.

Our review of the alternative sources of power production convinces us that they are less attractive than the proposed project. The adverse environmental impacts of such alternatives would include noise, visual impacts, emissions, and increased heat rejection. In addition, the operation of alternative thermal power sources would deplete even further the Nation's critically short fossil fuel supplies.

At the same time that we attempt to make the most efficient use of our non-depleting hydroelectric resources consistent with environmental protection, it is our opinion that electrical energy conservation practices are desirable and should be promoted vigorously. Though conservation cannot eliminate growth in energy demand and the need to expand electric generating capacity, such a program could effect a significant reduction in the need for new generating capacity over the next decade.

We believe that relicensing the redeveloped Parr Project best meets the standard of Section 10(a) of the Act. 16 U.S.C. § 803(a). That section requires that a project approved shall "be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water power development, and for other beneficial public uses, including recreational purposes * * *."

We have examined the question of comprehensive development in terms of resource conservation, water quality control, fish and wildlife protection, navi-

gation, coordination of project capacity with facilities in the region, and the economic consequence of takeover. With respect to water quality control, fish and wildlife protection, and navigation, we believe that relicensing with appropriate license conditions will adequately protect such resource values. The redevelopment of the Parr Project will also provide needed public recreation facilities.

We do not believe that Federal takeover of the existing project pursuant to Section 14 of the Act (16 U.S.C. § 807) would be in the public interest. Project No. 1894 subject to Federal takeover has an installed capacity of 14.9 mW. The substantial reconstruction proposed by Applicant includes a 518.4 mW pumped-storage facility and a 900 mW nuclear plant. The proposed redevelopment would not be subject to takeover. Applicant's redevelopment will maximize the energy-producing capacity of the region. For example, the installed capacity of the existing Parr Project amounts to approximately .49 percent of the Applicant's total system capacity for 1974, while the redeveloped Parr Project and associated V. C. Summer Nuclear Unit #1 would represent approximately 32 percent of the Applicant's system capacity for 1978.³

The Applicant is a member of Southeastern Electric Reliability Council (SERC). Elimination of the Parr Project from the Applicant's system would decrease member reserves, and consequently, system reliability. Without the Parr redevelopment, it is estimated that Applicant's system reserve for 1978 would be about 6.9 percent versus 19.8 percent with redevelopment which compares favorably with the planned reserve capacity for SERC.

There are no existing Federal projects within the Santee River Basin. The only Federal facilities within reasonable transmission distance are the Hartwell (264 mW) and Clark Hill (280 mW) hydroelectric projects, which are not available to fulfill the necessary pumping requirements. Thus, were the Federal Government to take over the existing plant and develop on its own an associated project with a similar capacity of 518.4 mW as proposed by the Applicant without the nuclear plant, there is no generation available from Federal projects to support its operation.

The Applicant estimates the fair value of the existing project to be \$15,000,000. As of June 30, 1971, it estimates its net investment at \$1,533,000 and reasonable severance damages in excess of \$190,000. The Applicant further estimates that the total amount due it upon Federal takeover would be approximately \$1,743,000.

Even assuming that takeover of this project would result in some additional income to the Federal treasury in excess of direct expenses, it would appear that any such amounts would be to some extent offset by the corresponding losses in Federal income taxes. In addition, the impacts upon local governments by reason of takeover would be substantial. Approximately 7 percent of Fairfield County's and 3 percent of Newberry County's annual tax revenues are attributable to the existing Parr Project. The estimated annual taxes contributed by the project to local, State, and Federal governments is \$214,000. It is estimated that the potential tax revenues and fees to local, State, and Federal governments after development and expansion would be \$1,000,000 annually.

The short-term use of the local environment as represented by a license period of up to 50 years would provide benefits in power generation, recreational use and economic growth. These benefits contrast, however, with the effects of the ecological alterations, heretofore noted, caused by the construction and operation of the project. For instance, the inundation of 2,550 additional acres of land by enlargement of the existing Parr Reservoir and construction of the

³ Table 1-1, Final Environmental Impact Statement for South Carolina Electric & Gas Company, Project No. 1894, pages 1-5.

6,800-acre Monticello Reservoir would result in the relocation of as many as 25 families and loss of forest and agricultural resources and wildlife habitat. Notwithstanding these short-term local impacts, we believe the maintenance and enhancement of long-term productivity will best be achieved by devoting the land and water resources of the area to the highest use they are capable of supporting *i.e.*, the production of electric power.

The Parr Project will result in the irreversible and irretrievable commitment of those construction materials and supplies which will not be salvaged after their use, as well as water lost through evaporation from both Parr and Monticello Reservoirs. It will be possible to remove structures, drain the impoundment, and replant trees at the end of the license period. To the extent that the project area were not restored to its natural state, the elimination of forest land would also be an irretrievable commitment of resources.

By letter dated September 15, 1972, the Secretary of the Commission requested comments pursuant to Section 4(e) of the Act from appropriate Federal, State and local agencies on the amended application. Federal agencies were also requested to submit comments and recommendations on takeover of the project pursuant to Section 14 of the Act and Section 16.8 of the Commission's Regulations under the Federal Power Act. No recommendation for Federal takeover of the project has been received.

The U.S. Department of the Army, Corps of Engineers (Corps), by letter dated December 14, 1972, stated it had no objection to issuance of a license. The Corps discussed the possible effect which the proposed 9-foot increase in the elevation of Parr Reservoir would have on a potential upstream Federal development, known as the Blairs Project. The Blairs Project was recommended in a plan for development of the Santee River. S. Doc. No. 189, 78th Cong., 2d Sess. (1944). The Corps stated that construction of this facility in the near future was unlikely. Furthermore, the redeveloped Parr Project would not significantly affect plans for redevelopment of the Santee River Basin. Therefore, the Corps stated that it had no objection to issuance of the license containing the usual conditions for the protection of the public interest. The Corps has approved the plan of the Parr Dam as it affects navigation by letter dated May 1, 1974.

The U.S. Atomic Energy Commission by letter dated December 13, 1973, which transmitted a copy of its Draft Environmental Impact Statement and a copy of its Safety Evaluation Report for A.E.C. Docket No. 50-395, stated that no license conditions to protect the interests of the Atomic Energy Commission were recommended.

The U.S. Department of the Interior (Interior) by letter dated June 15, 1973, stated that the proposed project will not directly affect any existing or proposed units of the National Park System or any sites that are eligible or recommended for registration as National, Historical, Natural, or Environmental Education Landmarks. Interior did recommend against issuance of a license until an acceptable Exhibit S is filed. We believe the public interest will be better served by issuance of the license with provision for the filing of a revised Exhibit S pursuant to Article 54 of the license. Such a revised Exhibit S will be based on the results of the comprehensive long-term post operational monitoring programs which will determine the effects on fish and wildlife. The availability of this information will enable us to further protect and enhance fish and wildlife in the area as may be necessary or appropriate.

Interior also discussed the impact of the redeveloped Parr project on a potential downstream Federal development, known as the Frost Shoals Project.

S. Doc. No. 189, *supra*. We note that there is no present plan or schedule for construction of this facility.

Interior further objected to the inclusion of the 55 acres of islands in the Monticello Reservoir for future recreational use since 20 of these acres are within a proposed nuclear exclusion zone. Atomic Energy Commission regulations state that "activities unrelated to operation of the reactor may be permitted in an exclusion area under appropriate limitations, provided that no significant hazards to the public health and safety will result." 10 CFR § 100.3(a) (1973). With appropriate safeguards we believe these islands may serve public recreational needs and are requiring their inclusion within the project boundary.

Interior stated that the 387-acre recreational parcel adjacent to Fairfield Powerhouse is inappropriate for recreational development due to the limited recreation capability of Monticello and Parr Reservoirs, lack of public access, proposed restricted public use of the Fairfield tailrace, transmission lines, railroad right-of-way, and steep and hilly topography. We are reserving decision on the suitability of the 387-acre recreational parcel pending the completion of a study which will compare the recreational advantages and disadvantages of this site and the 187-acre recreational parcel heretofore noted with possible subimpoundments on Cannon's and Heller's Creeks.

Finally, Interior requested that recreational lands extend a minimum of 200 horizontal feet from the high water mark. We are requiring Applicant to acquire in fee shoreline lands up to the 270-foot contour or up to 50 feet horizontal measure from the 266-foot contour, whichever is greater, on Parr Reservoir and shoreline lands up to the 430-foot contour or up to 50 feet horizontal measure from the 425-foot contour, whichever is greater, on Monticello Reservoir. This license condition will provide a strip of land 50 to 200 feet in horizontal measure along these reservoirs.

We do not preclude the possibility of requiring Applicant to acquire additional land for recreational purposes in the future. At this time, however, with the exception of those areas of intensive recreational use heretofore considered, we believe the acquisition of a strip of land 50 to 200 feet in width around the Monticello and Parr Reservoirs adequately protects the public interest. Other comments submitted by Interior have been addressed in the Final Environmental Impact Statement and considered by this Commission.

The U.S. Department of Agriculture, Forest Service (Forest Service) transmitted with its letter dated December 20, 1973, a Memorandum of Agreement between the Forest Service and the Applicant providing, in part, for the interests of the Forest Service. The details of this agreement have been heretofore noted. The Forest Service also suggested that a detailed development plan for the 300-acre subimpoundment be drafted which would include a parking lot for a minimum of 40 cars. We have conditioned the license to require the filing of such a detailed plan within one year from the date of issuance of this license. Finally, the Department of Agriculture recommended that the entire area within the triangle bounded by State Route 215, relocated State Route 99, and County Road 347 be considered for dedicating to public recreation in connection with the Monticello Reservoir subimpoundment. We are requiring that the Applicant include such land in the feasibility study to be filed pursuant to Article 45.

By letter dated November 7, 1972, the U.S. Department of Health, Education, and Welfare commented on the health aspects of proposed recreational facilities and recommended that the plans for sanitary facilities be submitted to the South Carolina State Board of Health for approval. In Article 43 we have

provided for the filing of a solid waste management plan approved by the appropriate State agency.

The U.S. Department of Transportation by letter dated November 9, 1972, noted that the enlargement of the Parr Project will have a minimal effect on the highway system but will require the relocation of portions of South Carolina Highway Route 99 and Route 215, both of which are included in the Federal Aid Secondary System of highways. The Department expressed concern regarding the cost of these road relocations. We note that legislation has been passed by the South Carolina General Assembly and approved by the Governor which provides for relocation of State Route 99 at Applicant's expense.

The South Carolina Water Resources Commission by letter dated December 12, 1972, stated that approval of the application would have less adverse environmental effects than its alternatives and urged the issuance of a license.

The South Carolina Recreation Commission by letter dated October 27, 1972, stated that they supported the project, primarily in light of the recreational benefits of the Monticello subimpoundment.

The South Carolina Department of Agriculture (Department) by letter dated November 3, 1972, stated that the benefits to be derived from the project far outweigh the adverse effects. The Department also stated that the adverse impact of the project on agriculture is not substantial.

The South Carolina Public Service Commission, the State Development Board, the South Carolina State Commission of Forestry, the Town of Winnsboro, the County of Newberry, and the City of Columbia by letters dated October 18, 1972, October 16, 1972, November 6, 1972, December 18, 1972, November 14, 1972, and November 16 1972, respectively, offered no objection to issuance of a license.

The South Carolina Department of Archives and History by letter dated October 20, 1972, commented on the project's effect on historical places and five small cemeteries. These comments have been addressed in this order heretofore.

The South Carolina Wildlife and Marine Resources Department (Department) by letter dated February 16, 1973, stated that a memorandum of understanding had been signed by the Department and the Applicant concerning water flow and land management. We have provided for minimum flow releases in Article 14 of the license.

The South Carolina Land Resources Conservation Commission (Commission) by letter dated December 22, 1972, offered no objection to the project. The Commission did recommend that an erosion control plan be developed to control erosion arising during and after construction. We have provided for these concerns in Articles 21, 40, and 47 of the license.

Applicant indicates that it plans at some future date to construct a second, and perhaps a third, 900 mW nuclear steam-electric generating unit. We note that the application for this project only includes a request for the use of the Monticello Reservoir "as a cooling impoundment for the proposed V. C. Summer Nuclear Complex (A.E.C. Docket No. 50-395)," and the only unit which was the subject of licensing before the Atomic Energy Commission was the 900 mW Unit 1 of the V. C. Summer Nuclear Complex. Although the Staff's Draft and Final Environmental Impact Statement considered the impacts of future nuclear units, we are approving in this license order only the use of Monticello Reservoir waters to cool the 900-mW Unit 1 of the V. C. Summer Nuclear Complex. If, in the future, Applicant desires to construct any steam electric generating plants on project lands or wishes to construct any plants which would utilize project waters for cooling purposes, then prior to construction it must file an appropriate application for Commission approval.

We believe that the subject matter of the instant application has been fully developed and considered by this Commission. These facts have been fully developed in the Draft Environmental Impact Statement and comments thereon, as set out in the Final Environmental Impact Statement, and other data on file with the Commission. Therefore, we do not believe that a public hearing will contribute any new and relevant information and conclude that it is not in the public interest to hold a hearing in this proceeding.

Turning to the transmission facilities connected with this project, we conclude that the generator leads and 2.3-kV lines for six units, the three 2.3/13-kV transformers at the hydro station, the 13-kV tie from the hydro station to the 72.5 mW Parr Steam Plant, the 2.3-kV tie from the hydro station to the nearby 2.3/23-kV Parr distribution substation, the 2.3/23-kV, 5,000 kVA transformer bank at the Parr distribution substation, and appurtenant facilities at the existing Parr Hydroelectric Project are primary lines within the meaning of Section 3(11) of the Act. At the Fairfield Pumped-Storage Facility, the generator leads, the step-up facilities, the two 230-kV lines from Fairfield Powerhouse to the V. C. Summer Nuclear Station switchyard, and appurtenant facilities are "primary lines". All other lines connected to the V. C. Summer Nuclear Station switchyard are part of Applicant's interconnected system.

We have previously noted that no recommendation for Federal takeover of the existing Parr Hydroelectric Project has been received. We believe, also, that a recommendation to Congress for Federal takeover of the project on our own motion, pursuant to Section 16.9 of the Regulations, would be inappropriate for the reasons discussed hereinbefore. For many of the same reasons we believe it would also be inappropriate to issue a non-power license on our own motion.

No conflicting applications for a license pursuant to Section 15 of the Act are pending before this Commission. We conclude on the basis of the facts before us that a new power license should be issued to the Applicant effective on the first day of the month in which this order is issued and terminating June 30, 2020. We believe that such a term is appropriate because of the substantial amount of new construction which will occur in connection with this redeveloped project. This also takes into consideration the operation of the project under annual licenses since July 1, 1970.

The Commission finds:

(1) The Parr Project No. 1894 affects lands of the United States and is located on a navigable waterway of the United States.

(2) The Applicant, South Carolina Electric & Gas Company, is a corporation incorporated under the laws of the State of South Carolina and has submitted satisfactory evidence of compliance with the requirements of all applicable State laws insofar as necessary to effectuate the purposes of a license for the project.

(3) Public notice of the filing of the application was given on November 1, 1972. Robert A. and Martha M. Westbrook and W. R. Robinson filed petitions to intervene out-of-time.

(4) The petition of Robert A. and Martha M. Westbrook and the petition of W. R. Robinson have been granted.

(5) Intervenors Robert A. and Martha M. Westbrook should be permitted to withdraw their petition to intervene. Therefore, a public hearing is neither warranted nor in the public interest.

(6) No conflicting application is before the Commission.

(7) The project does not affect a government dam, nor will the issuance of a license therefor, as hereinafter provided, affect the development of any water resources for public purposes which should be undertaken by the United States.

(8) Subject to the terms and conditions hereinafter imposed, the project is best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes.

(9) The installed horsepower capacity of the project hereinafter authorized for the purpose of computing the capacity component of the administrative annual charge based on such capacity to be paid under the license for the project for the cost of administration of Part I of the Act is reasonable as hereinafter fixed and specified.

(10) It is desirable to reserve for a later date a determination as to the amount of annual charges for the use, occupancy and enjoyment of lands of the United States.

(11) The plans of the structures affecting navigation have been approved by the Corps of Engineers.

(12) The term of the license hereinafter authorized is reasonable.

(13) The following described transmission facilities which are included in the application for license, are parts of the project within the meaning of Section 3(11) of the Act and should be included in the license for the project: at the existing Parr Hydroelectric Project, the generator leads and 2.3-kV lines for six units, the three 2.2/13-kV transformers at the hydro station, the 13-kV tie from the hydro station to the 72.5 mW Parr Steam Plant, the 2.3-kV tie from the hydro station to the nearby 2.3/23-kV Parr distribution substation, the 2.3/23-kV, 5,000 kVA transformer bank at the Parr distribution substation, and appurtenant facilities; and at the proposed Fairfield Pumped Storage Facility, the generator leads, the step-up facilities, the two 230-kV lines from Fairfield Powerhouse to the V. C. Summer Nuclear Station, and appurtenant facilities.

(14) The Exhibits designated and described in paragraph (B) below conform to the Commission's Rules and Regulations and should be approved as part of the license for the project.

(15) The estimated cost of the redeveloped project compared to the estimated cost of suitable alternatives is reasonable.

(16) The Applicant has demonstrated satisfactory evidence that it has the necessary financial capabilities to undertake the redevelopment and operation of the project.

(17) No recommendation for Federal takeover has been received.

(18) Takeover of the existing Parr Hydroelectric Project No. 1894 is unwarranted at this time and it is appropriate and in the public interest to issue a new power license to Applicant subject to the terms and conditions hereinafter imposed.

The Commission orders:

(A) This license is hereby issued to South Carolina Electric & Gas Company (hereinafter Licensee) under the Act for a period commencing the first day of the month in which this order is issued and terminating June 30, 2020, for the redevelopment, operation and maintenance of the Parr Project No. 1894, located on the Broad River, in Fairfield and Newberry Counties, South Carolina, and which occupies lands of the United States within the Sumter National Forest, and further would affect navigable waters of the United States, subject to the terms and conditions of the Federal Power Act which is incorporated herein by reference as part of this license, and subject to such rules and regulations as the Commission has issued or prescribed under the provisions of the Act.

(B) The Parr Project No. 1894 consists of :

(i) all lands constituting the project area and enclosed by the project boundary, the limits of which are otherwise defined and/or interests in such lands necessary or appropriate for the purposes of the project, whether such lands or interests therein are owned or held by the Licensee or by the United States; such project area, project boundary, and other facilities being generally shown and described by certain exhibits which form part of the application for license and which are designated and described as follows :

Exhibit J: Sheet 1 (FPC No. 1894-25) filed September 30, 1971, revised March 18, 1974, and entitled: "General Area Map"

Sheets 2 and 3 (FPC Nos. 1894-26 and 27) filed September 30, 1971, revised March 18, 1974, and entitled "Operating Territory", showing Licensee's transmission system, power plant locations, and interconnections; and

Exhibit K: Sheet 8 (FPC No. 1894-44) filed March 1, 1972, revised July 26, 1972 and March 18, 1974, and entitled: "General Map of Project Area"

(ii) project works consisting of :

(a) Existing and redeveloped works of the Parr Hydroelectric Development consisting of : (1) a steel-frame brick powerhouse containing 6 generators rated at 2480 kW, each, and provisions for 2 additional units; (2) a 2715 foot long dam composed of a 300-foot integrally constructed powerhouse section, a 300-foot earth dike, a 90-foot non-overflow section, and a 2000-foot concrete overflow section, 35 feet high, with crest at elevation 257.0 feet, m.s.l., surmounted by Bascule gates; (3) a 4400 acre reservoir at maximum controlled surface elevation 266 feet, m.s.l., at the dam, extending upstream for 13 miles, having a useable storage capacity of 29,000 acre-feet in a drawdown of 10 feet, providing water for operation of the conventional hydroelectric development and serving as the lower reservoir of the pumped storage facility; and (4) transmission facilities composed of generator leads and 2.3-kV lines for six units, three 2.3/13-kV transformers at the hydro station, the 13-kV tie from the hydro station to the 72.5 mW Parr steam-electric plant, the 2.3-kV tie from the hydro station to the nearby 2.3/23-kV Parr distribution substation, and the 2.3/23-kV, 5,000 kVA transformer bank at the Parr distribution substation;

(b) The Fairfield Pumped Storage Facility, consisting of : (1) the Parr Reservoir which serves as the lower pool; (2) a 6800-acre upper pool (Monticello Reservoir having lengths of 5000, 3400, 1700, and 900 feet, each with crest at elevation pool elevation, and a useable storage capacity of 29,000 acre-feet in an operating drawdown of 4.5 feet; (3) four random-fill dams impounding Monticello Reservoir having lengths of 5000, 3400, 1700, and 900 feet, each with crest at elevation 434 feet, m.s.l.; (4) a 400-foot-wide, 600-foot-long, intake channel in the south abutment of the 5,000-foot-long dam; a gated intake structure with invert at elevation 375 feet, m.s.l.; and four 800-foot-long, 26-foot diameter, surface penstocks bifurcating into eight 18-foot-diameter concrete-encased penstocks; (5) a semi-outdoor type generating station (Fairfield Powerhouse) housing 8 reversible pump-turbine units, each having a minimum capacity of 83,000 horsepower at the minimum head of 150 feet, to be operated by remote-automatic, local-automatic, or local-manual control option, directly coupled to 8 motor-generators, each with a nameplate rating of 64,800 kilowatts in the generating mode and 100,000 horsepower when operating as a motor; and (6) associated transmission facilities including generator leads, the step-up facilities, and the two 230-kv transmission lines from Fairfield Powerhouse to the V. C. Summer Nuclear Station;

(c) Recreational features consisting of : (1) a boat launching area adjacent to the crossing of Heller's Creek by County Road 28 in Parr Reservoir; (2) a 300-

acre subimpoundment in the northern end of Monticello Reservoir having a public boat launching area with parking and sanitary facilities; and (3) a scenic overlook on the eastern shore of Monticello Reservoir with parking, picnic, and sanitary facilities; and

(d) Appurtenant facilities:

* * * the location, nature, and character of which are shown and described by exhibits hereinbefore cited and by certain other exhibits which also form part of the amended application for license and which are designated and described as follows:

Exhibit L	FPC No. 1894-	Date filed	Showing
Sheet 2.....	36	Sept. 30, 1971	Fairfield Powerhouse and Switchyard Plans.
Sheet 3.....	46	Mar. 18, 1974	Section through Units, Fairfield Powerhouse.
Sheet 4.....	47	Mar. 18, 1974	Intake and Penstocks, Fairfield Powerhouse.
Sheet 5.....	39	Sept. 30, 1971	Frees Creek Dam.
Sheet 6.....	40	Sept. 30, 1971	One Line Electrical Schematic Diagram, Fairfield Powerhouse.
Sheet 7.....	41	Mar. 1, 1972	Parr Dam and General Layout.
Sheet 8.....	42	Mar. 1, 1972	Parr Powerhouse and Section through Units.
Sheet 9.....	43	Sept. 30, 1971	Sectional Plan of Parr Power Structure and One Line Electrical Schematic Diagram.

Exhibit M: Three typewritten pages entitled "Fairfield Pumped Storage Facility—Major Equipment", pages 1, 2, and 3 of 4 pages of Exhibit M filed July 26, 1972. One typewritten page entitled "Part Hydroelectric Facility—Major Equipment", page 4 of 4 pages of Exhibit M filed July 26, 1972.

Exhibit R: Eleven typewritten pages and two sketches (Typical Boat Launching Facility and Typical Overlook and Picnic Area—Exhibits R-1 and R-2, respectively) entitled "Recreation Use Plan" filed July 26, 1972; and one tracing, Exhibit R, Sheet 3 (FPC No. 1894-45) filed March 1, 1972, revised July 26, 1972, entitled "Proposed Recreational Development".

Exhibit V: Twenty-four typewritten pages of text entitled "Natural, Historic, and Scenic Values and Resources" filed July 26, 1972, and above listed Exhibit K, Sheet 8 (FPC No. 1894-44).

(iii) All of the structures, fixtures, equipment, or facilities used or useful in the maintenance and operation of the project and located within the project area, and such other property as may be used or useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as part of the project is approved or acquiesced in by the Commission; together with all riparian or other rights, the use or possession of which is necessary or appropriate in the maintenance or operation of the project.

(C) This license is also subject to the following terms and conditions:

Article 1. The entire project, as described in the order of the Commission, shall be subject to all the provisions, terms and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: *Provided, however,* That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project property; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in uses of project property or the project works or divergence from such approved exhibits may be made if such changes will not result in decrease in efficiency, in material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 5. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project. Construction of the project works or any feature thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow him and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may from time to time prescribe for the protection of life, health, or property.

Article 6. The Licensee within five years from date of issuance of the license shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance and operation of the project. The Licensee, its successors and assigns shall,

during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 7. In event the project is taken over by the United States upon the termination of the license, as provided in Section 14 of the Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section 15 of the Act, the Licensee, its successors and assigns will be responsible for and will make good any defect of title to or of right of occupancy and use in any of such project property which is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and will pay and discharge, or will assume responsibility for payment and discharge, of all liens or incumbrances upon the the project property created by the Licensee or created or incurred after the issuance of the license: *Provided*, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new Licensee, to acquire any different title to or right of occupancy and use in any of such project property than was necessary to acquire for its own purposes as Licensee.

Article 8. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Act and the Commission's Rules and Regulations thereunder.

Article 9. After the commencement of operation of the project under the license, six percent per annum shall be the specified rate of return on the net investment in the project for determining surplus earnings of the project for the establishment and maintenance of amortization reserves, pursuant to Section 10(d) of the Act; one-half of the project surplus earnings, if any, accumulated under the license, in excess of six percent per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year: *Provided*, That, if and to the extent that there is a deficiency of project earnings below six percent per annum for any fiscal year or years under the license, the amount of such deficiency shall be deducted from the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any thus cumulatively computed, shall be set aside in the project amortization reserve account; and the amounts thus established in the project amortization reserve account, including such amounts established under previous license or licenses, shall be maintained therein until further order of the Commission.

Article 10. For the purpose of determining the stage and flow of the stream or streams on which the project is located the amount of water held in and withdrawn from storage, and the effective head on the turbines, the Licensee shall install and thereafter maintain such gages and stream-gaging stations as the Commission may deem necessary and best adapted to the requirements; and shall

provide for the required readings of such gages and for the adequate rating of such stations. The Licensee shall also install and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission and may be altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval of the Commission or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of said project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such times and in such forms as the Commission may prescribe.

Article 11. The Licensee shall install additional capacity or make other changes in the project as directed by the Commission to the extent that it is economically sound and in the public interest to do so, after notice and opportunity for hearing.

Article 12. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 13. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvements of the United States the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the costs of making the determinations pursuant to the then current Commission Regulations under the Federal Power Act.

Article 14. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoirs at such rate in cubic feet per second, or such volume in acre-feet per specified period of time as the Secretary of the Army may prescribe in the interest of navigation, or as the

Commission may prescribe for the other purposes hereinbefore mentioned. Pending further order by the Commission on its own motion or at the request of others, including the State of South Carolina Wildlife and Marine Resources Department and the Fish and Wildlife Service of the U.S. Department of the Interior, after notice and opportunity for hearing, the Licensee shall :

(a) discharge from the Parr powerhouse during initial filling of the project reservoirs and during all months of the year, except March, April, and May, a minimum flow of 150 cfs and a minimum daily average flow of 800 cfs, or the daily natural inflow to the Parr Reservoir (less evaporative losses from the Parr and Monticello Reservoirs), whichever is the lesser amount; and

(b) discharge from the Parr powerhouse during the striped bass spawning season in the months of March, April, and May a minimum flow of 1,000 cfs or the average daily natural inflow into the Parr Reservoir (less evaporative losses from the Parr and Monticello Reservoirs), whichever is the lesser amount :

Provided, That Licensee shall take reasonable measures to determine the daily natural inflow to the Parr Reservoir : *Provided further*, That, whenever it is foreseeable that the daily natural inflow into the Parr Reservoir (less evaporative losses from Parr and Monticello Reservoirs) will be released, the Licensee shall promptly notify the State of South Carolina Wildlife and Marine Resources Department : *And provided further*, That such flows may be modified temporarily if required by operating emergencies beyond the control of the Licensee and for short periods for fishery management purposes upon mutual agreement between the Licensee and the State of South Carolina Wildlife and Marine Resources Department.

Article 15. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall, after notice and opportunity for hearing, permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission in the interest of comprehensive development of the waterway or waterways involved and the conservation and utilization of water resources of the region, for water supply, or for the purpose of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation, at least full reimbursement for any damages or expenses which the joint use causes him to incur, for use of its reservoir or other project properties or parts thereof for such purposes, any such compensation to be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot be concurrently submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 16. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or en-

dangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by other lawful authority for avoiding or eliminating inductive interference.

Article 17. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance and operation of such reasonable facilities and comply with such reasonable modifications of the project structures and operation as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 18. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of Licensee's lands and interest in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 19. The Licensee shall construct, maintain and operate or shall arrange for the construction, maintenance and operation of such reasonable recreational facilities including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities and utilities, and shall comply with such reasonable modifications of the project structures and operations as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal and State agencies, after notice and opportunity for hearing.

Article 20. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting; *Provided*, That the Licensee may reserve from public access, such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property. Licensee, in the interests of promoting optimum recreational use and protecting the scenic values of project lands and waters, may to a reasonable extent grant permits to individuals or groups of individuals for landscape planting on project lands, or for the construction of access roads, wharves, landings, and other similar facilities, the occupancy of which may, under appropriate circumstances, be subject to the payment of rent in a reasonable amount: *Provided*, That Licensee in granting such permits, shall require that permittees provide for multiple occupancy and use of such facilities, where feasible, and shall ensure that such facilities are constructed and maintained in such a manner so as to be consistent with shoreline aesthetic values: *Provided further*, That the Licensee, prior to the granting of said permits and construction of such facilities, shall file for Commission approval as part of its Exhibit R a master plan for the entire proj-

ect showing the location and typical design of such facilities and the use of project lands adjacent thereto. The master plan shall be prepared in conformance with the requirements of the then existing Rules and Regulations of the Commission.

Article 21. The Licensee shall be responsible for and shall take reasonable measures to prevent soil erosion on lands adjacent to any stream(s) or body of water, natural or artificial, and to prevent siltation of waters within the project or downstream or other forms of water or air pollution resulting from construction, operation or maintenance of the project. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission may find to be necessary or appropriate for these purposes, after notice and opportunity for hearing.

Article 22. The Licensee shall install appropriate instrumentation and other devices to monitor seepage, uplift, and performance of the project structures and reservoir slopes. A plan of instrumentation and a schedule of recording instrument readings shall be filed with the Commission prior to initial filling of the upper reservoir. The Licensee shall furnish periodically to the Commission, as may be requested by the Commission or its authorized representative, a report and analysis of the instrument readings.

Article 23. Insofar as any material is dredged or excavated in the prosecution of any work authorized under the license, or in the maintenance of the project, such material shall be removed and deposited in such a manner that said removal and deposit will reasonably preserve the project environmental values and will not interfere with traffic, both land and water. Dredging and filling in a navigable water of the United States will be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 24. Whenever the United States shall desire to construct complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and its rights-of-way and such right of passage through its dams or other structures, and permit such control of pools as may be required to complete and maintain such navigation facilities.

Article 25. The operation of any navigation facilities which may be constructed as a part of or in connection with any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 26. The Licensee shall furnish free of cost to the United States power for the operation and maintenance of navigation facilities at the voltage and frequency required by such facilities and at a point adjacent thereto whether said facilities are constructed by the Licensee or by the United States.

Article 27. The Licensee shall for the protection of navigation, construct, maintain and operate at its own expense such lights and other signals on fixed structures in or over navigable waters of the United States as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 28. Timber on lands of the United States cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for and the resulting slash and debris disposed of in accordance with the requirement of the agency of the United States having jurisdiction over said lands. Payment for merchantable timber will be at current stumpage rates, and payment for young growth timber below merchantable size will

be at current damage appraisal value. However, the agency of the United States having jurisdiction may sell or dispose of the merchantable timber to others than the Licensee, with the provision that timber so sold or disposed of will be cut and removed from the area prior to or without undue interference with clearing operations of the Licensee and in coordination with his project construction schedules. Such sale or disposal to others will not relieve the Licensee of the responsibility for the clearing and disposing of all slash and debris from project lands.

Article 29. The Licensee shall do everything reasonably within its power and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned to prevent, make advance preparations for suppression, and suppress fires on the lands to be occupied or used under the license. The Licensee shall be liable for and pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the work appurtenant or accessory thereto under the license.

Article 30. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the department or agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or to the intake by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

Article 31. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 32. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other means of transportation and communication not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 33. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 34. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license,

and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 35. The Licensee shall cooperate with the United States in the disposal by the United States of mineral and vegetative materials, under the Act of July 31, 1947, 61 Stat. 681, *as amended* (30 U.S.C. § 601, *et seq.*) from lands of the United States occupied by the project or any part thereof: *Provided*, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: *Provided further*, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission, after notice and opportunity for hearing.

Article 36. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and take any such other action necessary to restore the project stream(s), lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or provide for the continued operation and maintenance of non-power facilities and fulfill such other obligations under the license as the Commission may prescribe. The Commission, in its discretion, may also terminate the license.

Article 37. The right of the Licensee and of its transferees and successors to use or occupy waters, over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 38. The Licensee shall, to the satisfaction of the Commission's authorized representative install and operate such signs, lights, sirens or other devices below the powerhouses to warn the public of fluctuations in flow from the project, and shall install such signs, lights and other safety devices above the spillway and powerhouse intakes, as may be reasonably needed to protect the public in its recreational use of project lands and waters.

Article 39. The Licensee shall operate the project reservoirs in such a manner that releases from the lower reservoir during flood flows shall be no greater than flows which would have occurred in the absence of the project.

Article 40. Licensee shall clear the project area in accordance with the Land Clearing Plan consisting of seven typewritten pages filed as Exhibit R-4 in the amended application filed July 26, 1972. Further, the Licensee shall avoid or minimize any disturbance caused by construction and maintenance of the project works to the natural, scenic, historical and recreational values of the area, blending project works with the natural view, and revegetating, stabilizing and landscaping any construction areas located outside the area of the project reservoir. Licensee shall clear and keep clear to an adequate width lands along

open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other unneeded material resulting from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of reservoirs which may die during operations of the projects shall be removed. All clearing of the lands and disposal of the material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State and local statutes and regulations.

Article 41. The Licensee shall, prior to commencement of construction, consult with the University of South Carolina to determine the extent of any archaeological survey and salvage excavations that may be necessary prior to any construction activities and provide funds in a reasonable amount for any needed surveys or salvage excavations to be conducted and completed prior to construction and/or flooding, whichever is applicable.

Article 42. Licensee shall take such measures as may be necessary for control of vectors at the project and shall seek, in this regard, the recommendations of the South Carolina Department of Health and Environmental Control. In the event of Licensee's failure to undertake effective control measures, the Commission reserves the right to order, after notice and opportunity for hearing, Licensee to take appropriate measures for the control of vectors at the project.

Article 43. Licensee shall consult and cooperate with the South Carolina Department of Health and Environmental Control, and comply with local regulations in planning and providing for the collection, storage, and disposal of solid wastes generated through public access and use of project lands and waters and, within one year after the commencement of operation of the project, shall file with the Commission a solid waste management plan which has been approved by the Department of Health and Environmental Control. This plan shall provide: (a) the location of solid waste receptacles to be provided at public areas including campgrounds, picnicking areas, and boat access areas; (b) schedules of collection for the above receptacles; (c) provisions for including in the subject plan any public use areas as they are developed; and (d) disposal sites and methods of disposal.

Article 44. Licensee, following consultation and cooperation with the Bureau of Outdoor Recreation of the U.S. Department of the Interior; the South Carolina Wildlife and Marine Resources Department; and the South Carolina Department of Parks, Recreation, and Tourism, shall study the feasibility of constructing recreation subimpoundments (reservoirs with stable water surface elevations) with adjacent access or recreation areas at suitable locations on Cannon's and Heller's Creeks, or other arms of Parr Reservoir, in lieu of reserving and developing for recreational purposes the 180.5-acre parcel on Heller's Creek at County Road 28 and the 387-acre parcel opposite Fairfield Powerhouse, as shown on Exhibit R-3 (FPC No. 1894-45). Within one year following issuance of the license, Licensee shall file, for Commission approval, revisions of Exhibit R implementing findings of the study including, but not limited to, a schedule for development of (1) said 180.5-acre and 387-acre parcels for recreational purposes, or (2) said alternative recreation subimpoundments and adjacent recreation areas for fishing, waterfowl hunting, sightseeing, and other uses. Such revisions of Exhibit R shall conform to the Commission's then existing Rules and Regulations, including the economic effect of such development on project operation.

Article 45. Licensee, following consultation with the Bureau of Outdoor Recreation of the U.S. Department of the Interior and the South Carolina Department

of Parks, Recreation, and Tourism, shall within one year following the date of issuance of the license file, for Commission approval, revisions of Exhibit R showing: (1) appropriate site development plans, construction costs, and development schedules for the scenic overlook generally as shown on Exhibit R-2 approved herein, and (2) recreation facilities additional to those proposed for the Monticello subimpoundment boat launch area, to include water supply, picnicking, and additional parking facilities, following feasibility studies.

Article 46. The Licensee shall retain a Board of three or more qualified independent consultants who have not participated substantially in the design of the proposed project works, to review the design, specifications and construction of the project for safety and adequacy. Among other things, the Board shall assess the geology of the project site and surroundings; the proposed design, specifications, and construction of the dam, powerhouse, electrical and mechanical equipment involved in water control and emergency power supply; the construction inspection program; construction procedures and progress; instrumentation; the filling schedule for the upper reservoir and plans for surveillance during the initial filling. The Licensee shall submit to the Commission copies of the Board's report on each meeting. The Licensee shall also submit a final report of the Board upon completion of the project.

Article 47. The Licensee shall, during the construction and operation of the project, continue to consult and cooperate with the Bureau of Sport Fisheries and Wildlife, the South Carolina Wildlife and Marine Resources Department, the South Carolina Pollution Control Authority, and other appropriate environmental agencies for the protection and development of the natural resources and values of the project area. The Commission reserves the right, after notice and opportunity for hearing, to require such reasonable changes in the project and its operation as may be found necessary or appropriate to preserve and promote the environment of the project area, as provided herein by Articles 11 and 14.

Article 48. Licensee shall purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to:

(a) All islands formed by the 226-foot contour of the lower reservoir and by the 425-foot contour of the upper reservoir.

(b) Shoreline lands up to the 270-foot contour or up to 50-feet, horizontal measure, from the 266-foot contour of the lower reservoir, whichever is greater; and shoreline lands up to the 430-foot contour or up to 50-feet, horizontal measure, from the 425-foot contour of the upper reservoir, whichever is greater: *Provided*, That the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given:

Provided further, That the project boundary in the area of the V. C. Summer Nuclear Station shall be the 425-foot contour, as shown on Sheet 8 (FPC No. 1894), Exhibit K. Licensee within one year after completion of land acquisition shall file an Exhibit F and, for Commission approval, a revised Exhibit K.

Article 49. Following consultation with the South Carolina Wildlife and Marine Resources Department, Licensee shall file for Commission approval within six months after the date of issuance of the license its plans for a study to determine suitable plant species which would be tolerant to living in the alternately flooded and dewatered shoreline zones on Parr and Monticello reservoirs caused

by pumped storage operation of the project, for the purpose of preventing erosion and shoreline sedimentation, improving the scenic values, and improving the fish and wildlife habitat. Following completion of such study, Licensee shall file for Commission approval its proposals for implementing the findings of the study. The study report and implementation proposals shall be filed as revision to Exhibit V and shall include test plot plantings, follow-up evaluations, costs, and schedules.

Article 50. Licensee, for the purpose of monitoring and determining the quality of the aquatic environment of Parr Reservoir and Monticello Reservoir, including the 300-acre subimpoundment, so as to realize its full recreational potential, shall conduct a water quality monitoring program at selected locations for a period of five years from the date of commencement of project operation. Sampling shall be done at least monthly and include measurements of dissolved oxygen, pH, conductivity, temperature profiles, carbon dioxide, total dissolved solids, total alkalinity, total hardness, chloride, sulfate, phosphate, nitrate, BOD, COD, heavy metals, silica, calcium, magnesium, sodium, and turbidity. Annual progress reports and, within one year following conclusion of the monitoring program, a final report shall be filed showing the findings of this program together with recommendations of any need for further sampling or for proposals for maintenance or improvement of the aquatic environment to such reservoirs as shown to be desirable by the studies. The Commission reserves the right, after notice and opportunity for hearing, to require such reasonable changes in the project and its operation as may be found necessary or appropriate to maintain or improve the aquatic environment of such reservoirs, as provided herein by Articles 11 and 14.

Article 51. Licensee, at its water quality station in the Broad River downstream of Parr Reservoir, shall monitor on a continuous basis dissolved oxygen, temperature, stream flow, conductivity, and pH; and on a monthly basis, or more often if found necessary, turbidity and heavy metals. To assist the personnel of the Columbia, South Carolina, water treatment plant in the early detection of musty odors in Broad River waters, the Licensee shall include odor samples in its water quality monitoring program and, should musty odors be detected, promptly alert the Columbia water treatment plant personnel.

Article 52. The use of Monticello Reservoir as a source and repository of condenser cooling water for the 900-mW Unit 1 of the V. C. Summer Nuclear Station is hereby approved and authorized. If Licensee desires to use project lands or project waters for any other planned fossil fuel or nuclear steam-electric generating units, Licensee shall file for Commission approval an application for amendment of license, conforming to the then existing Rules and Regulations of the Commission, requesting authorization for such use or uses.

Article 53. The Licensee shall, in cooperation with the South Carolina Wildlife and Marine Resources Department and the U.S. Bureau of Sport Fisheries and Wildlife, conduct studies to determine the sport fishing potential of Parr reservoir and the 300-acre subimpoundment within Monticello reservoir, and shall develop appropriate fish management plans from these studies. Results of studies, proposals for any programs, and copies of any cooperative agreements shall be filed for Commission approval as parts of the revised Exhibit S.

Article 54. Following consultation and cooperation with the South Carolina Wildlife and Marine Resources Department and the Fish and Wildlife Service of the U.S. Department of the Interior, Licensee, within five years after issuance of the license, shall file for Commission approval a revised Exhibit S, prepared in accordance with the then existing Rules and Regulations of the Commission.

The revised Exhibit S shall include, *inter alia*, specific management plans with costs and implementation schedules, for the protection and enhancement of fish and wildlife resources affected by the project and shall be based on results of biological studies and post operational monitoring conducted to help determine such effect, as outlined in Licensee's Exhibit W. The plan shall also include plans for mitigation of waterfowl habitat loss and disruption of the Broad River Waterfowl Management Plan caused by the redevelopment of the project and shall consider the development of bottomland hardwood areas which can be shallowly flooded during hardwood dormant growth periods for the purpose of attracting waterfowl.

Article 55. Licensee shall, within one year following issuance of a license, file for Commission information an amendment to the Exhibit V, showing estimated costs of measures for preserving and enhancing the natural, historic, and scenic values and resources during the construction and operation of the project, as proposed in the Exhibit V.

Article 56. The Licensee shall make use of the Commission guidelines as issued in Order No. 414* and other recognized guidelines for treatment of transmission line rights-of-way and shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 57. The Licensee shall establish a relocation advisory service and give reasonable financial assistance to assist in the relocation of persons now located in the project area and to minimize any hardship to such persons arising from such relocation, and within six months of the date of issuance of the license and annually thereafter during the construction of the project, shall report to the Commission on the success of its efforts. The provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. § 4601, *et seq.* shall be used as a guide to implement this article.

Article 58. The Licensee shall provide, or arrange for the provision of, an access road to the nearest existing or relocated highway for those persons not displaced by the project but who have lost any access to the highways relocated as a consequence of this project. The location of such access roads shall be determined after consultation with said persons. Each access road shall be of a type and construction equivalent to existing access roads used by said person and shall be constructed without expense to said person.

Article 59. The Licensee shall commence construction of the project within one year from the effective date of the license and shall thereafter in good faith and with due diligence prosecute such construction and shall complete construction of such project works within five years from the effective date of the license.

Article 60. The Licensee shall pay the United States the following annual charge effective the first day of the month in which the order issued:

(i) For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge as determined by the

* [Editor's note: Reported, 44 FPC 1491].

Commission in accordance with the provisions of its regulations, in effect from time to time. The authorized installed capacity for such purposes is 711,040 horsepower.

(ii) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of Sumter National Forest lands an amount to be established at a future date, upon Commission approval of revised Exhibit K filed pursuant to Article 48.

Article 61. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

(D) The exhibits designated and described in Paragraph (B) above are hereby approved and made a part of this license to the extent heretofore noted.

(E) Intervenors Robert A. and Martha M. Westbrook are hereby permitted to withdraw their petition to intervene.

(F) The hearing provided in our order of August 9, 1974, in this proceeding is hereby vacated.

(G) This order shall become final 30 days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313(a) of the Act, and failure to file such an application shall constitute acceptance of this license. In acknowledgment of the acceptance of this license it shall be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.

Before Commissioners: John N. Nassikas, Chairman; Albert B. Brooke, Jr., Rush Moody, Jr., William L. Springer and Don S. Smith.

TEXAS GAS TRANSMISSION CORPORATION, DOCKET NO. CP74-297

FINDINGS AND ORDER AFTER STATUTORY HEARING PERMITTING AND APPROVING
ABANDONMENT OF FACILITIES

(Issued August 28, 1974)

On May 17, 1974, Texas Gas Transmission Corporation (Applicant) filed in Docket No. CP74-297 an application pursuant to Section 7(b) of the Natural Gas Act for permission and approval to abandon approximately 10.22 miles of its Scottsville 3-inch pipeline, together with certain measuring and regulating equipment associated therewith which were constructed in 1931, all as more fully set forth in the application in this proceeding.

Applicant proposes to abandon in place a 10.22-mile portion of its Scottsville 3-inch pipeline located in Warren and Allen Counties, Kentucky, and to salvage, at a value of \$258, associated measuring and regulating equipment. The facilities to be abandoned have deteriorated to the point where they cannot be operated and meet the requirements of the Natural Gas Pipeline Safety Act of 1968 (49 U.S.C. 1671, *et seq.*) and the regulations promulgated thereunder.

The subject facilities are currently used to supply 16 farm tap or rural customers of Western Kentucky Gas Company (Western Kentucky) in Applicant's Zone 3. Western Kentucky and all the farm tap customers have agreed to the proposed abandonment and the latter have made arrangements for alternate fuels. Applicant states that there will be no change in the contract demand or the quantity entitlements of Western Kentucky in Zone 3.

56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

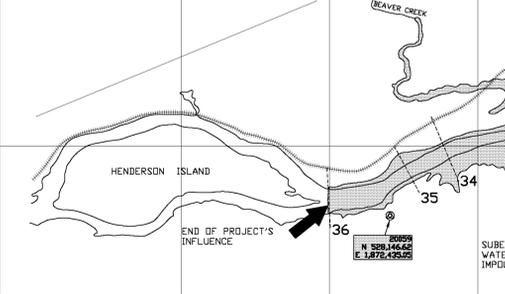
PROJECT BOUNDARY LINE ELEVATIONS FOR PARR RESERVOIR (MINIMUM)

USGS STATION NO.	DISTANCE FROM PARR DAM (FT.)	ELEVATION OF PROJECT BOUNDARY LINE (MINIMUM)	BASED ON
1	100	270.0	Flood of record (224,000 CFS) in river with Fairfield built but not operating. All Spillway Gates fully down.
2	1,000	270.0	
3	3,000	270.0	
4	6,000	270.8	
5	7,800	271.3	
6	9,850	272.1	
7	12,300	272.8	
8	14,600	274.1	
9	15,500	274.3	
10	17,700	275.3	
11	20,400	275.8	
12	25,700	276.7	
13	25,600	277.4	
14	30,600	279.2	
15	32,700	279.7	
16	35,300	270.0	40,000 CFS in river and all Fairfield units operating. All Spillway Gates fully down. (Table 4-AIS-21-74).
17	37,400	270.0	
18	40,100	270.0	
19	42,600	270.0	
20	45,300	270.0	
21	48,100	270.0	
22	49,800	270.0	
23	51,000	270.0	
24	53,600	270.2	
25	54,900	270.4	
26	55,100	270.5	
27	58,000	271.3	
28	61,000	272.2	
29	64,100	273.1	
30	66,800	274.1	
31	69,000	274.7	
32	71,600	275.3	
33	74,800	276.0	
34	76,600	276.5	
35	79,200	278.0 P.B.L. CLOSES HERE	
36	82,500	280.3	
37	87,400	282.1	
38	91,100	283.6	
39	94,800	285.6	

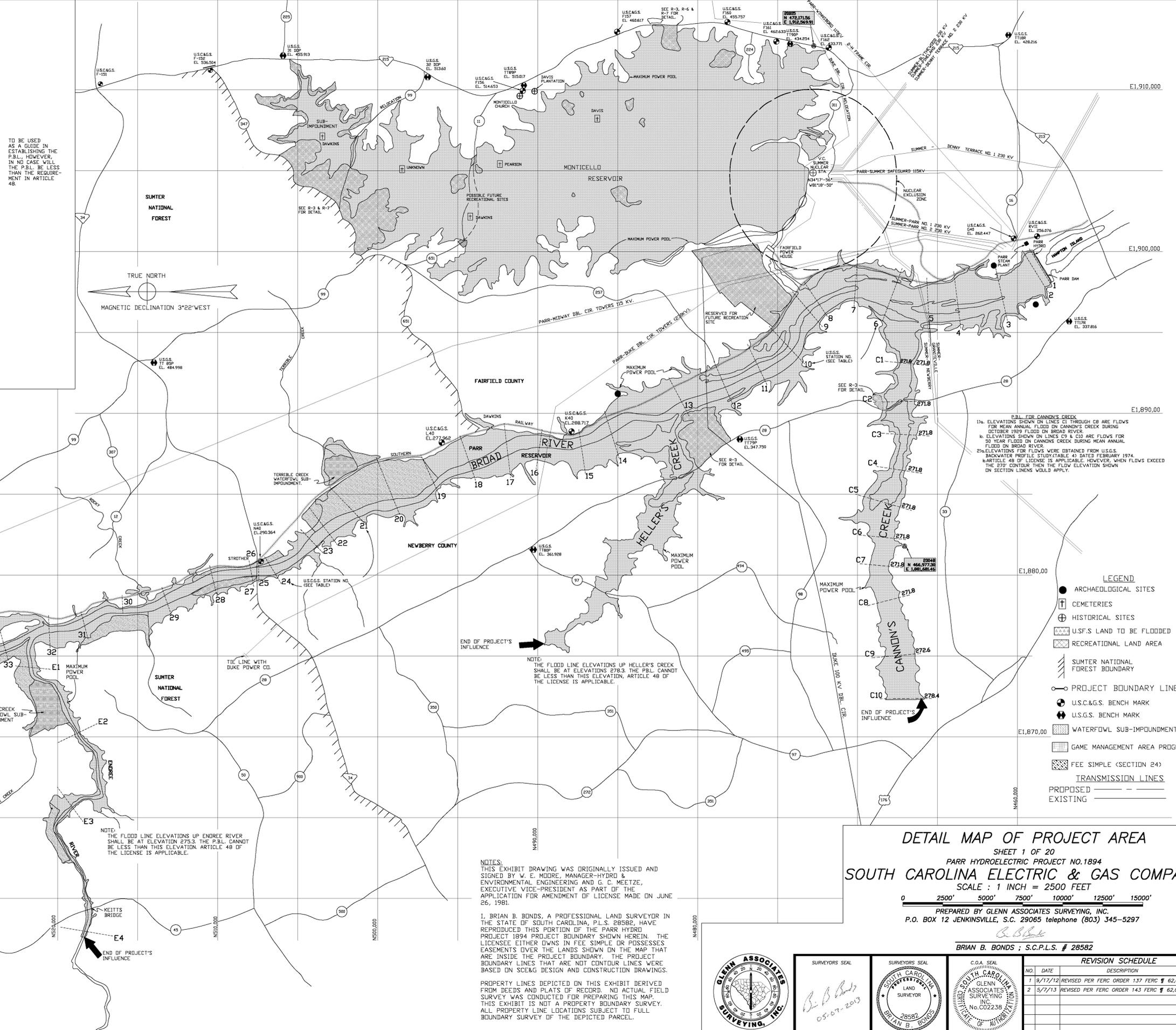
ARTICLE 48 OF THE F.P.C. LICENSE STATES THAT ON THE PARR RESERVOIR, WE SHALL DOWN IN FEE AND INCLUDE WITHIN THE P.B.L. ALL LANDS UP TO THE 270 FOOT CONTOUR OR UP TO 50 FEET, HORIZONTAL MEASURE, FROM THE 266 FOOT CONTOUR, WHICHEVER IS GREATER. ALL P.B.L. SHALL BE RUN IN STRAIGHT LINE SEGMENTS EQUAL TO OR SLIGHTLY GREATER THAN ELEVATIONS SHOWN. HOWEVER, THE P.B.L. SHALL NOT EXCEED 200 FEET, HORIZONTAL MEASURE, FROM THE 266 FOOT CONTOUR UNLESS IT CAN BE JUSTIFIED.

Federal Acreage Occupied by the Project Boundary

Drawing No.	Tract No.	Federal Acreage (Flowage Easement)	SCE&G Owned Section 24 Lands (Fee Simple)
K-14	193	-	72.14
K-17	198	17.88	-
K-15/16	200	120.55	25.35
K-14	211	-	26.13
K-13	213	-	28.26
K-10/13	214	-	390.65
K-17	226	3.09	-
K-16/17	227	12.52	-
K-17	232	3.14	-
K-17	248	0.33	-
K-17	264	0.93	-
K-15	266	0.05	-
K-10	271	4.12	-
Total		162.61	542.53



- NOTES:**
- ON THE MONTICELLO RESERVOIR & SUB-IMPONDMENT THE PROJECT BOUNDARY LINE IS GENERALLY A MAXIMUM 800 FEET FROM THE 450' CONTOUR EXCEPT IN RECREATIONAL AREAS OR DEEMED NECESSARY BY FIELD INSPECTION (SEE "K" SHEETS 2-20 FOR DETAILS).
 - THE P.B.L. AROUND PARR RESERVOIR IS GENERALLY ALONG THE FLOOD OF RECORD AS ADJUSTED FOR THE INFLUENCE OF PARR DAM, AS INDICATED ON TABLE THIS SHEET.
 - ALL LANDS WITHIN THE PROJECT BOUNDARY LINE ARE OWNED IN FEE SIMPLE BY SOUTH CAROLINA ELECTRIC AND GAS COMPANY, UNLESS OTHERWISE SHOWN ON K-2 THRU K-17.
 - PROJECT BOUNDARY LINE IS NOT SHOWN ON THIS SHEET, EXCEPT IN RECREATIONAL AREAS, BUT IS SHOWN IN DETAIL ON SHEETS K-2 THRU K-20.
 - ELEVATIONS SHOWN CORRECTED ACCORDING TO RECENT SURVEY BASED ON U.S.C&G.S.M.S.L.
 - SOUTHERN RR. R/W IS EXCLUDED FROM PROJECT, EXCEPT TO THE EXTENT OF FLOWAGE RIGHTS (SEE EXHIBIT "F").
 - NO TREES ARE TO BE CUT ON AREAS INDICATED AS ISLANDS OR RECREATIONAL AREAS.
 - CO-ORDINATES SHOWN ARE BASED ON THE STATE GRID SYSTEM.



TO BE USED AS A GUIDE IN ESTABLISHING THE P.B.L., HOWEVER, IN NO CASE WILL THE P.B.L. BE LESS THAN THE REQUIREMENT IN ARTICLE 48.

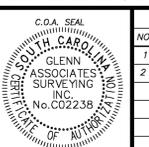
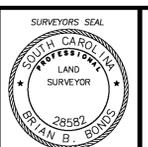


P.B.L. FOR CANNON'S CREEK
 1. ELEVATIONS SHOWN ON LINES C1 THROUGH C8 ARE FLOWS FOR MEAN ANNUAL FLOOD ON CANNON'S CREEK DURING OCTOBER 1999 FLOOD ON BROAD RIVER.
 2. ELEVATIONS SHOWN ON LINES C9 & C10 ARE FLOWS FOR 50 YEAR FLOOD ON CANNON'S CREEK DURING MEAN ANNUAL FLOOD ON BROAD RIVER.
 3. ELEVATIONS FOR FLOWS WERE OBTAINED FROM U.S.G.S. BACKWATER PROFILE STUDY (TABLE 4) DATED FEBRUARY 1974. ARTICLE 48 OF LICENSE IS APPLICABLE. HOWEVER, WHEN FLOWS EXCEED THE 270' CONTOUR THEN THE FLOW ELEVATION SHOWN ON SECTION LINES WOULD APPLY.

- LEGEND**
- ARCHAEOLOGICAL SITES
 - ⊕ CEMETERIES
 - ⊕ HISTORICAL SITES
 - ▨ U.S.F.S. LAND TO BE FLOODED
 - ▨ RECREATIONAL LAND AREA
 - ▨ SUMNER NATIONAL FOREST BOUNDARY
 - PROJECT BOUNDARY LINE
 - U.S.C.&G.S. BENCH MARK
 - U.S.G.S. BENCH MARK
 - ▨ WATERFOWL SUB-IMPONMENTS
 - ▨ GAME MANAGEMENT AREA PROGRAM
 - ▨ FEE SIMPLE (SECTION 24)
 - ▨ TRANSMISSION LINES
 - ▨ PROPOSED
 - ▨ EXISTING

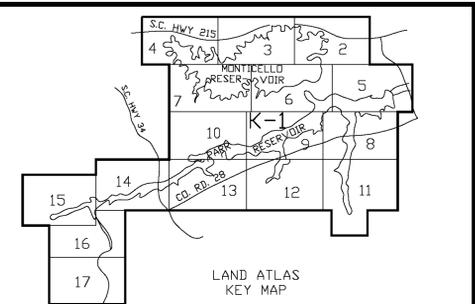
DETAIL MAP OF PROJECT AREA
 SHEET 1 OF 20
 PARR HYDROELECTRIC PROJECT NO. 1894
SOUTH CAROLINA ELECTRIC & GAS COMPANY
 SCALE: 1 INCH = 2500 FEET
 0 2500' 5000' 7500' 10000' 12500' 15000'
 PREPARED BY GLENN ASSOCIATES SURVEYING, INC.
 P.O. BOX 12 JENKINSVILLE, S.C. 29065 telephone (803) 345-5297

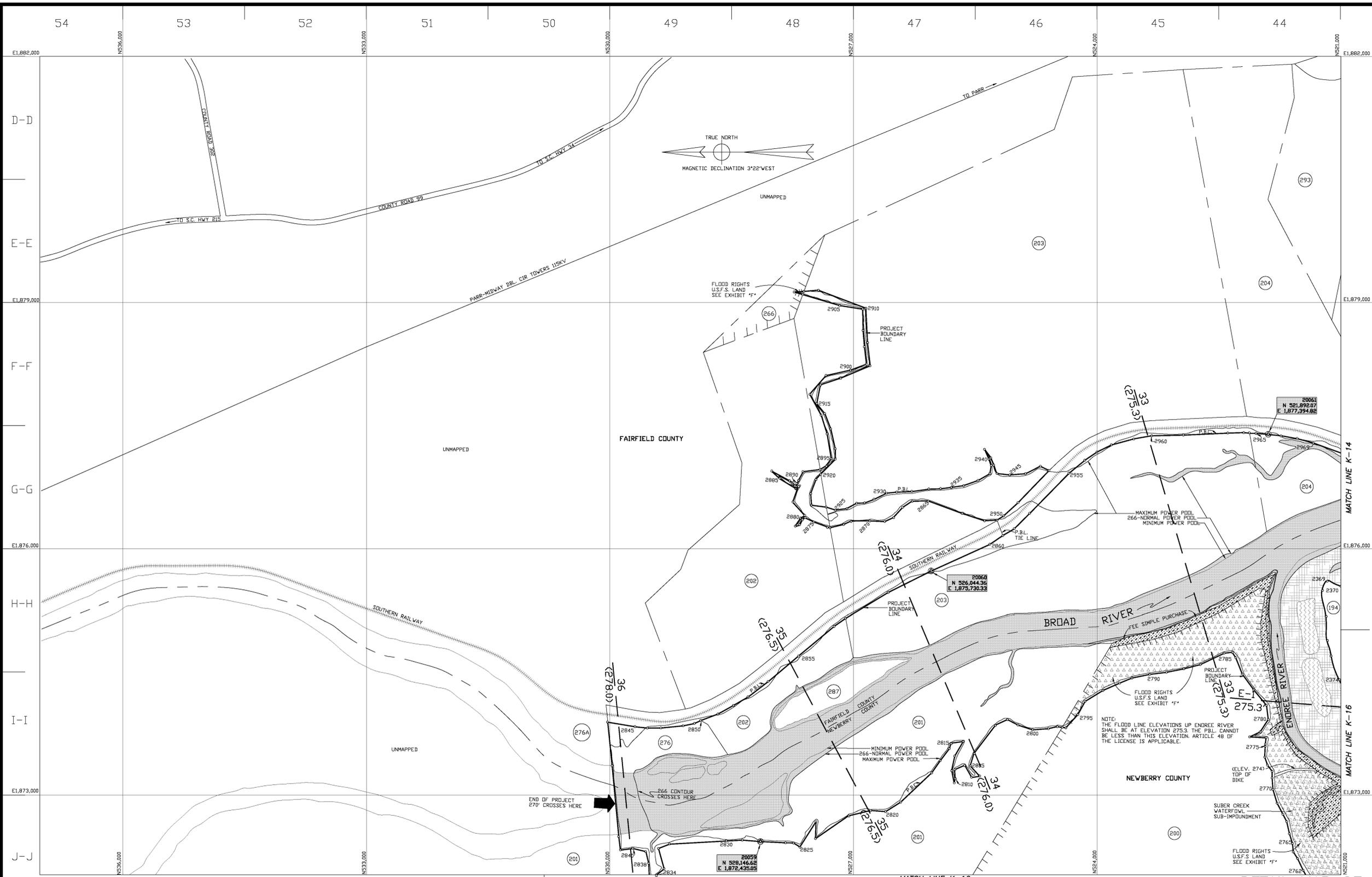
NOTES:
 THIS EXHIBIT DRAWING WAS ORIGINALLY ISSUED AND SIGNED BY W. E. MOORE, MANAGER-HYDRO & ENVIRONMENTAL ENGINEERING AND G. C. MEETZE, EXECUTIVE VICE-PRESIDENT AS PART OF THE APPLICATION FOR AMENDMENT OF LICENSE MADE ON JUNE 26, 1981.
 I, BRIAN B. BONDS, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF SOUTH CAROLINA, P.L.S. 28582, HAVE REPRODUCED THIS PORTION OF THE PARR HYDRO PROJECT 1894 PROJECT BOUNDARY SHOWN HEREIN. THE LICENSEE EITHER OWNS IN FEE SIMPLE OR POSSESSES EASEMENTS OVER THE LANDS SHOWN ON THE MAP THAT ARE INSIDE THE PROJECT BOUNDARY. THE PROJECT BOUNDARY LINES THAT ARE NOT CONTOUR LINES WERE BASED ON SCE&G DESIGN AND CONSTRUCTION DRAWINGS.
 PROPERTY LINES DEPICTED ON THIS EXHIBIT DERIVED FROM DEEDS AND PLATS OF RECORD. NO ACTUAL FIELD SURVEY WAS CONDUCTED FOR PREPARING THIS MAP. THIS EXHIBIT IS NOT A PROPERTY BOUNDARY SURVEY. ALL PROPERTY LINE LOCATIONS SUBJECT TO FULL BOUNDARY SURVEY OF THE DEPICTED PARCEL.



REVISION SCHEDULE

NO.	DATE	DESCRIPTION	CHECKED
1	9/17/12	REVISED PER FERC ORDER 137 FERC # 62,033	BBB
2	5/7/13	REVISED PER FERC ORDER 143 FERC # 62,095	BBB





ORIGINAL NOTES:

1. ALL PROPERTY WITHIN THE PROJECT BOUNDARY LINE IS OWNED IN FEE SIMPLE BY S.C.E.&G. CO. UNLESS OTHERWISE SHOWN ON EXHIBIT "F".
2. ALL PROPERTIES & PROPERTY LINES WERE SHOWN OUTSIDE P.B.L. AS A CONVENIENCE FOR HISTORICAL PURPOSES FOR S.C.E.&G. CO.
3. DETAILED DESCRIPTION FOR PROJECT BOUNDARY LINE IS SHOWN ON SHEETS K-18 THRU K-20.
4. LAND PARCELS ARE KEPT FOR EXHIBIT "F" BY ENCIRCLED NUMBERS. EX (3)
5. LANDS ABUTTING P.B.L. ON THE EXTERIOR ARE IN PRIVATE OWNERSHIP UNLESS SHOWN OTHERWISE ON EXHIBIT "F".
6. CO-ORDINATES SHOWN ARE BASED ON THE STATE GRID SYSTEM (NAD27)
7. ELEVATIONS SHOWN ARE BASED ON THE U.S.C.&G.S. DATA (M.S.L.)
8. THE P.B.L. AROUND PARR RESERVOIR IS GENERALLY ALONG THE CONTOUR OF THE FLOOD OF RECORD AS ADJUSTED TO ACCOUNT FOR THE INFLUENCE OF PARR DAM, AS INDICATED ON EXHIBIT K-1.
9. ALL ISLANDS ARE TO REMAIN IN THEIR NATURAL STATE.
10. SOUTHERN R.R. R/W IS EXCLUDED FROM PROJECT, EXCEPT TO THE EXTENT OF FLOWAGE RIGHTS. SEE EXHIBIT "F".

NOTES:

THIS EXHIBIT DRAWING WAS ORIGINALLY ISSUED AND SIGNED BY W. E. MOORE, MANAGER-HYDRO & ENVIRONMENTAL ENGINEERING AND G. C. MEETZE, EXECUTIVE VICE-PRESIDENT AS PART OF THE APPLICATION FOR AMENDMENT OF LICENSE MADE ON JUNE 26, 1981.

I, BRIAN B. BONDS, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF SOUTH CAROLINA, P.L.S. 28582, HAVE REPRODUCED THIS PORTION OF THE PARR HYDRO PROJECT 1894 PROJECT BOUNDARY SHOWN HEREIN. THE LICENSEE EITHER OWNS IN FEE SIMPLE OR POSSESSES EASEMENTS OVER THE LANDS SHOWN ON THE MAP THAT ARE INSIDE THE PROJECT BOUNDARY. THE PROJECT BOUNDARY LINES THAT ARE NOT CONTOUR LINES WERE BASED ON SCE&G DESIGN AND CONSTRUCTION DRAWINGS.

PROPERTY LINES DEPICTED ON THIS EXHIBIT DERIVED FROM DEEDS AND PLATS OF RECORD. NO ACTUAL FIELD SURVEY WAS CONDUCTED FOR PREPARING THIS MAP. THIS EXHIBIT IS NOT A PROPERTY BOUNDARY SURVEY. ALL PROPERTY LINE LOCATIONS SUBJECT TO FULL BOUNDARY SURVEY OF THE DEPICTED PARCEL.

LEGEND

- ARCHAEOLOGICAL SITES
- ⊕ CEMETERIES
- ⊕ HISTORICAL SITES
- ⊕ U.S.F.S. LAND TO BE FLOODED
- ⊕ RECREATIONAL LAND AREA
- ▨ SUMTER NATIONAL FOREST BOUNDARY
- PROJECT BOUNDARY LINE
- ⊕ U.S.C.&G.S. BENCH MARK
- ⊕ U.S.G.S. BENCH MARK
- ▨ WATERFOWL SUB-IMPOUNDMENTS
- ▨ GAME MANAGEMENT AREA PROGRAM
- ▨ FEE SIMPLE (SECTION 24)
- TRANSMISSION LINES
- PROPOSED
- EXISTING

DETAIL MAP OF PROJECT AREA

SHEET 15 OF 20

PARR HYDROELECTRIC PROJECT NO. 1894

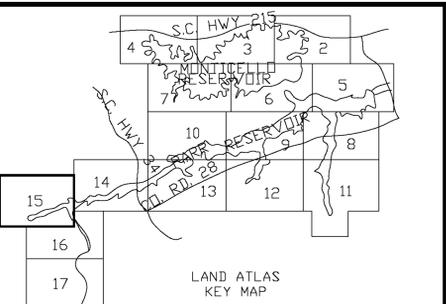
SOUTH CAROLINA ELECTRIC & GAS COMPANY

SCALE : 1 INCH = 500 FEET

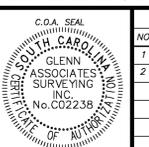
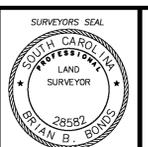
0 500' 1000' 1500' 2000' 2500' 3000'

PREPARED BY GLENN ASSOCIATES SURVEYING, INC.
P.O. BOX 12 JENKINSVILLE, S.C. 29065 telephone (803) 345-5297

BRIAN B. BONDS ; S.C.P.L.S. # 28582



SURVEYORS SEAL
B. B. Bonds
05-07-2013



REVISION SCHEDULE			
NO.	DATE	DESCRIPTION	CHECKED
1	9/17/12	REVISED PER FERC ORDER 137 FERC # 62,033	BBB
2	5/7/13	REVISED PER FERC ORDER 143 FERC # 62,095	BBB

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

May 4, 2015

Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way Mail Code A221
Cayce, South Carolina 29033-3701

Re: Relicensing FERC Project 1894

Dear Bill:

Thank you for your letter dated March 18, 2015. Could you please provide me with copies of the list of the property acquisitions, designated as Exhibit F, and the property maps depicting the PBL, designated as Exhibit K to the Project's license that were filed with FERC on June 26, 1981 as well as FERC's order dated August 19, 1981 approving both exhibits, as referenced in the second page of said letter?

Sincerely,

A handwritten signature in black ink that reads "William B. Hendrix, Jr." in a cursive style.

William B. Hendrix, Jr.



May 27, 2015

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated May 4, 2015

Dear Mr. Hendrix:

I am responding to your letter dated May 4, 2015 requesting additional information concerning the Federal Energy Regulatory Commission's (FERC) establishment of the Project boundary line (PBL) of the Parr Reservoir. As noted in my previous letter dated March 18, 2015, the Company considers establishment of the PBL fully resolved. The Company has acquired all property rights along the shores of the Parr Reservoir and its tributaries which remain necessary for the operation and maintenance of FERC Project No. 1894. There is no reason to revisit the matter as the reservoir was established in conformity with the specific obligations set forth in the Project's license and has been approved by FERC. Moreover, even if the Company were to see a need in the future to reexamine the placement of the PBL, any property removed from the PBL with the FERC approval would then become non-Project lands and precluded from the jurisdiction of the FERC. In reference to your request for various documents, we must respectfully decline that request. We consider this matter closed and are unwilling to expend additional time and resources retrieving documents for you on this matter.

If you have any further questions, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,

A handwritten signature in blue ink that reads "William Argentieri". The signature is fluid and cursive, written in a professional style.

William Argentieri, Manager Civil Engineering
Fossil/Hydro Technical Services

c: H. E. Delk, Jr./PH File
J. H. Hamilton/ J. Stuckey

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

June 9, 2015

Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way
Mail Code A221
Cayce, South Carolina 29033-3701

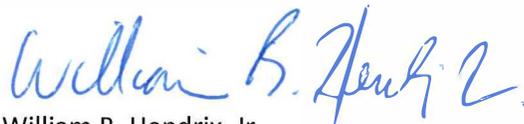
Mr. Henry Mealing
Kleinschmidt Associates
204 Caughman Farm Lane, Ste.301
Lexington, South Carolina 29072

Re: FERC Project 1894 Relicensing

Dear Sirs:

Pursuant to Code of Federal Regulations (18 C.F.R. 16.8(b) (5), attached please find request for information and study request.

Sincerely,

A handwritten signature in blue ink that reads "William B. Hendrix, Jr." with a stylized flourish at the end.

William B. Hendrix, Jr.

(I) IDENTIFICATION OF INFORMATION TO BE PROVIDED AND STUDY TO BE PERFORMED

The Pre-Application Document (PAD) that South Carolina Electric & Gas (SCE&G) has submitted to the Federal Energy Regulatory Commission (FERC) for the re-licensing of this Project is inaccurate and incomplete. The PAD does not accurately describe or reflect the actual Project Boundary Line (PBL) that was established for the Project or the actual length of the project. The PBL that was established by SCE&G does not comply with the guidelines and directives established by FERC when the license was issued. In addition, the survey method that was used to delineate the PBL is not in compliance with FERC's license. Requestor is asking that any and all information and documentation regarding the establishment of the PBL be provided. This information should contain, but not be limited to: (1) complete copies of any studies conducted by, or on the behalf, of SCE&G in regards to the establishment of the PBL, (2.) copies of any amendments to Exhibit J or Exhibit K that have been made since the issuance of the License for this Project, (3.) copies of any correspondence or documents between SCE&G and FERC in regards to SCE&G acquiring additional land beyond what was required in the license that was issued for the project, and (4.) Copies of any FERC Orders or correspondence approving the acquisition of additional lands other than as required in the original license. Lacking the production of the above-referenced documentation and information, requestor asks that a new study be undertaken to determine how, and upon what criteria, SCE&G established the PBL. This new study will determine whether or not the PBL was established in accordance with FERC regulations and was carried out with FERC's approval. This study would include the production of a true elevation survey of the PBL for the project.

(II) IDENTIFICATION OF BASIS FOR DETERMINATION

The license issued authorizing this Project by FERC on August 28, 1974, provides very specific guidelines as to what property is to be acquired for the project and included within the Project's Boundary. "Finally, Interior requested that recreational lands extend a minimum of 200 horizontal feet from the high water mark. We are requiring Applicant to acquire in fee shoreline lands up to the 270-foot contour or up to 50 feet horizontal measure from the 266-foot contour, whichever is greater, on Parr Reservoir...this license condition will provide a strip of land 50 to 200 feet in horizontal measure along these reservoirs. "(Pages 19 and 20 of license. *Exhibit 1*)

"We do not preclude the possibility of requiring Applicant to acquire additional lands for recreational purposes in the future. At this time, however, with the exception of those areas of intensive recreational use heretofore considered, we believe the acquisition of a strip of land 50

to 200 feet in width around the Monticello and Parr Reservoirs adequately protects the public interest.” (Page 20 of license. *Exhibit 1*)

“Article 48. Licensee shall purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to:

.... (b) Shoreline lands up to the 270-foot contour or up to 50-feet, horizontal measure, from the 266-foot contour of the lower reservoir, whichever is greater:....Provided, That the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given:” (Page 44 of license. *Exhibit 2*)

These guidelines for acquiring lands for the project are also reflected in the PAD that SCE&G has currently filed with FERC for the relicensing of this project. “Article 48: License shall purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to:....(b) Shoreline lands up to the 270-foot contour or up to 50-foot horizontal measure from the 266-foot contour of the lower reservoir, whichever is greater:... Provided that the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given.” (Page 3-12 and 3-13 – Pre-Application Document, January 2015 *Exhibit 3*) “Article 48 of the Project License issued in 1974 required that SCE&G purchase in fee and include within the Project boundary...shoreline lands up to the 270-foot contour, or 50 feet (measured horizontally) from the Parr Reservoir’s 266-foot contour, whichever is greater...Provided that the Project Boundary, except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontally measured from the 266-foot...” (Section 3, Page 8 – Shoreline Management Plan Parr Reservoir, September 2014. *Exhibit 4*) “SCE&G owns all lands or obtained flowage rights within the Project boundary surrounding Parr Reservoir. As noted, this area is referred to as the “Buffer Zone” and may encompass an area up to the 270-foot contour or measuring up to 50 feet but no greater than 200 feet horizontally from the 266-foot contour on Parr Reservoir, whichever is greater.”(Section 3.2, Page 10 – Shoreline Management Plan Parr Reservoir, September 2014. *Exhibit 5*)

In reality the land acquisition that was done for property determined to be within the project boundary of this project was not based on the guidelines spelled out in the license issued by FERC, and was instead based on the Broad River’s 100 year flood of record. Exhibit K

documents for this project reflect the large discrepancy between what was required by FERC as a condition of the license and what SCE&G actually acquired. "Notes: 2. The P.B.L. around Parr Reservoir is generally along the flood of record as adjusted for the influence of Parr Dam, as indicated on table this sheet" (SCE&G Exhibit K-Sheet 1, Exhibit 6) "Elevation of Project Boundary Line (Minimum) Based on Flood of record (224,000 CFS) in river with Fairfield built but not operating. All spillway gates fully down." (SCE&G Exhibit K-Sheet 1, Exhibit 7) The flood of record for this area occurred in 1928 and 1929 with waters reaching an elevation of 285' – 19' above the current crest level of the dam and the Maximum Reservoir Operating Level (Full Pool) (Parr Hydroelectric Project P-1894 – Table of Standard Project Numbers.) and 16.5 'above the Maximum Rated Capacity of the dam's spillway. The Exhibit K documents have numerous notes and wording in reference to the elevation level of the reservoir that are not based on the license and in fact contradict the license requirements. These notes also contradict information that is in the PAD that is currently before FERC for approval:

- (1.) "THE FLOOD LINE ELEVATIONS UP HELLER'S CREEK SHALL BE AT ELEVATION 278.3. THE P.B.L. CANNOT BE LESS THAN THIS ELEVATION, ARTICLE 48 OF THE LICENSE IS APPLICABLE."
- (2.) "ARTICLE 48 OF LICENSE IS APPLICABLE. HOWEVER, WHEN FLOWS EXCEED THE 270' CONTOUR THEN THE FLOW ELEVATION SHOWN ON SECTION LINES WOULD APPLY."
- (3.) "THE FLOOD LINE ELEVATIONS UP ENOREE RIVER SHALL BE AT ELEVATION 275.3. THE PBL CANNOT BE LESS THAN THIS ELEVATION. ARTICLE 48 OF THE LICENSE IS APPLICABLE."
- (4.) "ALL P.B.L. SHALL BE RUN IN STRAIGHT LINE SEGMENTS EQUAL TO OR SLIGHTLY GREATER THAN THE ELEVATIONS SHOWN." (*Exhibit 8*)

While the license does state that there is the possibility of acquiring additional lands if "satisfactory reasons to the contrary are given," or such lands were "necessary or appropriate for project operations," there has been no record of any such reasons being presented to FERC by SCE&G or of FERC approving any additional land acquisition other than that authorized under the original license. SCE&G would be hard pressed to justify the acquisition of lands 19' above the crest level of the dam, which they obviously have no means of controlling, as "necessary or appropriate for project purposes." While SCE&G has claimed to have filed revised Exhibits F & K in 1981, and to have received approval of these revisions by FERC Order dated August 19, 1981, they have been unable or unwilling to produce copies of said documents. SCE&G informed Requestor on May 27, 2015 that "they consider this matter closed and are unwilling to expend additional time and resources retrieving documents." (*Exhibit 9*)

The current Exhibit K documents on file have a reference note, "This Exhibit drawing was originally issued....as part of the Application for Amendment of License made on June 26, 1981." Requestor has been informed by FERC personnel that they have no record of any Application for Amendment. The land that SCE&G acquired for this project extends anywhere from an elevation of 270' up to elevations as high as 285' – 19' above the crest level of the dam and the project's Maximum Reservoir Operating Level and 16.5' above the Maximum Rated Capacity of the dam's spillway. SCE&G maintains their land acquisition was based on a United States Geological Survey (USGS) study. This in itself would seem to establish, and be an admission, that the acquisition was not done in accordance with the requirements of the FERC license as there is no reference in the license, or any subsequent filings, to the use or need of such a study. When Requestor initially asked SCE&G for copies of this study he was told by the Company's Manager of Civil Engineering, William Argentieri, "We've been looking for a copy of that study for years." Later the same day (October 30, 2014) that the request for a copy of the study was made, Requestor received an e-mail from Argentieri stating, "Good news, even though I cannot find the final report, the USGS backwater study drawings have enough information on them to help us understand the reasoning used to determine the location of the Parr Reservoir project boundary line." (*Exhibit 10*) In a subsequent meeting to discuss this "good news", requestor was shown two engineering profile sheets supposedly showing the elevations of the PBL as it related to the water flows during the flood of record in the Broad River. The sheets were unsigned and had no engineering seals. When asked for narrative or pertinent data information that was produced in conjunction with the study, Requestor was told that SCE&G had no such information. Incredibly, SCE&G now wants Requestor and the general public, to blindly accept that the thousands of acres of land that were acquired for this project was based and according to a study that they have no copy of, or are unwilling to produce. It would seem that whatever study was apparently done, it was not in conjunction with establishing the PBL. The two sheets supplied to Requestor, have revision dates much later than the recording dates of the deeds acquiring lands within the PBL. Negotiations for these land acquisitions were initiated well before the dates on the sheets and it would certainly take a suspension of disbelief to think that the PBL was not established well before the signing and recording of deeds. It seems more likely that this USGS study, if actually fully conducted, was not done so in conjunction with the establishment of the PBL, but instead with regard to issues that were discovered well after the land acquisition process was complete. The use of "Straight Line Segments" to establish the PBL is in direct conflict with the license requirements. All references to establishing the PBL in the license call for horizontal measures from the established elevation. SCE&G has previously admitted that this practice was not in compliance with the methods prescribed in the license, and have deeded property back to landowners as a result of this non-compliance.

(III) RESOURCE ISSUES AND GOALS/OBJECTIVES FOR THESE RESOURCES

The land acquisition process that SCE&G conducted as part of this project resulted in hundreds of acres of land being unnecessarily acquired. Large tracts of these lands were never intended for project purposes and have instead been utilized as exclusive hunting property, which includes a boat landing on the Broad River, for SCE&G employees, retirees and their political operatives. Unlike the rest of the property acquired for this project, all the land acquired above the SC Rte. 34 Bridge over the Broad River was never placed into the State of South Carolina's Department of Natural Resources game management program. SCE&G has placed posted signs on the property and it has been used exclusively for hunting by their operatives. In a period of time where they have yearly sought rate increases from their customers, SCE&G has spent tens of thousands of dollars, if not more, maintaining the properties for hunting. (*Exhibit 11*) It should also be noted that these properties are located from 13 to 15 miles from the dam of this project. All of SCE&G's presentations and documents that have been filed, including Exhibit K, relicensing website and the PAD, continue to refer to the reservoir as being 13 miles long -in reality it is 15 miles long. (Presentations dated 9/19/2012 & 1/20/2013- Parr Hydroelectric Project Hydrologic Data - Parr Reservoir (full) 13 miles long- Joint Agency/Public Meeting dated 4/14/15) The acquisition process that was conducted for this project has resulted in countless landowners being unnecessarily deprived of the resources and benefits of their property. These resources and benefits are now being enjoyed by SCE&G and its employees. SCE&G corporately benefits through the harvest of timber on the property that was acquired, and SCE&G employees get the benefit of a free hunt club. Prior to being acquired by SCE&G, these lands provided a source of income not only for the landowners, but the numerous individuals living in the Western Part of Fairfield County who were employed in timber, hunting and farming activities. Ironically, these individuals having lost all benefit of these lands, are now as customers of SCE&G, in the position of having to finance the upkeep of the property they lost to SCE&G's hunt club, as well as the Company's record corporate profits, through year after year of rate increases. Surely this was not what FERC had in mind when they established the elevation of the PBL of this project as being no more than 200 feet horizontal measure from the elevation of 266' - the elevation of 266' being the top of the crest gates of the dam and the Maximum Reservoir Operating Level (Full Pool.) The requested information and study will review whether or not the resources that are part of the land that was acquired for this project are being used for the purposes for which they were originally said to have been intended for and whether or not they would be best served by being returned to the original landowners.

(IV) STUDY METHODOLOGY/ALTERNATIVES

The issue of the establishment of the PBL has been completely ignored through the initial process of this re-licensing. There have been no discussions or studies done to address the issue. The majority of study requests that are proposed, are addressed to study issues downstream of the dam of this project. In light of SCE&G's lack of producing any concrete documentation substantiating how they went about acquiring land within the PBL of this project, it would seem only appropriate that as part of a relicensing process, a study be conducted to review the process that was initially conducted in regards to the land acquisition for this project. Such a study would certainly include a complete re-survey of the PBL based on true elevations and the horizontal measure there from. There is no other method available which would insure the accuracy and authenticity of the PBL.

(V) DOCUMENTATION OF STUDY METHODOLOGY AS GENERALLY ACCEPTED PRACTICE

Requestor is unaware of any method of establishing or confirming property lines other than through the use of a survey - as such, this would certainly be considered accepted practice.

(VI) EXPLANATION AS TO HOW INFORMATION/STUDY REQUESTED WILL BE USEFUL IN FURTHERING RESOURCE GOALS/OBJECTIVES

From the time the land acquisition for this project was conducted, until the present date, there have been lingering questions and doubts by the landowners effected, as to the legitimacy and need for the acquisitions. Three generations of landowners have had to live with the loss and use of their land. Livelihoods once supported through timber harvesting, row-cropping and hunting are no longer available. In their place, a well maintained hunt club for SCE&G employees, retirees and political operatives. This has been particularly bothersome to said landowners, as throughout the acquisition process, they were continuously advised by SCE&G representatives, that their land would be inundated once the project was complete and of no viable use to them. The reality could not be any further from the truth.

One would certainly assume, that through a re-licensing process such as the one currently being conducted for this project, any issues involving discrepancy's or questions, would be thoroughly re-examined and vetted. One would also assume that SCE&G would strive to make the re-licensing process as transparent and through as possible. Accordingly, the information and study requested above would insure that all land acquired for the project was done so in accordance with FERC regulations. If it is found that these regulations were not followed, they will provide a starting point for the return of lost resources to their rightful owners.

Section 1

recommended for registration as National, Historical, Natural, or Environmental Education Landmarks. Interior did recommend against issuance of a license until an acceptable Exhibit S is filed. We believe the public interest will be better served by issuance of the license with provision for the filing of a revised Exhibit S pursuant to Article 54 of the license. Such a revised Exhibit S will be based on the results of the comprehensive long-term post operational monitoring programs which will determine the effects on fish and wildlife. The availability of this information will enable us to further protect and enhance fish and wildlife in the area as may be necessary or appropriate.

Interior also discussed the impact of the redeveloped Parr project on a potential downstream Federal development, known as the Frost Shoals Project. S. DOC. NO. 189, supra. We note that there is no present plan or schedule for construction of this facility.

Interior further objected to the inclusion of the 55 acres of islands in the Monticello Reservoir for future recreational use since 20 of these acres are within a proposed nuclear exclusion zone. Atomic Energy Commission regulations state that "activities unrelated to operation of the reactor may be permitted in an exclusion area under appropriate limitations, provided that no significant hazards to the public health and safety will result." 10 CFR §100.3(a) (1973). With appropriate safeguards we believe these islands may serve public recreational needs and are requiring their inclusion within the project boundary.

Interior stated that the 387-acre recreational parcel adjacent to Fairfield Powerhouse is inappropriate for recreational development due to the limited recreation capability of Monticello and Parr Reservoirs, lack of public access, proposed restricted public use of the Fairfield tailrace, transmission lines, railroad right-of-way, and steep and hilly topography. We are reserving decision on the suitability of the 387-acre recreational parcel pending the completion of a study which will compare the recreational advantages and disadvantages of this site and the 187-acre recreational parcel heretofore noted with possible subimpoundments on Cannon's and Heller's Creeks.

Finally, Interior requested that recreational lands extend a minimum of 200 horizontal feet from the high water mark. We are requiring Applicant to acquire in fee shoreline lands up to the 270-foot contour or up to 50 feet horizontal measure from the 266-foot contour, whichever is greater, on Parr

Reservoir and shoreline lands up to the 430-foot contour or up to 50 feet horizontal measure from the 425-foot contour, whichever is greater, on Monticello Reservoir. This license condition will provide a strip of land 50 to 200 feet in horizontal measure along these reservoirs.

We do not preclude the possibility of requiring Applicant to acquire additional land for recreational purposes in the future. At this time, however, with the exception of those areas of intensive recreational use heretofore considered, we believe the acquisition of a strip of land 50 to 200 feet in width around the Monticello and Parr Reservoirs adequately protects the public interest. Other comments submitted by Interior have been addressed in the Final Environmental Impact Statement and considered by this Commission.

The U.S. Department of Agriculture, Forest Service (Forest Service) transmitted with its letter dated December 20, 1973, a Memorandum of Agreement between the Forest Service and the Applicant providing, in part, for the interests of the Forest Service. The details of this agreement have been heretofore noted. The Forest Service also suggested that a detailed development plan for the 300-acre subimpoundment be drafted which would include a parking lot for a minimum of 40 cars. We have conditioned the license to require the filing of such a detailed plan within one year from the date of issuance of this license. Finally, the Department of Agriculture recommended that the entire area within the triangle bounded by State Route 215, relocated State Route 99, and County Road 347 be considered for dedicating to public recreation in connection with the Monticello Reservoir subimpoundment. We are requiring that the Applicant include such land in the feasibility study to be filed pursuant to Article 45.

By letter dated November 7, 1972, the U.S. Department of Health, Education, and Welfare commented on the health aspects of proposed recreational facilities and recommended that the plans for sanitary facilities be submitted to the South Carolina State Board of Health for approval. In Article 43 we have provided for the filing of a solid waste management plan approved by the appropriate State agency.

The U.S. Department of Transportation by letter dated November 9, 1972, noted that the enlargement of the Parr Project will have a minimal effect on the highway system but will require the relocation of portions of South Carolina Highway Route 99 and Route 215, both of which are included

Section 2

Article 47. The Licensee shall, during the construction and operation of the project, continue to consult and cooperate with the Bureau of Sport Fisheries and Wildlife, the South Carolina Wildlife and Marine Resources Department, the South Carolina Pollution Control Authority, and other appropriate environmental agencies for the protection and development of the natural resources and values of the project area. The Commission reserves the right, after notice and opportunity for hearing, to require such reasonable changes in the project and its operation as may be found necessary or appropriate to preserve and promote the environment of the project area, as provided herein by Articles 11 and 14.

Article 48. Licensee shall purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to:

(a) All islands formed by the 226-foot contour of the lower reservoir and by the 425-foot contour of the upper reservoir.

(b) Shoreline lands up to the 270-foot contour or up to 50-feet, horizontal measure, from the 266-foot contour of the lower reservoir, whichever is greater; and shoreline lands up to the 430-foot contour or up to 50-feet, horizontal measure, from the 425-foot contour of the upper reservoir, whichever is greater: Provided, That the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given:

Provided further, That the project boundary in the area of the V. C. Summer Nuclear Station shall be the 425-foot contour, as shown on Sheet 8 (FPC No. 1894), Exhibit K. Licensee within one year after completion of land acquisition shall file an Exhibit F and, for Commission approval, a revised Exhibit K.

Article 49. Following consultation with the South Carolina Wildlife and Marine Resources Department, Licensee shall file for Commission approval within six months after the date of issuance of the license its plans for a study to determine suitable plant species which would be tolerant to

Section 3

Article 43: Requirement for Licensee to consult and cooperate with the South Carolina Department of Health and Environmental Control, and comply with local regulations in planning and providing for the collection, storage, and disposal of solid wastes generated through public access and use of project lands and waters, and within one year after the commencement of operation of the Project, shall file with the Commission a solid waste management plan which has been approved by the Department of Health and Environmental Control. This plan shall provide (a) the location of solid waste receptacles to be provided at public areas including campgrounds, picnicking areas, and boat access areas; (b) schedules of collection for the above receptacles; (c) provisions for including in the subject plan any public use areas as they are developed; and (d) disposal sites and methods of disposal.

Article 44: Requirement for Licensee, following consultation and cooperation with the Bureau of Outdoor Recreation of the U.S. Department of the Interior; the South Carolina Wildlife and Marine Resources Department; the South Carolina Department of Parks, Recreation, and Tourism, shall study the feasibility of constructing recreation sub-impoundments (reservoirs with stable water surface elevations) with adjacent access or recreation areas at suitable locations on Cannon's and Heller's Creeks, or other arms of Parr Reservoir, in lieu of reserving and developing for recreational purposes the 180.5-acre parcel on Heller's Creek at County Road 28 and the 387-acre parcel opposite Fairfield Powerhouse, as shown on Exhibit R-3 (FPC No. 1894-45). Within one year following issuance of the license, Licensee shall file, for Commission approval, revisions of Exhibit R implementing findings of the study including, but not limited to, a schedule for development of (1) said 180.5-acre and 387-acre parcels for recreational purposes, or (2) said alternative recreation sub-impoundments and adjacent recreation areas for fishing, waterfowl hunting, sightseeing, and other uses. Such revisions of Exhibit R shall conform to the Commission's then existing Rules and Regulations, including the economic effect of such development on project operation.

Article 48: Licensee shall purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to:

(a) All islands formed by the 266-foot contour² of the lower reservoir and by the 425-foot contour of the upper reservoir.

(b) Shoreline lands up to the 270-foot contour or up to 50-feet, horizontal measure, from the 266-foot contour of the lower reservoir, whichever is greater; and shoreline lands up to the 430-foot contour or up to 50-feet, horizontal measure, from the 425-foot contour of the upper reservoir, whichever is greater: Provided, that the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given.

Provided further, that the project boundary in the area of V. C. Summer Nuclear Station shall be the 425-foot contour as shown on Sheet 8 (FPC No. 1894), Exhibit K. Licensee within one year after completion of land acquisition shall file an Exhibit F and, for Commission approval, a revised Exhibit K.

Article 50: Licensee, for the purpose of monitoring and determining the quality of the aquatic environment of Parr Reservoir and Monticello Reservoir, including the 300-acre sub-impoundment, so as to realize its full recreational potential, shall conduct a water quality monitoring program at selected locations for a period of five years from the date of commencement of project operation. Sampling shall be done at least monthly and include measurements of dissolved oxygen, pH, conductivity, temperature profiles, carbon dioxide, total dissolved solids, total alkalinity, total hardness, chloride sulfate, phosphate, nitrate, BOD, COD, heavy metals, silica, calcium, magnesium, sodium, and turbidity. Annual progress reports and, within one year following conclusion of the monitoring program, a final report shall be filed showing the findings of this program together with recommendations of any need for further sampling or for proposals for maintenance or improvement of the aquatic environment to such reservoirs as shown to be desirable by the studies.

Article 51: Requirement to monitor on a continuous basis dissolved oxygen, temperature, stream flow, conductivity and pH, and on a monthly basis, turbidity and heavy metals, at its water quality station in the Broad River downstream of Parr Reservoir. To assist the personnel of the Columbia, South Carolina, water treatment plant in the early detection of musty odors in Broad

² The current license identifies elevation 226' as the contour of the lower reservoir, however this is incorrect, as the top of the crest gates are at elevation 266'.

Section 4

3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN

Parr Reservoir is formed by the Parr Shoals Dam ("Dam"), which was originally constructed between 1912 and 1914. The Dam is situated across the Broad River and houses a 14.88 megawatt (MW) hydroelectric facility, located in an integral powerhouse. On August 28, 1974, the Federal Power Commission (FPC), predecessor to the FERC, issued SCE&G a new operating License for the Parr Shoals Development. In addition to relicensing the existing facilities, the new License authorized the construction of the 511.2 MW Fairfield Pumped Storage Development. This resulted in the creation of the Fairfield Development's upper pool, Monticello Reservoir. The new License also authorized the enlargement of the existing Parr Reservoir to serve as the lower pool to the Fairfield Development. This involved raising the height of the Dam approximately 9 feet, thereby nearly doubling Parr Reservoir's surface area. The construction of newly licensed facilities was completed in 1978, with the facilities beginning commercial operation that same year (F.P.C., 1974). The newly developed Project, including both Parr and Fairfield Developments, was subsequently referred to as the Parr Hydroelectric Project.

Article 48 of the Project License issued in 1974 required that SCE&G purchase in fee and include within the Project boundary: the islands in the Parr and Monticello Reservoirs formed by the 266-foot and 425-foot contour intervals, respectively; shoreline lands up to the 270-foot contour, or 50 feet (measured horizontally) from the Parr Reservoir's 266-foot contour, whichever is greater; and, shoreline lands up to the 430-foot contour interval, or 50 feet (measured horizontally) from Monticello Reservoir's 425-foot contour, whichever is greater. Provided that the Project boundary, except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontally measured, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given. This area is referred to as the "Buffer Zone". The FPC determined that acquiring these lands would provide SCE&G with adequate shoreline control around the reservoirs, in addition to serving the purposes of Project operation and recreation (F.P.C., 1974).

Furthermore, Article 20 of the Project License orders that SCE&G allow public access, to a reasonable extent to Project waters and adjacent Project lands (with the exception of lands necessary for the protection of life, health, and property) for navigation and outdoor recreational

Section 5

Monticello Reservoir is included under separate cover), while adhering to the historical management goals agreed to and developed with agencies and stakeholders.

In addition to an updated SMP for each Project reservoir, a Permitting Handbook was developed in consultation with stakeholders and agencies to address activities requiring consultation with and/or permits from SCE&G. These activities include, but are not limited to the following: shoreline stabilization, access path development, and other shoreline activities. SCE&G will review the Permitting Handbook with interested stakeholders periodically to evaluate its effectiveness; however, SCE&G may make changes to the permitting process at any time as it determines in its sole judgment to be necessary and appropriate.

3.2 PROJECT BOUNDARY

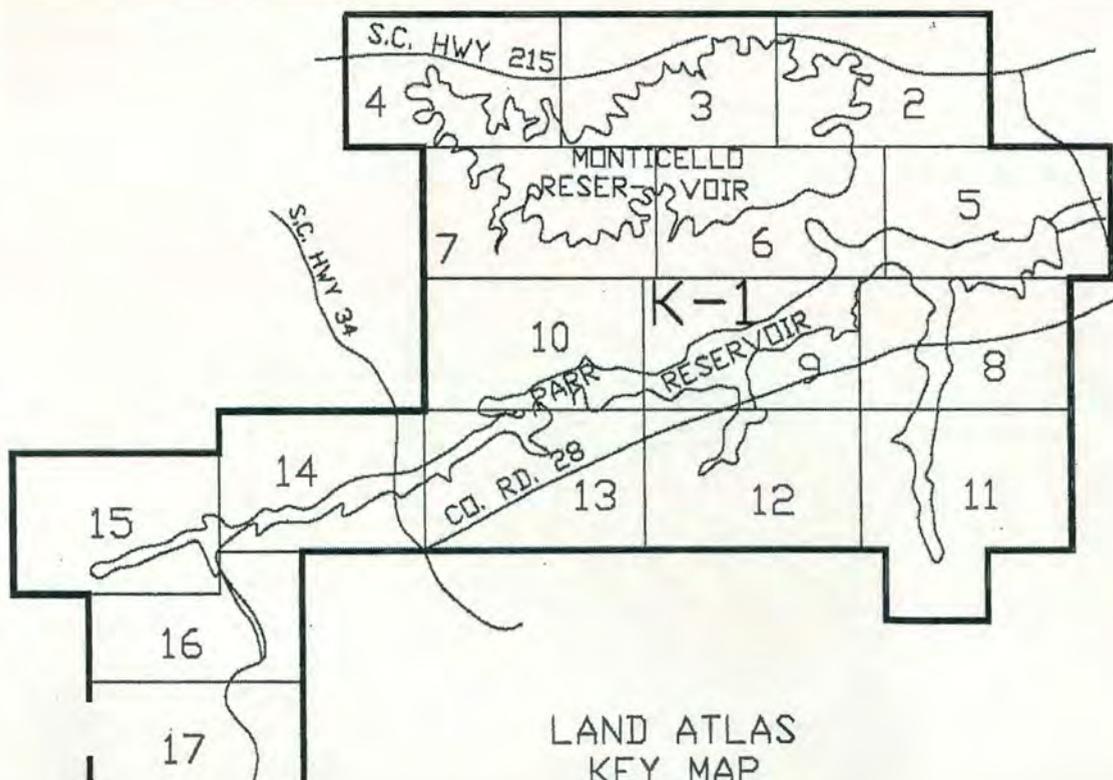
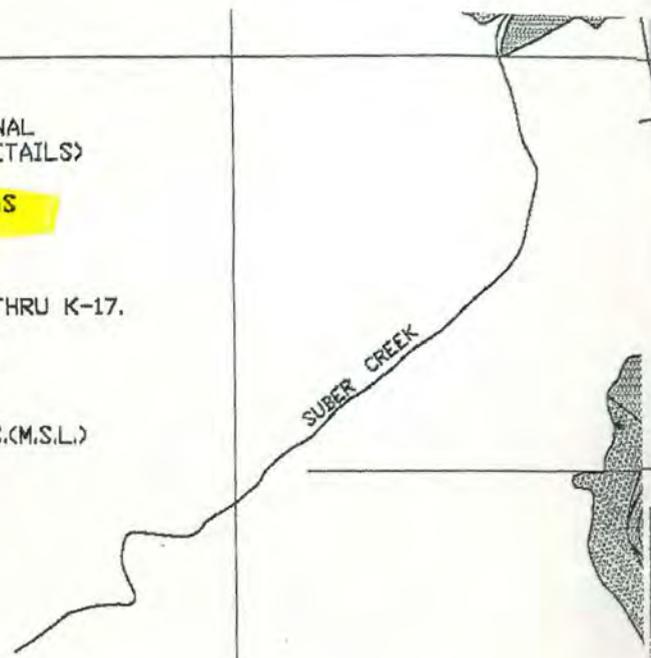
SCE&G owns all lands or obtained flowage rights within the Project boundary surrounding Parr Reservoir. As noted, this area is referred to as the "Buffer Zone" and may encompass an area up to the 270-foot contour or measuring up to 50 feet but no greater than 200 feet horizontally from the 266-foot contour on Parr Reservoir, whichever is greater.

3.3 ~~ACREAGE OF PROJECT LANDS~~ (SECTION TO BE MOVED TO TABLE UNDER SECTION 5.0)

Section 6

NOTES:

1. ON THE MONTICELLO RESERVOIR & SUB-IMPOUNDMENT THE PROJECT BOUNDARY LINE IS GENERALLY A MAXIMUM OFF 200' FROM THE 425' CONTOUR EXCEPT IN RECREATIONAL AREAS OR DEEMED NECESSARY BY FIELD INSPECTION. (SEE "K" SHEETS 2-20 FOR DETAILS)
2. THE P.B.L. AROUND PARR RESERVOIR IS GENERALLY ALONG THE FLOOD OF RECORD AS ADJUSTED FOR THE INFLUENCE OF PARR DAM, AS INDICATED ON TABLE THIS SHEET.
3. ALL LANDS WITHIN THE PROJECT BOUNDARY LINE ARE OWNED IN FEE SIMPLE BY SOUTH CAROLINA ELECTRIC AND GAS COMPANY, UNLESS OTHERWISE SHOWN ON K-2 THRU K-17.
4. PROJECT BOUNDARY LINE IS NOT SHOWN ON THIS SHEET, EXCEPT IN RECREATIONAL AREAS, BUT IS SHOWN IN DETAIL ON SHEETS K-2 THRU K-20.
5. ELEVATIONS SHOWN CORRECTED ACCORDING TO RECENT SURVEY BASED ON U.S.C.&G.S.(M.S.L.)
6. SOUTHERN R.R. R/W IS EXCLUDED FROM PROJECT, EXCEPT TO THE EXTENT OF FLOWAGE RIGHTS. (SEE EXHIBIT "F").
7. NO TREES ARE TO BE CUT ON AREAS INDICATED AS ISLANDS OR RECREATIONAL AREAS.
8. CO-ORDINATES SHOWN ARE BASED ON THE STATE GRID SYSTEM.



LAND ATLAS
KEY MAP

N520,000

Section 7

56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | 48 | 47 | 46 | 45 | 44 | 43

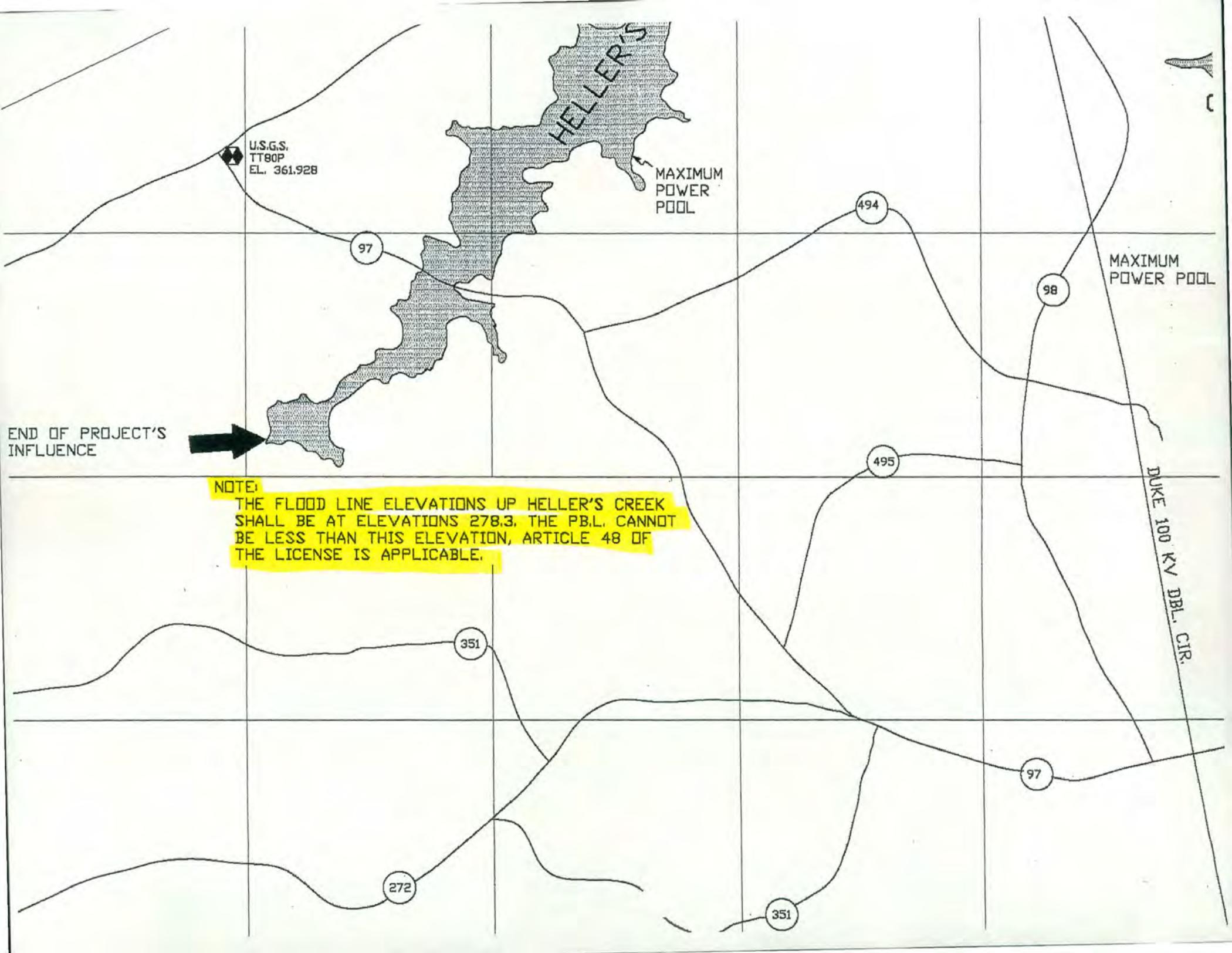
**PROJECT BOUNDARY LINE ELEVATIONS FOR PARR RESERVOIR
(MINIMUM)**

USGS STATION NO:	DISTANCE FROM PARR DAM (FT.)	ELEVATION OF PROJECT BOUNDARY LINE (MINIMUM)	BASED ON
1	100	270.0	<p>Flood of record (224,000 CFS) in river with Fairfield built but not operating. All Spillway Gates fully down.</p>
2	1,000	270.0	
3	3,000	270.0	
4	6,000	270.8	
5	7,800	271.3	
6	9,850	272.1	
7	12,300	272.8	
8	14,600	274.1	
9	15,500	274.3	
10	17,700	275.3	
11	20,400	275.8	
12	22,700	276.7	
13	25,600	277.4	
14	30,600	279.2	
15	32,700	279.7	
16	35,300	270.0	<p>40,000 CFS in river and all Fairfield units operating; all Spillway Gates fully down. (Table 4-A)5-21-74.</p>
17	37,400	270.0	
18	40,100	270.0	
19	42,600	270.0	
20	45,300	270.0	
21	48,100	270.0	
22	49,800	0.0	
23	51,000	270.0	
24	52,000	270.0	

TO BE USED AS A GUIDE IN ESTABLISHING THE P.B.L., HOWEVER, IN NO CASE WILL THE P.B.L. BE LESS THAN THE REQUIREMENT IN ARTICLE 48.

not a rule

Section 8



U.S.G.S.
TT80P
EL. 361.928

HELLER'S

MAXIMUM
POWER
POOL

97

494

98

MAXIMUM
POWER POOL

END OF PROJECT'S
INFLUENCE



NOTE:
THE FLOOD LINE ELEVATIONS UP HELLER'S CREEK
SHALL BE AT ELEVATIONS 278.3, THE P.B.L. CANNOT
BE LESS THAN THIS ELEVATION, ARTICLE 48 OF
THE LICENSE IS APPLICABLE.

DUKE 100 KV DBL. CIR.

495

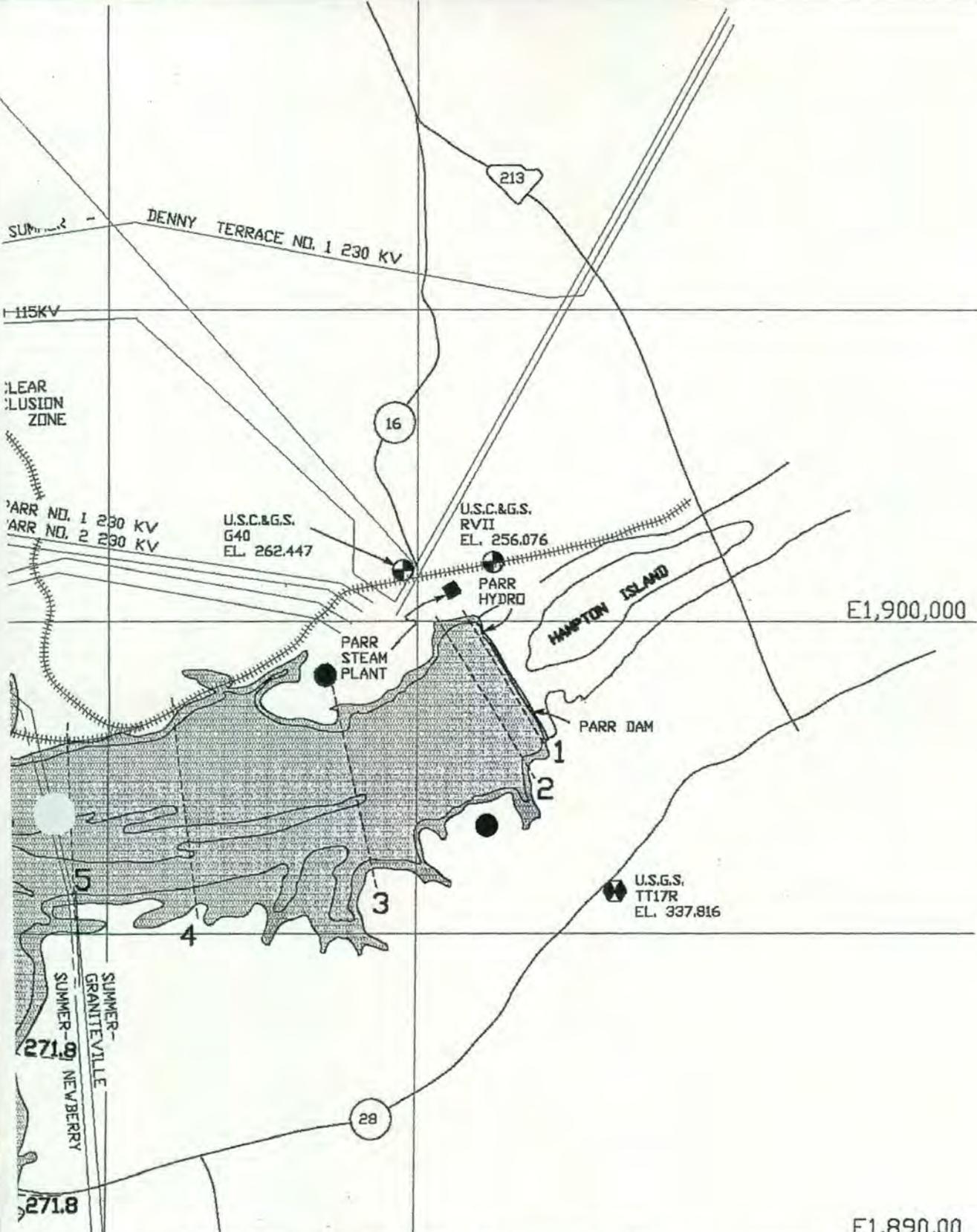
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P.B.L. FOR CANNON'S CREEK

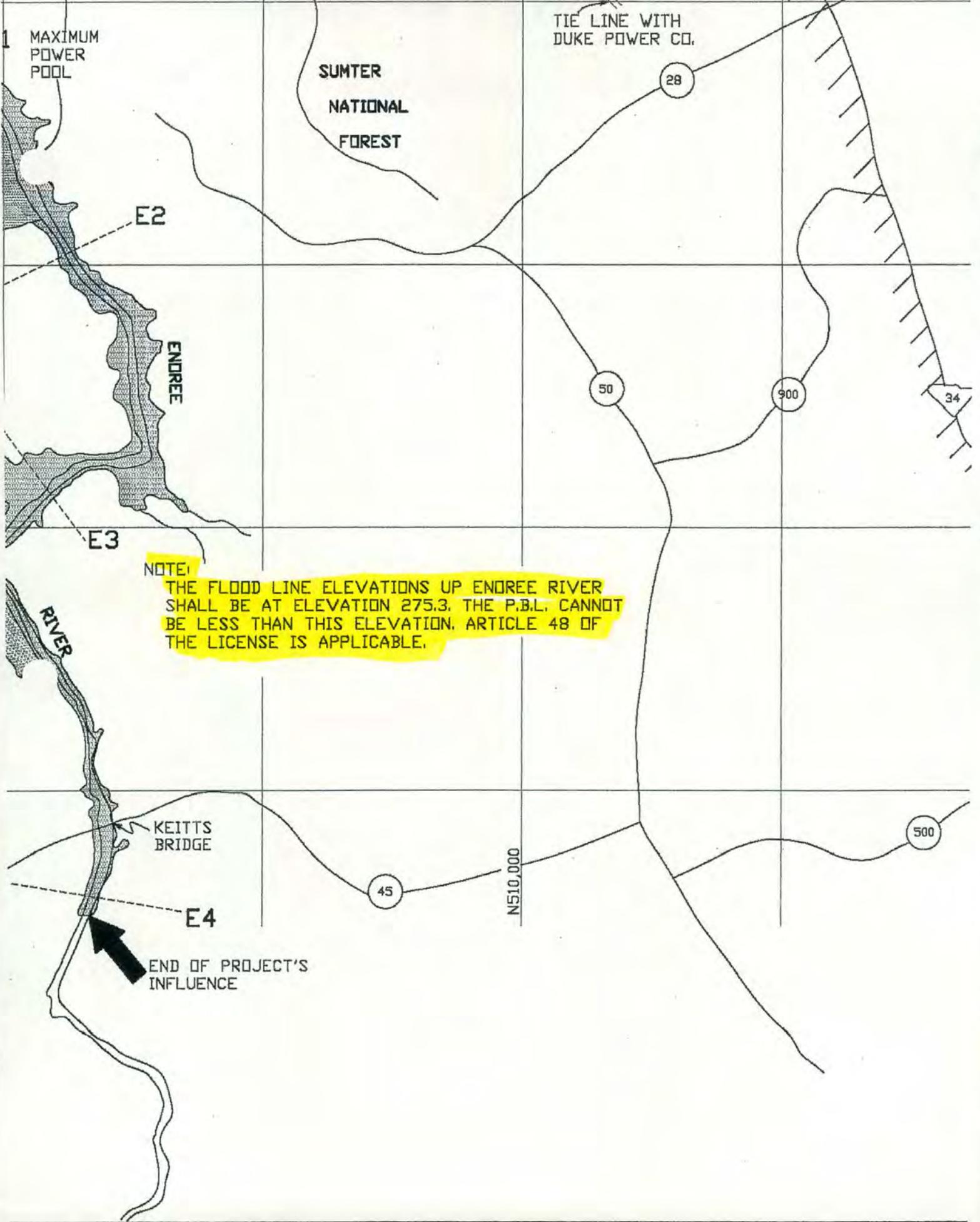
1)a. ELEVATIONS SHOWN ON LINES C1 THROUGH C8 ARE FLOWS FOR MEAN ANNUAL FLOOD ON CANNON'S CREEK DURING OCTOBER 1929 FLOOD ON BROAD RIVER.

b. ELEVATIONS SHOWN ON LINES C9 & C10 ARE FLOWS FOR 50 YEAR FLOOD ON CANNONS CREEK DURING MEAN ANNUAL FLOOD ON BROAD RIVER.

2)a. ELEVATIONS FOR FLOWS WERE OBTAINED FROM U.S.G.S. BACKWATER PROFILE STUDY (TABLE 4) DATED FEBRUARY 1974.

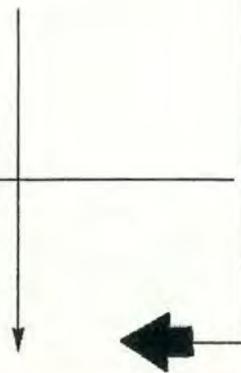
b. ARTICLE 48 OF LICENSE IS APPLICABLE, HOWEVER, WHEN FLOWS EXCEED THE 270' CONTOUR THEN THE FLOW ELEVATION SHOWN ON SECTION LINES WOULD APPLY.

1.8



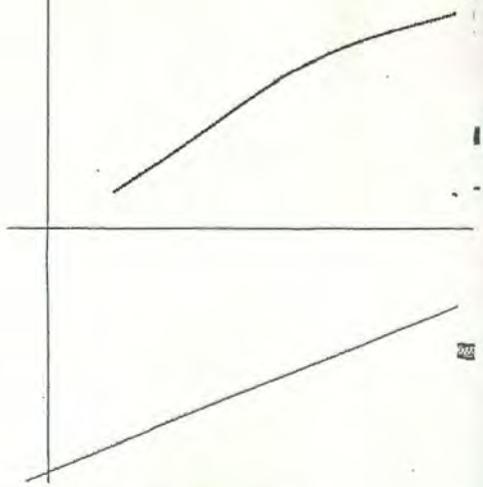
NOTE!
THE FLOOD LINE ELEVATIONS UP ENDREE RIVER SHALL BE AT ELEVATION 275.3, THE P.B.L. CANNOT BE LESS THAN THIS ELEVATION, ARTICLE 48 OF THE LICENSE IS APPLICABLE.

28	58,000	271.3
29	61,000	272.2
30	64,100	273.1
31	66,800	274.1
32	69,000	274.7
33	71,600	275.3
34	74,800	276.0
35	76,600	276.5
36	79,200	278.0 P.B.L. CLOSSES HERE
37	82,500	280.3
38	87,400	282.1
39	91,100	283.6
40	94,800	285.6



ARTICLE 48 OF THE F.P.C. LICENCE STATES THAT ON THE PARR RESERVOIR, WE SHALL OWN IN FEE AND INCLUDE WITHIN THE P.B.L. ALL LANDS UP TO THE 270 FOOT CONTOUR OR UP TO 50 FEET, HORIZONTAL MEASURE, FROM THE 266 FOOT CONTOUR, WHICHEVER IS GREATER. ALL P.B.L. SHALL BE RUN IN STRAIGHT LINE SEGMENTS EQUAL TO OR SLIGHTLY GREATER THAN ELEVATIONS SHOWN. HOWEVER, THE P.B.L. SHALL NOT EXCEED 200' FEET, HORIZONTAL MEASURE, FROM THE 266 FOOT CONTOUR UNLESS IT CAN BE JUSTIFIED.

Federal Acreage Occupied by the Project Boundary			SCE&G Owned
Drawing No.	Tract No.	Federal Acreage (Flowage Easement)	Section 24 Lands (Fee Simple)
K-14	193	-	72.14
K-17	198	17.88	
K-15/16	200	120.55	25.35
K-14	211	-	26.13
K-13	213	-	28.26
K-10/13	214	-	390.65
K-17	226	3.09	-
K-16/17	227	12.52	-
K-17	232	3.14	-
K-17	248	0.33	-
K-17	264	0.93	-
...



Section 9



May 27, 2015

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated May 4, 2015

Dear Mr. Hendrix:

I am responding to your letter dated May 4, 2015 requesting additional information concerning the Federal Energy Regulatory Commission's (FERC) establishment of the Project boundary line (PBL) of the Parr Reservoir. As noted in my previous letter dated March 18, 2015, the Company considers establishment of the PBL fully resolved. The Company has acquired all property rights along the shores of the Parr Reservoir and its tributaries which remain necessary for the operation and maintenance of FERC Project No. 1894. There is no reason to revisit the matter as the reservoir was established in conformity with the specific obligations set forth in the Project's license and has been approved by FERC. Moreover, even if the Company were to see a need in the future to reexamine the placement of the PBL, any property removed from the PBL with the FERC approval would then become non-Project lands and precluded from the jurisdiction of the FERC. In reference to your request for various documents, we must respectfully decline that request. We consider this matter closed and are unwilling to expend additional time and resources retrieving documents for you on this matter.

If you have any further questions, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,

A handwritten signature in blue ink that reads "William Argentieri".

William Argentieri, Manager Civil Engineering
Fossil/Hydro Technical Services

c: H. E. Delk, Jr./PH File
J. H. Hamilton/ J. Stuckey

Section 10

Hendrix, William B.

From: ARGENTIERI, WILLIAM R <BARGENTIERI@scana.com>
Sent: Thursday, October 30, 2014 4:47 PM
o: Hendrix, William B.; Jeffrey Carter
Cc: BOOZER, THOMAS C; COLLINS, SCOTT E
Subject: Parr PBL

Billy and Jeff,

Good news, even though I cannot find the final report, the USGS backwater study drawings have enough information on them to help us understand the reasoning used to determine the location of the Parr Reservoir project boundary line. I know you will be unavailable next week, but would you like to get together again sometime during the weeks of November 10 or 17 to discuss what I found? If so, maybe you could give me a couple of dates and times you will be available and I will see what works for Tommy, Scott and I. If it is okay with you, we can meet at Tommy's office again.

Let me know what works for you.

Thanks,

William R. Argentieri
South Carolina Electric & Gas Company
Mail Code A221
220 Operation Way
Cayce, SC 29033-3701

(Physical Address)
100 SCANA Pkwy
Building A, Floor 2
Cayce, SC 29033-3712

Phone - (803) 217-9162
Fax - (803) 933-7849
Cell - (803) 331-0179

Section 11



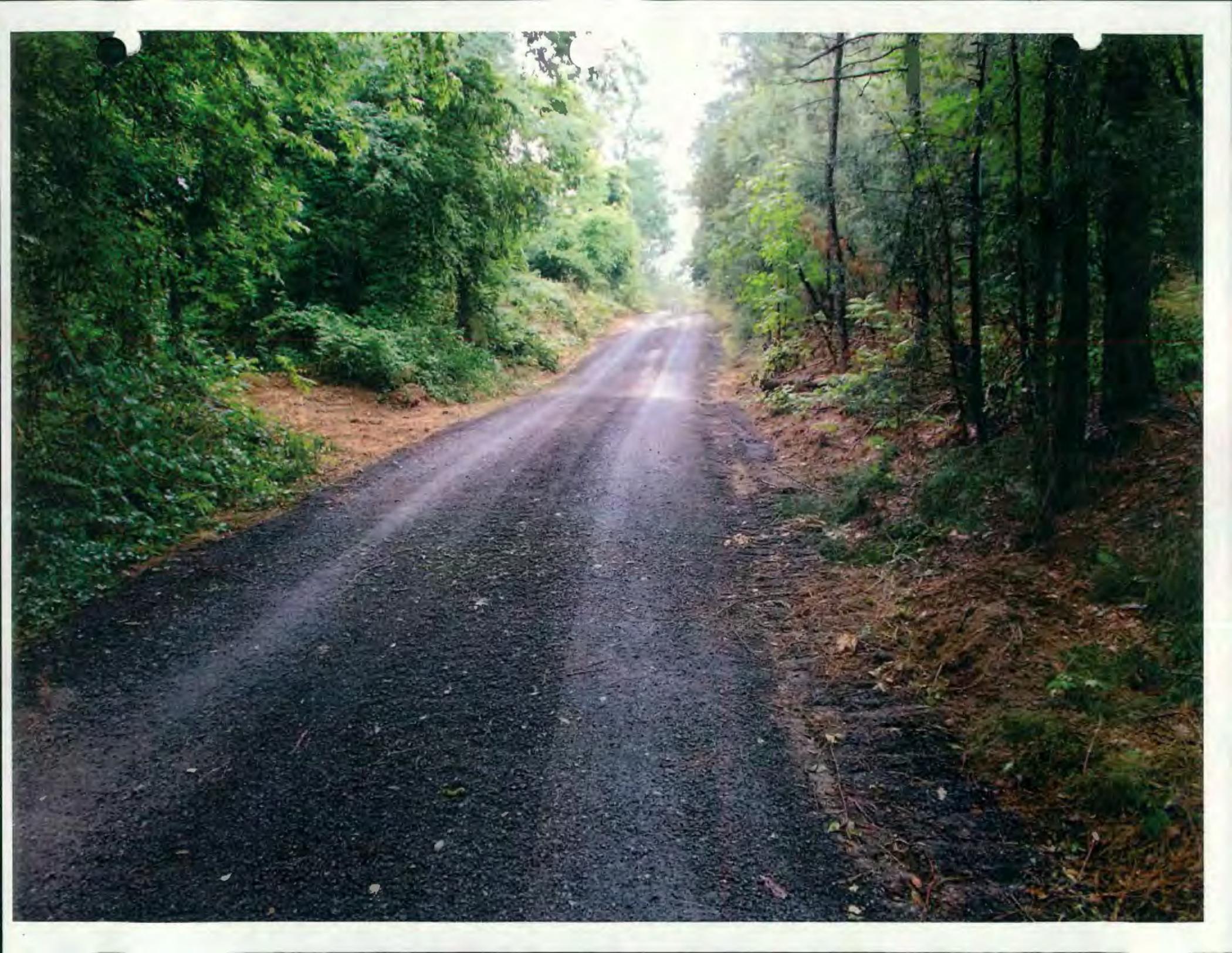




















South Carolina Department of Natural Resources



1000 Assembly Street
PO Box 167
Columbia, SC 29202
803-734-9096 - Office
marshallb@dnr.sc.gov

Alvin A. Taylor
Director

Robert D. Perry
Director, Office of
Environmental Programs

June 15, 2015

Mr. James M. Landreth, Vice President
Fossil & Hydro Operations
South Carolina Electric & Gas Company
220 Operations Way
Mail Code A221
Cayce, SC 29033-3701

REFERENCE: Comments on the Pre-Application Document and Study Requests for Parr Shoals Hydroelectric Project (P-1894)

Dear Mr. Landreth:

The South Carolina Department of Natural Resources (DNR) has reviewed the Pre-Application Document (PAD) prepared by South Carolina Electric and Gas (SCE&G) for the proposed relicensing of the Parr Shoals Hydroelectric Project, FERC Project No. 1894 (hereafter referred to as "Parr Shoals Project" or "Project"). The Federal Energy Regulatory Commission (FERC) approved SCE&G's request to use the Traditional Licensing Process (TLP), and that process requires DNR to submit comments and study requests to you within 60 days of the Joint Agency Meeting(s), which were conducted by SCE&G on April 14, 2015.

DNR understands the purpose of the PAD is to provide the FERC, federal and state agencies, and other interested stakeholders with background information related to Project facilities and engineering, operational, economic, and environmental aspects of the Project. The PAD is also intended to define pertinent Project issues and identify potential study/information needs.

The Parr Shoals Project is highly complex, and information in the PAD has been very helpful to DNR staff in providing a better understanding of Project operations and existing protection, mitigation and enhancement measures. The PAD has also been helpful in identifying potential Project effects on natural resources.

Our comments on the PAD and PAD Appendices are provided to identify areas for clarification, additional information and discussion as part of the ongoing relicensing process. We are not suggesting that SCE&G revise and/or re-file the PAD with the FERC or other stakeholders.

James M. Landreth, Vice President

COMMENTS on the PAD and Study Requests for Parr Shoals Hydroelectric Project (P-1894)

June 15, 2015

Project Description

A description of the Project is provided in the PAD. According to the PAD, the Parr Shoals Project is located in Newberry and Fairfield counties, South Carolina, on the Broad River, approximately 26 river miles upstream from the City of Columbia. The Project includes the existing Parr Shoals Development with its 4,400 acre reservoir on the Broad River, and the adjacent Fairfield Pumped Storage Development with the 6,800 acre Monticello Reservoir on Frees Creek, a tributary to the Broad River.

The Parr Shoals Development consists of a powerhouse approximately 60 feet wide by 300 feet long and containing 6 generators, a 2,715 foot long concrete dam with a trash raking system mounted on the intake deck, ten bottom-hinged Bascule gates mounted on the crest of the dam, a 4,400 acre reservoir, and transmission and appurtenant facilities. The normal maximum water level of Parr Reservoir is at El. 266.0 feet. The Parr Shoals Development has an installed capacity of 14.88 MW and generates using available inflows up to the maximum station hydraulic capacity of 6,000 cfs.

The Fairfield Pumped Storage Development is comprised of a 6,800 acre reservoir, four earthen dams, an intake channel, a gated intake structure, four surface penstocks (each 26 feet in diameter and approximately 800 feet long) bifurcating into eight concrete-encased penstocks (each approximately 18.5 feet in diameter), a semi-outdoor generating station, approximately 520 feet long by 150 feet wide, housing eight vertical Francis reversible pump-turbine units and transmission and appurtenant facilities. The normal maximum water level in Monticello Reservoir is El. 425.0 feet. The Fairfield Pumped Storage Development has an installed capacity of 511.2 MW and generates with flows from Monticello Reservoir up to a maximum hydraulic capacity of approximately 50,400 cfs. Fairfield pumps water from Parr Reservoir back to Monticello Reservoir with a maximum hydraulic capacity of about 41,800 cfs. An active storage of up to 29,000 acre-feet may be transferred between the two reservoirs by the pumped storage operations.

The existing FERC license for the Project expires on June 30, 2020. SCE&G intends to file for a new license with FERC on or before May 31, 2018.

Responsibilities of DNR

DNR is the state agency charged by state law with the management, protection, and enhancement of wildlife, fisheries, and marine resources in South Carolina. DNR is responsible for formulating comprehensive policies for water resources through a State Water Plan to address issues affecting water supply, water quality, navigation, hydroelectric power, outdoor recreation, fish and wildlife needs, and other water resource interests. DNR is also charged with the statewide responsibilities for regulating watercraft operation and associated recreation on state waters, conducting geological surveys and mapping, promoting soil and water conservation, management of invasive aquatic plants, flood mitigation, drought response planning and coordination, and the state scenic rivers program. DNR's mission is to serve as the principal advocate for and steward of South Carolina's natural resources. (DNR authorities and

responsibilities are described in Titles 48, 49 and 50, South Carolina Code of Laws (1976), as amended.)

Interests and Objectives of DNR

DNR is actively involved in SCE&G's Parr Hydro Relicensing Project with eight staff of DNR participating among the three Resource Conservation Groups (RCGs) and associated Technical Working Committees (TWCs) formed by SCE&G in the summer of 2013. Consultations within these groups over the past two years have allowed DNR to provide input to SCE&G in their development of the PAD and related study proposals submitted to FERC in January, 2015. DNR interests and objectives related to the Project include the protection, enhancement and restoration of natural resources and their associated values. Specific interests include the following:

- Ensure the FERC license recognizes that Parr Reservoir, Monticello Reservoir, and the Broad River are important public trust resources, and that the Project is managed to achieve public benefits.
- Water Quality: Maintain and/or enhance water quality conditions to meet state standards and current use classifications that protect and provide for fish and wildlife habitat, contact recreation, and public water supply.
- Water Quantity: Ensure the implementation of appropriate water management and downstream flows to protect water quality, fish and wildlife resources, and navigation; and meet present and future water supply needs. Improve information, plans, and procedures for making equitable water management decisions. Balance water resource user needs to protect natural resources within the Project and downstream river reaches. Conserve reservoir levels and protect adequate downstream flows during periods of drought or low inflow.
- RTE Species: Protect and enhance rare, threatened, and endangered (RTE) species; and species of conservation concern.
- Aquatic Resources: Protect and enhance fishery resources and aquatic habitat. Minimize entrainment mortality for fish. Stabilize lake-levels during spawning seasons to promote reproduction of fish. Protect and enhance shoreline and littoral habitats for aquatic species. Implement long-term monitoring strategies to ensure protection of key aquatic species and to appraise restoration and enhancement efforts. Enhance habitat and flow conditions in the tailrace, bypass areas, and downstream river reaches. Reduce negative effects to stream fish populations caused by habitat fragmentation resulting from the dams and lakes; and monitor viability of key conservation species potentially impacted by fragmentation. Minimize spread of exotic, invasive species.
- Terrestrial Resources: Protect and enhance wildlife and botanical resources and related habitat. Protect and enhance environmentally sensitive areas and natural communities of concern. Protect and enhance riparian vegetation and habitat areas on shorelines. Minimize habitat losses from shoreline erosion and development. Increase the acreage of protected natural areas. Minimize spread of exotic, invasive species.
- Recreation: Protect and enhance public opportunities for fishing, hunting, wildlife viewing, boating, and other outdoor recreation. Expand and improve existing areas and facilities to meet user needs. Develop and locate new areas/facilities based on user needs

and carrying capacity. Increase land areas designated for outdoor recreation and wildlife conservation. Design and manage access facilities to minimize crowding and safety problems. Design facilities to be ADA accessible. Improve safety and law enforcement among recreational users. Protect aesthetic resources at the Project.

- Cultural Resources: Protect any significant archaeological and historic sites and resources from human and natural impacts.

Comments

DNR's comments address the PAD and the supporting information provided in the PAD appendices, which includes presentations and meeting summaries of the RCGs or TWCs participating in SCE&G's relicensing process. Note: the page numbers referenced in our comments correspond to the hyphenated numbers (e.g. page 3-4) of the PAD sections; however, page numbers for the appendices are referenced to the PDF-page numbers of the 1,873-page PAD which was accessed from the website <http://parrfairfieldrelicense.com>.

Reservoir Fluctuations

In our review of the PAD, we observed that some of the information in the PAD regarding the description of "daily" operations and associated reservoir elevations, appears to be inconsistent with data presented in the document. The following comments are offered for clarification.

In Section 3.4 (page 3-9), it states "The Fairfield Development generates and pumps using an active storage of 29,000 acre-feet. During the generation cycle, active storage in the upper Monticello Reservoir is released from the powerhouse into the lower Parr Reservoir. During the pumping cycle, the active storage is transferred from the Parr Reservoir back into the Monticello Reservoir. *This cycle occurs daily, and the transfer of the full active storage results in an upper reservoir maximum fluctuation of 4.5 feet, and a corresponding lower reservoir fluctuation of 10 feet*" (*emphasis added*).

Section 3.4, page 3-10 - A summary of maximum and minimum annual reservoir elevations observed over a five year period is presented in Tables 3-1 and 3-2.

Appendix C, page 191 – Meeting notes from December 4, 2012, are presented, and in those notes a statement was made on the bottom of page 1 that "the level of daily fluctuation at Parr reservoir is usually around 8 feet, with a maximum of 10 feet, and depends on what time of year it is".

DNR notes that the ranges of fluctuations presented in Section 3.4 and Appendix C, page 191, represent fluctuations between the maximum and minimum pool elevations which occur over the course of a year *and do not reflect normal daily fluctuations*. Actual reservoir fluctuations observed during the period of 1995-2013 for Parr Reservoir and 2005-2013 for Monticello Reservoir are presented in Appendix C on pages 622 through 629 (April 1, 2014 presentation for the Fisheries TWC). These data show that during the periods of record, daily operations have generally used only a portion of the available 29,000 acre/feet, and the resulting daily fluctuations are much less on average than described in Section 3.4. DNR recommends that

information describing the daily fluctuations in both Parr and Monticello reservoirs be included in the License Application.

Downstream Flows

As demonstrated in the PAD (Appendix C, pages 331- 354, Parr Project effects on flow regulation presented June 27, 2013), Project operations have been observed to alter downstream flows (compared to inflows) so as to increase the magnitude and frequency of high flow events. Project operations can alter the flows released at Parr Dam as measured at Alston all the way to the Congaree River (see Figures on pages 352, 353 and 354). DNR is concerned that these flow variations may be disrupting the spawning success of diadromous fish in the Broad and Congaree rivers.

Appendix C, page 917 – A discussion between Kleinschmidt and DNR involving sturgeon populations on April 24, 2014, is presented. In that consultation, DNR staff noted that DNR would have concerns if Project operations impact flows downstream in the Congaree River during the spring spawning season. Kleinschmidt responded that impacts on flows in the Congaree as a result of project operations would be unlikely for a number of reasons. “Acknowledging that flow impacts to the Upper Congaree are unlikely, Kleinschmidt staff noted that level-loggers are being deployed throughout the reach of the Broad below the project and that an operations model is being developed to determine the extent of the downstream peaking “wave.” It was determined that, if operations modeling efforts suggest that water level/flow effects extend downstream of the Columbia Hydro Project, then there may be a need to reinitiate consultation regarding potential sturgeon impacts; otherwise, there are no concerns”. DNR notes that data collected since that meeting, and presented in the PAD (Figure on pages 352-354) clearly show effects that Project operations can have on the frequency, duration, and magnitude of peak flows downstream to the Congaree River. Since these flows may disrupt spawning diadromous fish, we recommend that DNR, USFWS and NMFS personnel be consulted to determine what additional information may be needed to assess those impacts.

Section 3.7, page 3-11 – Article 39 requires that the project is operated such that releases from Parr Reservoir during flood flows shall be no greater than flows which would have occurred in the absence of the Project. The Article did not provide a definition for flood flows; however, in practice, SCE&G uses 40,000 cfs as the targeted flood flow to guide operational measures to comply with this Article. Assuming a similar article is incorporated in the new license, DNR sees a need for further discussion and evaluation of how Project operations effect downstream flows during high inflow events, and we think such evaluation should address inflows less than 40,000 cfs, and consider effects of flood flow alterations on diadromous fish.

Section 4.2.2, page 4-15 – The flow statistics presented in this section (Table 4-2) are limited to monthly flow data from the Alston gage. Annual and monthly flow duration curves are provided in Appendix A of the PAD (page 162). As the relicensing process proceeds, DNR suggests that it is essential to have an understanding of daily variability of flows to be able to evaluate Project effects on aquatic and related natural resources. As an example, we would note that the daily minimum and maximum flows from the Project in the selected period of record (1981-2013)

James M. Landreth, Vice President

COMMENTS on the PAD and Study Requests for Parr Shoals Hydroelectric Project (P-1894)

June 15, 2015

have ranged from a low of 48 cfs, on September 12, 2002, to a high of 106,000 cfs on October 14, 1990 (USGS summary statistics for Station 02161000, Broad River at Alston).

Other Items

Appendix C, page 225 – On page 2 of the minutes from the May 14, 2013, Recreation TWC meeting, SCE&G determines that some property within the Project Boundary (Lyne Tract) needs to be reclassified from future recreation to project operations. DNR suggests that 1) it may not be necessary to reclassify the entire 350 acres to Project Operations and other options should be considered, and 2) any lands that are removed from present or future recreational status should be replaced.

Section 2.0, pages 2-1 and 2-2, describes SCE&G's request to use the Traditional Licensing Process, a request which the FERC approved on February 20, 2015. DNR notes that SCE&G also intends to pursue a Settlement Agreement as a component of relicensing (Appendix C, pages 194, 968, and 973, in December 4, 2012 meeting summary and August 14, 2014 email to stakeholders). DNR looks forward to participating in the development of a settlement agreement that addresses a number of natural resources issues.

Study Requests

Proposed study plans are presented in Appendix H of the PAD. DNR has participated in the development of all of these study plans, and we concur with the plans as presented. These include :

- Water Quality in Downstream West Channel Study Plan
- Monticello Reservoir Freshwater Mussel reconnaissance Survey Study Plan
- Reservoir Fluctuation Study Plan
- Instream Flow Study Plan
- Desktop Fish Entrainment Study Plan
- American Eel Abundance Study Plan
- Monticello Reservoir and Parr Reservoir Waterfowl Survey Study Plan
- Rare, threatened and endangered Species Study Plan
- Rocky Shoals Spider Lily Study Plan
- Broad River Spiny Crayfish Study Plan
- Recreation Use and Needs Study Plan
- Downstream Recreational Flow Assessment Study Plan
- Downstream Navigational Flow Assessment Study Plan
- Parr Shoreline Management Plan Outline
- Monticello Shoreline Management Plan Outline
- Hydraulic & Project Operations Model Study Plan

Additional Information Needs

James M. Landreth, Vice President

COMMENTS on the PAD and Study Requests for Parr Shoals Hydroelectric Project (P-1894)

June 15, 2015

With the comments provided in this letter, DNR is identifying needs for clarification, additional information, and discussion to be addressed as part of the continuing consultations of the current relicensing process. We recommend SCE&G address our comments and information needs within the respective RCG or TWC that is appropriate for addressing the issues.

To reiterate additional information needs, DNR requests development of additional hydrologic information describing Project inflows, outflows (Broad River at Alston), and Congaree River flows to better assess the potential effects of Project operations on spawning diadromous fish. We also recommend that SCE&G convene a meeting with the resource agencies and interested stakeholders to discuss the potential impacts of current project operations on the spawning of diadromous fish, to include American shad, striped bass and shortnose sturgeon.

We appreciate the opportunity to review and comment on the PAD for the Parr Shoals Hydroelectric Project. If you have questions or need additional information please do not hesitate to contact me by phone at 803-734-9096 or email at marshallb@dnr.sc.gov.

Sincerely,



Bill Marshall

Coordinator, FERC Hydro Projects Review

cc: Bill Argentieri, SCE&G
Henry Mealing, Kleinschmidt Associates
Byron Hamstead, USFWS
Pace Wilbur, NMFS
Bob Perry, DNR
Dick Christie, DNR



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office

263 13th Avenue South

St. Petersburg, Florida 33701-5505

<http://sero.nmfs.noaa.gov>

June 15, 2015

F/SER47:FR/pw

(Sent via Electronic Mail)

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Comments on the Pre-Application Document for the Parr Shoals
Hydroelectric Project; Newberry and Fairfield Counties, South Carolina
(FERC Project No. 1894)

Dear Secretary Bose:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Pre-Application Document (PAD) prepared by South Carolina Electric and Gas (SCE&G) for the proposed relicensing of the Parr Shoals Hydroelectric Project, FERC Project No. 1894 (hereafter referred to as "Parr Shoals Project" or "Project"). The Federal Energy Regulatory Commission (FERC) approved SCE&G's request to use the Traditional Licensing Process (TLP), and that process requires the NMFS to submit comments and study requests within 60 days of the Joint Agency Meeting, which SCE&G conducted on April 14, 2015. The following comments are submitted in accordance with the provisions of the Federal Power Act (16 U.S.C. 803(a); the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e); the Endangered Species Act (16 U.S.C. 1531-1543); the National Environmental Policy Act (NEPA, 42 U.S.C. 4321 et. seq.); and the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et. seq.).

Project Description

The Parr Shoals Project is located in Newberry and Fairfield Counties, South Carolina, on the Broad River, approximately 26 river miles upstream from the City of Columbia. The Project includes the existing Parr Shoals Development with its 4,400 acre reservoir on the Broad River and the adjacent Fairfield Pumped Storage Development with the 6,800 acre Monticello Reservoir on Frees Creek, a tributary to the Broad River.

The Parr Shoals Development consists of a powerhouse approximately 60 feet wide by 300 feet long and containing six generators; a 2,715-foot-long concrete dam with a trash raking system mounted on the intake deck; ten bottom-hinged Bascule gates mounted on the crest of the dam; a 4,400 acre reservoir; and transmission and appurtenant facilities. The normal maximum water level of Parr Reservoir is at Elevation 266.0 feet. The Parr Shoals Development has an installed capacity of 14.88 MW and generates using available inflows up to the maximum station hydraulic capacity of 6,000 cfs.

The Fairfield Pumped Storage Development is comprised of a 6,800 acre reservoir; four earthen



dams; an intake channel; a gated intake structure; four surface penstocks (each 26 feet in diameter and approximately 800 feet long) bifurcating into eight concrete-encased penstocks (each approximately 18.5 feet in diameter); a semi-outdoor generating station, approximately 520 feet long by 150 feet wide, housing eight vertical Francis reversible pump-turbine units; and transmission and appurtenant facilities. The normal maximum water level in Monticello Reservoir is Elevation 425.0 feet. The Fairfield Pumped Storage Development has an installed capacity of 511.2 MW and generates with flows from Monticello Reservoir up to a maximum hydraulic capacity of approximately 50,400 cfs. Fairfield pumps water from Parr Reservoir back to Monticello Reservoir with a maximum hydraulic capacity of about 41,800 cfs. An active storage of up to 29,000 acre-feet may be transferred between the two reservoirs by the pumped storage operations.

By letter dated January 5, 2015, SCE&G filed a PAD and Notice of Intent (NOI) for a new license for the Project. The current Project license was issued August 28, 1974, and expires on June 30, 2020.

Comments on the PAD

The purpose of the PAD is to provide the FERC, federal and state agencies, and other interested stakeholders with background information related to Project facilities and engineering, operational, economic, and environmental aspects of the Project. The PAD is also intended to define pertinent Project issues and identify potential study/information needs.

Project operations have been observed to alter downstream flows (compared to inflows) so as to increase the magnitude and frequency of high flow events (PAD, Appendix C, pages 331- 354). Project operations can alter the flows released at Parr Dam as measured at Alston all the way to the Congaree River (see Figures on pages 352, 353, and 354). The NMFS is concerned these flow variations may disrupt spawning by anadromous fish in the Broad and Congaree Rivers.

The NMFS also has concerns about potential impacts from fluctuating water levels from peaking activities to the area in the Congaree River known to be spawning habitat for Shortnose Sturgeon (*Acipenser brevirostrum*). A meeting on April 24, 2014, between Kleinschmidt and the South Carolina Department of Natural Resources (SCDNR) involving Shortnose Sturgeon populations is summarized in Appendix C, pages 917-918. In that consultation, SCDNR staff noted SCDNR would have concerns if Project operations impact flows downstream in the Congaree River during the spring spawning season. Data presented in the PAD (Figure on pages 352-354) clearly show the effects of Project operations on duration and magnitude of flows downstream to the Congaree River. Since these flows may disrupt spawning anadromous fish, including the federally-endangered Shortnose Sturgeon, the NMFS recommends that SCDNR, USFWS, and NMFS personnel be consulted to determine if additional information may be needed to assess those impacts.

Additional Study Requests

The NMFS supports the additional information needs requested by SCDNR and the U. S. Fish and Wildlife Service and makes these following additional requests:

1. SCE&G further evaluate hydrologic information on Project flows (inflow, outflow, and Congaree River flows) to better assess the impact on spawning anadromous fishes, especially the Shortnose Sturgeon.
2. SCE&G convene a meeting with the resource agencies and interested stakeholders to discuss the potential impacts of current project operations on the spawning of anadromous fish, to include American Shad, Striped Bass, and Shortnose Sturgeon.
3. SCE&G scope options for and evaluate the engineering feasibility of fishways at the Parr Shoals Development suitable for passing American Eel, American Shad, and Blueback Herring.

Thank you for the opportunity to provide these comments. Please directed related questions or comments to the attention of Mr. Fritz Rohde at our Beaufort Field Office, 101 Pivers Island Road, Beaufort, North Carolina 28516-9722, or at (252) 838-0828

Sincerely,



/ for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc: SCANA, bargentieri@scana.com
Kleinschmidt, henry.mealing@kleinschmidtgroup.com
FWS, bryon_hamstead@fws.gov
SCDNR, marshallb@dnr.sc.gov, christied@dnr.sc.gov, perryb@dnr.sc.gov



United States Department of the Interior



FISH AND WILDLIFE SERVICE

176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

June 15, 2015

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: COMMENTS on Notice of Intent to File License Application; Filing of Pre-Application Document; and Approval of Use of the Traditional Licensing Process; Parr Hydroelectric Project; Newberry and Fairfield Counties, South Carolina (FERC Project No.1894-207); FWS Log No. 2015-CPA-0053

Dear Ms. Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the Federal Energy Regulatory Commission's (Commission) February 20, 2015, "Notice of Intent (NOI) to File License Application, Filing of Pre-Application Document (PAD), and Approving Use of the Traditional Licensing Process (TLP)" for the above-referenced hydroelectric project located on the Broad River in South Carolina. The following comments are submitted in accordance with the provisions of the Fish and Wildlife Coordination Act, as amended (16U.S.C. 661-667e); section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (ESA); the Federal Power Act (16 U.S.C. 803(a) and (j)); the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 1536, 1538); the National Environmental Policy Act (NEPA, 42 U.S.C. 4321 *et seq.*); the Clean Water Act (33 U.S.C. 1251 *et seq.*); and the Electric Consumers Protection Act of 1986 (100 Stat. 1243).

PROJECT DESCRIPTION

The Parr Hydroelectric Project (Project) consists of two developments located on the Broad River basin in Newberry and Fairfield counties, South Carolina. The Project does not occupy any Federal lands. The 14.88-megawatt (MW) Parr Shoals development consists of the 4,400-acre Parr Reservoir on the Broad River formed by the Parr Shoals Dam and serves as the lower reservoir for the pumped storage development. The 511.2-MW Fairfield Pumped Storage development consists of the 6,800-acre Lake Monticello (formerly Frees Creek, a small tributary of the Broad River) now impounded) formed by four earthen dams and serves as the upper reservoir for the pumped storage development. Lake Monticello also provides cooling water for the V.C. Summer Nuclear Station. The Parr Shoals dam is approximately 24 river miles upstream from the Columbia Diversion Dam that is equipped with a vertical slot fishway facility.

RELICENSING PROCESS

By letter dated January 05, 2015, South Carolina Electric & Gas Company (SCE&G) filed a PAD and NOI for a new license for the Project. The current Project license was issued August 28, 1974, and expires June 30, 2020.

In its PAD and accompanying NOI filed with the Commission, SCE&G declared its intent to apply for a new license of the existing Project (which expires June 30, 2020), and requested to use the TLP pursuant to FERC Regulations (18 CFR. §5.3). Public notice of this request was also provided on December 28, 2014, and January 14, 2015. Although not required by the Commission's regulations, SCE&G began early consultation (pre-PAD) with natural resource agencies and has made substantial effort in the relicensing process. During this early investment, SCE&G began conducting studies to address information needs and to assess impacts to natural resources. Due to the high level of communication and consideration of the Service's concerns thus far in the relicensing process, we foresee minimal controversy during relicensing and supported SCE&G's request to use the TLP for the Project. In a letter dated February 20, 2015, the Commission approved SCE&G's request to use the TLP.

ENDANGERED SPECIES

By letter dated February 20, 2015, the Commission designated SCE&G as the non-federal representative for the purposes of informal consultation pursuant to section 7 of ESA. This designation authorizes SCE&G to conduct informal consultation, conduct studies, and develop a draft biological assessment.

Pursuant to 50 CFR section 402.12, Federal agencies are required to assess the effects of their actions and to consult with the Service on any action that may affect a listed species. These regulations require the preparation of a biological assessment for any "major activity." This consultation must include an assessment of direct impacts associated with the Project, as well as cumulative and secondary impacts to listed species associated with the actions of that are likely to result from the actions.

The endangered species list is dynamic. The Service published a notice (*Federal Register* 76:59836-59862) on September 27, 2011, stating that we will conduct an in-depth review of 374 rare Southeastern aquatic, riparian, and wetland animal and plant species to determine if any of all of them warrant Federal protection under the ESA. The species that the Service has been petitioned to list and for which a positive 90-day finding has been issued are collectively referred to as At-Risk Species (ARS).

Enclosed is a list of federally endangered, threatened, and ARS for Fairfield, Newberry, and Richland counties, South Carolina.

FISH AND WILDLIFE SERVICE GOALS

The Service's goals for the Broad River system are to conserve, protect, enhance, and restore aquatic and riparian habitats and species as well as species diversity. Where applicable, we seek mitigation that directly benefits the affected ecosystems(s). Generally, the Service is interested in

enhancing quality stream flow for aquatic habitat; restoring bypassed or diverted reaches; protecting, restoring, or enhancing ecosystem function; and restoring populations of fish and wildlife.

Mitigation Policy. The U.S. Fish and Wildlife Service's Mitigation Policy, 46 *Federal Register*, 7656-7663, states: "*In the interest of serving the public, it is the policy of the U.S. Fish and Wildlife Service to seek to mitigate losses of fish and wildlife, their habitats, and use thereof from land and water developments.*" Consistent with this Policy¹ (501 FW 2), we recommend developing adequate measures to compensate for the ongoing impacts of this Project and its operation on the natural resources of the area. These measures should include mitigation for impacts from the continued operation of the Project on fish and wildlife populations and their habitats, including wetlands. The Service uses this Mitigation Policy to develop consistent and effective recommendations to protect and conserve valuable fish and wildlife resources. Moreover, we seek and recommend appropriate and timely mitigation activities to allow Federal and private developers to anticipate and incorporate measures early in the relicensing process.

In seeking mitigation, the Service will first recommend avoidance and minimization of losses of fish and wildlife and their habitats. If losses are likely to occur, we will recommend measures to reduce or eliminate them over time. If losses are likely to continue to occur, we will recommend those losses be compensated by replacement of the same kind of habitat value so that the total loss of such in-kind habitat value will be eliminated. In developing our recommendations for protection, mitigation, and enhancement measures for the continuing impacts of this Project, we seek to reduce adverse impacts to aquatic, riparian, and terrestrial resources and to enhance fish and wildlife resources where feasible. The Service recommends mitigation for inadequate in-stream flows, dewatered bypass river reaches, impaired water quality, and adverse effects to aquatic communities and high-quality forested wetlands within the floodplain. Sources of mitigation include, but are not limited to, enhanced in-stream flows; watering of bypass reaches; improvements to water quality; spawning flows for native fish; ecologically sound inundation of floodplains; protection and enhancement of rare, threatened, and endangered species; protection of shoreline through riparian buffers; and acquisition of land.

Service Goals. Specific Service interests and objectives for the Parr Hydroelectric Project include the following criteria:

1) Project Operations:

- Develop and implement Project operations criteria that provide reasonable operational flexibility with full consideration of the resulting environmental impacts;
- Restore natural stream flow regimes, (including flood spates) to provide natural habitat conditions for aquatic resources especially during spawning seasons; and
- Stabilize reservoir elevations to provide productive littoral zones and stable spawning habitats especially during spawning seasons.

¹ The Service published its Mitigation Policy in the *Federal Register*, Vol. 46, No. 15, January 23, 1981 (*Federal Register* 46:7656-7663), with corrections in the *Federal Register* of February 4, 1981 in accordance with the Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)-754), the Fish and Wildlife Coordination Act (16 U.S.C. 661-667(e)), the Watershed Protection and Flood Prevention Act (16 U.S.C. 1001-1009), and the National Environmental Policy Act (42 U.S.C. 4321-4347).

2) Water Resources:

- Monitor, maintain, and/or enhance water quality throughout the Project; and
- Provide accurate and accessible water quality monitoring throughout the Project's new license.

3) Fish and Aquatic Resources

- Enhance seasonal minimum flows to provide adequate habitat and zones of passage for native resident fish, diadromous fish, freshwater mussels, and navigation purposes;
- Prevent and/or mitigate ongoing aquatic fish and mussel habitat fragmentation caused by the Project;
- Protect and enhance stream flow for aquatic resources during low inflow conditions and future droughts;
- Protect and enhance shoreline and littoral zones in Parr Reservoir and Lake Monticello to ensure healthy productivity and stable fish spawning habitat;
- Prevent and/or adequately mitigate for entrainment mortality of fish caused by the Project;
- Prevent current and future threats from invasive species;
- Protect, mitigate, and/or enhance populations and habitats of freshwater mussels and crayfish; and
- Employ science-based adaptive management of focal species.

4) Wildlife and Botanical Resources

- Protect, enhance, and expand natural areas and vegetated shoreline.
- Prevent terrestrial habitat loss from erosion, silviculture, and other land disturbances;
- Prevent and/or mitigate for impacts to migratory birds, bald eagles, bats, and their habitats; and
- Prevent current and future threats from invasive species.

5) Rare, Threatened, and Endangered Species

- Protect, enhance, and/or mitigate for the harm or loss of habitats for rare, threatened, endangered, and other species of concern².

6) Recreation and Land Use

- Protect, enhance, and expand areas designated for public outdoor recreation and provide adequate access and facilities (consistent the Americans with Disabilities Act) to recreational opportunities; and
- Develop and implement an enforceable shoreline management plan and permitting guidelines that protect conservation priority resources and aesthetics.

² Enclosed is a list of federally endangered, threatened, and ARS for Fairfield, Newberry, and Richland Counties, South Carolina. In addition to these lists, two conservation priority species impacted by the Project were proposed by the Service and accepted by the Rare, Threatened, and Endangered Technical Working Committee for the Parr Shoals Hydroelectric Project. Those species are *Lampsilis cariosa* (yellow lampmussel) and *Elliptio roanokensis* (Roanoke slabshell).

COMMENTS ON PAD

The Service reviewed and provided numerous comments on a draft PAD for the Project on August 29, 2014, and attended a meeting on October 9, 2014, to discuss comments from other natural resources agencies. We reviewed the PAD filed on January 5, 2015. We focused our review on sections with relevance to our interests and authority. In general, we are pleased to find the PAD to be a comprehensive and well composed document that meets or exceeds the purposes and content requirements set forth in 18 CFR section 5.6.

The applicant has committed time and resources in advance in early coordination with the Service and other stakeholders toward the relicensing of this Project. There may be some differences in perspective between the Service and those of SCE&G, but we believe that the applicant has set a high standard for cooperation and communication among stakeholders to address potential issues. For these reasons, we anticipate a corresponding high regard for our environmental interests and objectives during the relicensing process.

Section 3.4: This section outlines a typical pumping cycle where active storage is transferred to and from Parr and Monticello Reservoirs. While the annual maximum for daily reservoir elevation fluctuation is reported to be 4.5 feet for Monticello and 10 feet for Parr, the Service contends that it is also important for the Commission to be aware of typical reservoir elevation fluctuation. According to reservoir elevation observation data from 1995-2013, the monthly mean for daily fluctuation for Parr ranges from 2.87 feet in February to 7.03 feet in August. Similarly, the elevation fluctuation for Monticello ranges from 1.49-feet in February to 3.40 feet in August (see consultation record in PAD for data presented at the Fisheries Technical Working Committee (TWC) meeting on April 1, 2014). These data suggest that the current environmental condition of the Project (e.g., reservoir shoreline stability, fish and mussel assemblages, downstream hydrology, etc.) are expressions of only a portion of the allowable operating range for the Project.

Section 3.4 and 4.2.2: Section 3.4 does not describe any daily or seasonal ramping rates. While section 4.2.2 summarizes monthly flow statistics for water years 1981-2013 at the USGS gage (02161000) below the Project on the Broad River, these data do not show daily and hourly streamflow fluctuations that occur in the Broad River below the Project. The Service contends that daily and sub-daily streamflow fluctuations³ in the Broad River affect many aquatic resources and their habitats. Measuring streamflow fluctuation across broad timescales may mask trends that drive a biological phenomenon or environmental impact. Data reported and presented by American Rivers and the University of South Carolina at the Operations Resource Conservation Group (RCG) meeting on June 27, 2013, (see consultation record) show that stream flow pulses occur more frequently during higher baseflow conditions. Baseflow conditions are typically highest in the spring months (see Appendix A of PAD) during the spawning season for many resident and diadromous fishes and freshwater mussels. The Service believes that SCE&G's Final

³ Streamflow fluctuation refers to the following phenomena: 1) the difference between inflow and outflow (magnitude); 2) the increasing or decreasing rate of streamflow (ramping rate); 3) the duration of that disequilibrium; and 4) the frequency of these events over time.

License Application and the Commission's environmental document⁴ should assess streamflow fluctuations on sufficiently small timescale to fully evaluate potential ecological impacts to priority natural resources.

Section 3.7: License article 39 is the, "requirement to operate the Project reservoirs in such a manner that releases from the lower reservoir during flood flows shall be no greater than flows, which would have occurred in the absence of the Project." The Service agrees with SCDNR's assertion that there is a need to further discuss SCE&G's definition of a flood flow (40,000 cubic feet per second), and we support their request for additional information and/or consultation record regarding how this benchmark was established.

Section 4.2.2: Table 4-2: The water year for minimum recorded flow in May is incorrect.

Section 4.2.6: The South Carolina Department of Health and Environmental Control (SCDHEC) identifies several areas within both reservoirs and immediately downstream of the Project in which water quality conditions are impaired. Since these impairments impact use by aquatic life (Table 4-5), the Service is concerned and interested to know the measures being taken to recovery water quality.

Sections 4.2.7 and 4.2.10: The USGS gage (02160991) in the Project's tailrace has documented 13 hourly DO excursions below SCDHEC's standard (4.0 mg/l) from January 2011 to August 2014. Currently, SCE&G is assessing how the Project may be causing these conditions, and has coordinated with the Water Quality TWC. Additional studies are being conducted to monitor dissolved oxygen (DO) in Hampton Island's west channel which is opposite of the Project tailrace and USGS gage (02160991). The Service appreciates the initiative SCE&G's has taken to investigate this issue and to explore potential DO enhancement measures via turbine aeration (self-venting). Ensuring adequate DO is a priority for us and requires reliable, continuous monitoring and enhancement measures as necessary.

Section 4.3.1.4: The reference of (Post 2010) under the "American Shad" heading was not included in references section 4.3.8.

Section 4.3.3: SCE&G staff informed the Service of potential freshwater mussel harvesting in the reservoirs. While this activity is permissible, the taking of freshwater mussels is unlawful without a permit from SCDNR. The Service wants to ensure that mussel harvesting activities are responsible, sustainable and enforced according to South Carolina law.

Sections 4.3.6 and 4.3.7: Currently, no specific prevention, mitigation, or enhancement measures have been identified as a result of the Desktop Fish Entrainment Study Plan. However, the Service is open to a variety of outcomes consistent with our Mitigation Policy that aim to offset the ecological impact of fish and mussels entrained and killed by Project operations. Such measures may include, but are not limited to, modifying Project operations, fisheries stocking activities, and/or annual contributions to the Broad River Mitigation Trust Fund.

⁴ Either environmental impact statement or environmental assessment pursuant to the National Environmental Policy Act.

Sections 4.4.2 and 4.6.1: Table 4-15 and the text that precedes it describe the avian resources found in surveys of the adjacent V.C. Summer Nuclear Station. Section 4.6.1 identifies federally listed species in the project vicinity. The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized to do so by the Department of the Interior. On March 30, 2011, the Service and the Commission entered into a Memorandum of Understanding that focuses on avoiding or minimizing adverse impacts on migratory birds and cooperative reinforcement for migratory bird conservation. The Service's division of Migratory Bird Management provides regional lists of Birds of Conservation Concern (BCC), which consist of migratory nongame conservation priority species. The BCC list is divided into Bird Conservation Regions (BCR). The Project occurs in the Piedmont region (BCR 27). We recommend that the Final License Application considers the Project's potential impact on BCC that occur in the Project vicinity including, but not limited to bald eagle⁵, prairie warbler, loggerhead shrike, and brown-headed nuthatch.

In the interest of avoiding impacts to migratory birds, the Service will continue to consult with SCE&G to develop protective or compensatory measures for Project related impacts to migratory birds. Additionally, we view the development of a new shoreline management plan and permitting guidelines as an opportunity to reinforce protections for migratory birds.

Section 4.6.1: The list of federally protected species is dynamic. Table 4-18 omits several species known to occur in Richland, Fairfield, and Newberry Counties, South Carolina². It is important that the Final License Application and the Commission's environmental document⁴ describe and fully consider potential impacts to these species resulting from the Project's new license.

Sections 4.6.4 and 5.1.5: Currently, no studies have been proposed to determine how the Project may be affecting the yellow lampmussel (*Lampsilis cariosa*) and Roanoke slabshell (*Elliptio roanokensis*). However, it is evident from data collected so far, that the Parr dam is a physical barrier that prevents these species from accessing upstream habitats, thereby limiting the distribution⁶ and recovery of these priority species. The Service is committed to restoring populations of these species upstream of the Parr Reservoir and elsewhere in the Broad River basin.

Section 4.6.5: No proposed protection, mitigation, or enhancement measures for rare, threatened, or endangered species have been proposed at this time as we await study results. The Service looks forward to working with SCE&G and other stakeholders to develop measures to avoid impacts, enhance current habitats, and/or compensate for Project effects pursuant to our Mitigation Policy.

Section 4.7.11: The Service supports SCDNR's assertion that any lands reclassified from the future recreation designation should be replaced.

⁵ In a Rare, Threatened, and Endangered Species TWC meeting held October 22, 2013 (see consultation record), the Service shared with SCE&G locations of nine active bald eagle nests near the Project.

⁶ Section 4.6.3 of the PAD indicates that the Project tailrace represents the upstream known occurrence for these species in the Broad River basin.

ADDITIONAL INFORMATION REQUESTS

The Service echoes the additional information needs put forth by SCDNR and requests the following:

- 1) Presentation hydrologic data describing Project outflow in relation to inflow with sufficiently resolution (hourly timescale) so as to reveal potentially meaningful hydrologic trends and associated biological impacts;
- 2) A description of measures in place to continue monitoring and remediation of impaired water quality within and immediately downstream of the Project boundary;
- 3) Assess potential adverse impacts and issues for federally protected species omitted from the PAD including migratory birds⁷; and
- 4) Does SCE&G concur with the Service's assertion that the Project is a barrier limiting the distribution and recovery of yellow lampmussel and Roanoke slabshell? If not, additional surveys/studies may be needed to verify this fact.

The Service appreciates the opportunity to work with Commission staff, SCE&G, and stakeholders to ensure that impacts to fish and wildlife resources are minimized during this, and the next license. Additionally, we are interested in participating in the development of a settlement agreement that addresses our concerns for this Project. If you have any questions about these comments, please contact Mr. Byron Hamstead at (843) 727-4707, ext. 205, and reference FWS Log No. 2015-CPA-0053.

Sincerely,


Thomas D. McCoy
Field Supervisor

TDM/BAH

cc: Dr. Wilson Laney, USFWS, Raleigh, NC
Mr. Shawn Alam, USDOJ OEPC, Washington, DC

⁷ Service staff can provide technical assistance as needed.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

South Carolina Electric & Gas Company

Project No. 1894-207 – South Carolina
Parr Hydroelectric Project

NOTICE OF PROPOSED REVISED RESTRICTED SERVICE LIST
FOR A PROGRAMMATIC AGREEMENT

(January 28, 2016)

Rule 2010 of the Federal Energy Regulatory Commission’s (Commission) Rules of Practice and Procedure, 18 CFR section 385.2010, provides that, to eliminate unnecessary expense or improve administrative efficiency, the Secretary may establish a restricted service list for a particular phase or issue in a proceeding concerning non-public information. The restricted service list should contain the names of persons on the service list who, in the judgment of the decisional authority establishing the list, are active participants with respect to the phase or issue in the proceeding for which the list is established.

The Commission staff is consulting with the Maine Historic Preservation Commission (Maine SHPO) and the Advisory Council on Historic Preservation (Advisory Council) pursuant to the Advisory Council’s regulations, 36 CFR Part 800, implementing section 106 of the National Historic Preservation Act, *as amended*, (54 U.S.C. § 306108), to prepare a Programmatic Agreement for managing properties included in, or eligible for inclusion in, the National Register of Historic Places at the existing Parr Hydroelectric Project.

On November 18, 2014, Commission staff established a restricted service list for the Parr Hydroelectric Project. Since that time, the U.S. Forest Service requested to supplement the restricted service list because of personnel changes. The restricted service list is supplemented as follows:

Replace “Mike Harmon, U.S. Forest Service” with “James F. Bates or Representative, U.S. Forest Service.”

Nathaniel J. Davis, Sr.,
Deputy Secretary.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Parr Hydroelectric Project

Project No. 1894-207

ERRATA NOTICE

(January 28, 2016)

On January 28, 2016, the Commission issued a “NOTICE OF PROPOSED REVISED RESTRICTED SERVICE LIST FOR A PROGRAMMATIC AGREEMENT” for the existing Parr Hydroelectric Project No. 1894-207.

In the Notice, the State Historic Preservation Office (SHPO) was incorrectly identified as the Maine Historic Preservation Commission (Maine SHPO). The SHPO for this project is the South Carolina Department of Archives & History (South Carolina SHPO).

Nathaniel J. Davis, Sr.,
Deputy Secretary.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

South Carolina Electric & Gas Company

Project No. 1894-207 - South
Carolina
Parr Hydroelectric Project

NOTICE OF REVISED RESTRICTED SERVICE LIST
FOR A PROGRAMMATIC AGREEMENT

(February 9, 2016)

Rule 2010 of the Federal Energy Regulatory Commission's (Commission) Rules of Practice and Procedure, 18 CFR section 385.2010, provides that, to eliminate unnecessary expense or improve administrative efficiency, the Secretary may establish a restricted service list for a particular phase or issue in a proceeding concerning non-public information. The restricted service list should contain the names of persons on the service list who, in the judgment of the decisional authority establishing the list, are active participants with respect to the phase or issue in the proceeding for which the list is established.

The Commission staff is consulting with the South Carolina Department of Archives & History (South Carolina SHPO) and the Advisory Council on Historic Preservation (Advisory Council) pursuant to the Advisory Council's regulations, 36 CFR Part 800, implementing section 106 of the National Historic Preservation Act, *as amended*, (54 U.S.C. § 306108), to prepare a Programmatic Agreement for managing properties included in, or eligible for inclusion in, the National Register of Historic Places that could be affected by issuance of a new license for the Parr Hydroelectric Project No. 1894-207.

On November 18, 2014, Commission staff established a restricted service list for the Parr Hydroelectric Project. Since that time, the United Keetoowah Band of Cherokee Indians in Oklahoma requested a change in the restricted service list and therefore, the restricted service list is revised as follows:

Replace "Lisa C. Baker, Acting THPO, United Keetoowah Band of Cherokee Indians in Oklahoma" with "Assistant Chief Joe Bunch, or Representative, United Keetoowah Band of Cherokee Indians in Oklahoma."

Nathaniel J. Davis, Sr.,
Deputy Secretary.

April 8, 2016

Mr. William R. Argentieri
South Carolina Electric and Gas Company
Mail Code A221
220 Operations Way
Cayce, SC 29033-3701

Subject: Comments and Recommendations: Downstream Navigational Flow Assessment
Parr-Fairfield Hydroelectric Project (FERC No. 1894)

Dear Mr. Argentieri:

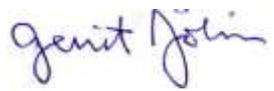
Ensuring downstream navigation and recreation needs are met through a new license for the Parr-Fairfield Hydroelectric Project is fundamental to American Rivers' interests in this relicensing and for the future of the Broad River which is directly affected by project operations. We are a member of the Recreation Technical Working Committee, and participated in numerous meetings and the development of the study plan for assessing downstream flows to meet the state's minimum standards for recreational navigation. American Rivers has reviewed the April 2016 Downstream Navigational Flow Assessment report and offer the following comments and recommendations.

The flow assessment report clearly indicates that a flow of 1,000 cfs is needed to satisfy the State of South Carolina's navigation requirements as a determined by state guidance (South Carolina Water Resources Commission 1988: Instream Flow Study Phase II: Determination of Minimum Flow Standards to Protect Instream Uses in Priority Stream Segments: A Report to the South Carolina General Assembly. The Water Resources Commission is now part of the South Carolina Department of Natural Resources which has adopted this method for determining navigation flow requirements.)

Despite the findings of the navigation assessment, the report recommends a flow of 500 cfs for navigation requirements. A flow of 500 cfs clearly does not meet the state's criteria for determining minimum navigation flows. We are baffled why the report recommends a flow which is clearly in conflict with the state's method and study results.

American Rivers recognizes that based on the findings of the Downstream Navigation Flow Assessment a flow of at least 1,000 cfs is needed to meet navigation requirements. We recommend that the report be changed to conclude that a 1,000 cfs flow, not a 500 cfs flow, is needed to meet navigation requirements.

Sincerely,



Gerrit Jöbsis
Senior Director, Southeast Conservation

cc: SC Department of Health and Environmental Control
SC Department of Natural Resources
Recreation Technical Working Committee



April 15, 2016

Attn: Bill Argentieri
South Carolina Electric & Gas Company

Re: Downstream Navigational Flow Assessment – Parr Hydroelectric Project

Mr. Argentieri,

The following comments are in response to the Downstream Navigational Flow Assessment that was prepared as part of the relicensing of the Parr/Fairfield hydroelectric projects and was sent to members of the Recreation Technical Working Committee on April 1st.

- The transects used to determine navigability of a shoal should not follow a straight line, but rather should follow the top of the shoal (the shallowest area) to better reflect the possible blockages to navigation. We suggest the committee make an effort to verify the results by attempting to actually navigate the shoals at the recommended flows.
- The assessment states that a flow of 1,000 cfs meets the established criteria for navigation at ledge two, but goes on to recommend a navigational minimum flow of 500 cfs which the assessment clearly states does not meet the criteria. The assessment should not include a recommendation the author feels “should be more than sufficient” when we have clearly defined criteria to determine navigability.
- Additionally, as there should be supplementary data available from the IFIM study we recommend navigational flows be assessed at other sites including the Bookman Shoals area suggested by the DNR.

As we continue to review the assessment and the stage-discharge rating curves used in the analysis we may have additional questions or comments.

Thank you.

Sincerely,

Bill Stangler
Congaree Riverkeeper

Post Office Box 5294 • Columbia, South Carolina 29250
(803) 760-3357 • www.congareeriverkeeper.org



April 22, 2016

Mr. William R. Argentieri
South Carolina Electric and Gas Company
Mail Code A221
220 Operations Way
Cayce, SC 29033-3701

Subject: Comments and Recommendations: Parr Shoals Dam Turbine Venting Report
Parr-Fairfield Hydroelectric Project (FERC No. 1894)

Dear Mr. Argentieri:

Ensuring water quality meets or exceeds state standards at the Parr-Fairfield Hydroelectric Project is fundamental to American Rivers' interests in the relicensing of this project and for the future health of the Broad River. We are a member of the Water Quality Technical Working Committee, and have participated in numerous meetings and in the development of related studies. American Rivers has reviewed the April 2016 *Parr Shoals Dam Turbine Venting Report* transmitted April 19, 2016 and offer the following comments and recommendations.

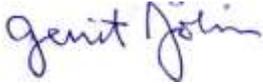
Water quality of the Broad River is directly affected by project operations. Impoundment of the river causes water quality changes. The Baseline Water Quality Report was reviewed at the February 4, 2014 Water Quality TWC meeting. Excursions of DO levels less than 4.0 mg/L in the Parr Shoals Dam tailrace resulting from project discharges were documented at the Jenkinsville gage (USGS station 02160991).

The turbine venting study report shows that DO improvements between 0.16 mg/l and 0.45 mg/l resulted from venting at Units 1–5. Turbine venting is not possible at Unit 6. As explained in the report, it is possible that higher levels of DO improvement are possible with venting at Units 1-5 during periods with lower DO saturation than when the study was conducted.

American Rivers recognizes that changes in project operations will be needed to improve water quality in the Broad River downstream of the Parr Shoals Dam. We believe that turbine venting has potential to improve DO. We recommend South Carolina Electric and Gas Company develop an operational sequencing plan that maximizes DO enhancement by prioritizing use of turbines where venting is most effective at improving DO levels. This sequencing plan should be implemented during an initial period of the new license to better evaluate how turbine venting can improve water quality during periods of low DO with a goal of meeting state standards at all times. Additional methods may be needed to meet state standards if turbine venting falls short of that goal.

Thank you for the opportunity to review and comment on this important report. We look forward to working collaboratively with South Carolina Electric and Gas and other stakeholders through the remainder of the relicensing process.

Sincerely,

A handwritten signature in blue ink that reads "Gerrit Jöbsis". The signature is written in a cursive style with a large initial 'G'.

Gerrit Jöbsis
Senior Director, Southeast Conservation

cc: SC Department of Health and Environmental Control
SC Department of Natural Resources
Water Quality Technical Working Committee

April 22, 2016

Mr. William R. Argentieri
South Carolina Electric and Gas Company
Mail Code A221
220 Operations Way
Cayce, SC 29033-3701

Subject: Comments and Recommendations: Water Quality in Downstream West Channel
Parr-Fairfield Hydroelectric Project (FERC No. 1894)

Dear Mr. Argentieri:

Ensuring water quality meets or exceeds state standards at the Parr-Fairfield Hydroelectric Project is fundamental to American Rivers' interests in the relicensing of this project and for the future health of the Broad River. We are a member of the Water Quality Technical Working Committee, have participated in numerous meetings and in the development of related studies. American Rivers has reviewed the April 2016 *Water Quality in Downstream West Channel Study Report* transmitted April 19, 2016 and offer the following comments and recommendations.

Water quality of the Broad River is directly affected by project operations. The Parr Shoals Dam blocks flows from the West Channel and no water is released directly into the West Channel except during spill events. Hydroelectric units of the project only release water into the East Channel.

The water quality study report clearly shows that dissolved oxygen levels (DO) in the West Channel do not meet state water quality standards. Monitoring results at all three West Channel stations document that DO frequently drops below the instantaneous standard of 4.0 mg/l and that the daily average standard of 5.0 mg/l is not met periodically. Results also demonstrate diurnal swings in dissolved oxygen concentrations between 0.0 mg/l and 20.0 mg/l which are consistent with effects of low flow conditions and water quality affected by periods dominated by photosynthesis and respiration. These study results are consistent with impairment due to hydrologic alteration and resulting stagnant or dewatered conditions in the West Channel.

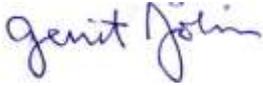
We also note that while the transmittal memo states that this is the final study report, the report itself is marked as "draft" on the first two pages.

American Rivers recognizes that changes in project operations will be needed to improve water quality in the West Channel. We recommend South Carolina Electric and Gas Company work with TWC members and other stakeholders to restore continuous flows to

the West Channel so that DO is improved and water quality standards are met at all times.

Thank you for the opportunity to review and comment on this important report. We look forward to working collaboratively with South Carolina Electric and Gas and other stakeholders through the remainder of the relicensing process.

Sincerely,

A handwritten signature in blue ink that reads "Gerrit Jöbsis". The signature is written in a cursive style with a large, stylized 'G' and 'J'.

Gerrit Jöbsis
Senior Director, Southeast Conservation

cc: SC Department of Health and Environmental Control
SC Department of Natural Resources
Water Quality Technical Working Committee



August 8, 2016

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated July 22, 2016

Dear Mr. Hendrix:

In your letter dated July 22, 2016, you asked the status of our response to your June 9, 2015 comments to the Pre-Application Document (PAD). The following paragraph sets out our current thinking on that matter.

In your June 9, 2015 letter, you requested that there be a new study to determine the Project boundary of the Parr Hydroelectric Project. The current Project boundary was determined and lands were acquired in accordance with the FERC license Article 48 and approved by the FERC by letter dated August 19, 1981 (16 FERC ¶62,250). There is nothing apparently deficient in the proceedings associated with SCE&G's compliance with the Article 48 in regards either to the establishment of the Project Boundary or the acquisition of properties necessary and appropriate to meet the license requirements. Hence, there is no apparent need to conduct another study. Even were that not so, and were there to be the discovery of some basis for concluding that some of the properties acquired then for the Project are not now essential to the Project, there is no basis for requiring SCE&G to give up ownership and control of that property, through sale or otherwise. All lands acquired by SCE&G based on the original hydraulic study were done so by purchasing the land at negotiated, fair market prices from the property owners and not by condemnation. Nevertheless, to be absolutely sure that we give full and fair consideration of all comments received, we are still evaluating the following: 1) any technical deficiencies in the work supporting the Project Boundary establishment that might create a necessity to conduct another hydraulic flow study; 2) how any new study would further the resource goals and objectives; 3) how possible new restrictions due to environmental considerations such as reservoir fluctuations or downstream flows, which are being discussed during the current relicensing process, could require this land to be inundated more frequently than is currently the case; and 4) concerns raised by the resource agencies during recreation and shoreline management relicensing meetings relating to removal of lands from the Project boundary. Once we have thoroughly considered these factors, responses to your PAD comments will be composed and included in the license application along with responses to all other PAD comments received.

Mr. William B. Hendrix, Jr.
Parr Hydroelectric Project, FERC Project No.1894
Response to letter dated July 22, 2016
Page 2

If you have any further questions, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,



William Argentieri, Civil Engineering Manager
Fossil/Hydro Technical Services

c: H. E. Delk, Jr./PH File
J. H. Hamilton/ J. Stuckey

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

August 17, 2016

Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way Mail Code A221
Cayce, South Carolina 29033-3701

Re: Relicensing FERC Project 1894

Dear Mr. Argentieri:

Thank you for your letter dated August 8, 2016. I do have one question that I would appreciate your help clarifying. In your letter you state, "All lands acquired by SCE&G based on the original hydraulic study were done so by purchasing the land at negotiated, fair market prices from the property owners and not by condemnation." Is this original hydraulic study you are referencing one in the same as the USGS backwater study that we have discussed before and is referenced throughout the Exhibit K documents for this project? Is this original hydraulic study the same document you reference in your E-mail to me of October 30, 2014 stating, "...even though I cannot find the final report, the USGS backwater study drawings have enough information on them to help us understand the reasoning used to determine the location of the Parr Reservoir project boundary line. " ?

I look forward to hearing back from you.

Sincerely,

A handwritten signature in black ink that reads "William B. Hendrix, Jr." in a cursive style.

William B. Hendrix, Jr.



August 30, 2016

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No. 1894
Response to letter dated August 17, 2016

Dear Mr. Hendrix:

In your letter dated August 17, 2016, you asked for clarification of terminology used in previous letters and emails regarding a hydraulic study and USGS backwater study. The term hydraulic study is referring to the USGS backwater study document.

If you have any further questions, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,

A handwritten signature in blue ink that reads "William Argentero". The signature is fluid and cursive.

William Argentero, Civil Engineering Manager
Fossil/Hydro Technical Services

c: H. E. Delk, Jr./PH File
J. H. Hamilton/ J. Stuckey

ORIGINAL



**SOUTH CAROLINA DEPARTMENT OF
ARCHIVES • HISTORY**

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SECRETARY OF THE
COMMISSION**

2016 SEP 27 P 2: 16

**FEDERAL ENERGY
REGULATORY COMMISSION**

September 26, 2016

**Mr. William Green
Group Manager, Natural and Cultural Resources
Terracon Consultants, Inc.
521 Clemson Road
Columbia, SC 29229**

**Re: Historic Properties Management Plan for the Parr Hydroelectric Project
Fairfield and Newberry Counties, South Carolina
FERC Project No. 1894 - *207*
SHPO Project Number 13RD0073**

Dear Mr. Green:

Thank you for your letter of August 26, 2016, which we received on August 29 along with two copies of the Historic Properties Management Plan (HPMP). The State Historic Preservation Office is providing comments pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

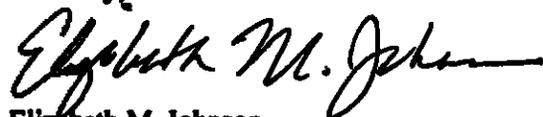
After reviewing the document and comparing to the 2002 "Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects", we offer the following comments and questions for consideration.

- **Section 4.0:** It would be helpful to add a site plan/drawing/aerial labeled with the structures and buildings mentioned in the text for both the Parr Shoals Development and Fairfield Pumped Storage. The text does a nice job of describing, but a labeled graphic and photographs would help the reader understand each of the properties.
- **Section 4.0:** Please add photographs of the eligible and potentially eligible archaeological sites to document existing site conditions.
- **Page 67:** Consider adding the photographic standards to the HPMP, as web links can change.
- **Page 67:** Is there a list or survey of the "original" vs. "non-original" elements?
- **Page 71:** Please clarify the type of activities that are covered by the second bullet under Reservoir Operation. What could these include?
- **Page 74:** Please specify the curation facility.

- **Page 74:** Under the public education section, should it specify how long these materials will be available? For the length of the license?
- **Section 9.0:** Add training, which is an item listed in the HPMP guidance.
- **Page 92:** How will SCE&G determine and document that a window or door cannot be repaired?
- **Page 93:** For in-kind replacements, the new component not only should be the same material, but also matching the existing in appearance (could reference page 66 for a description of in kind).

Thanks for the opportunity to review the HPMP. If you have any questions, please contact me at (803) 896-6168 or ejohnson@scdah.sc.gov.

Sincerely,



**Elizabeth M. Johnson
Director, Historical Services, D-SHPO
State Historic Preservation Office**

Copies delivered via email to:

**Cc: Patricia Leppert, FERC
Wenonah Haire, Catawba Indian National THPO
Eric Oosawhwee-Voss, United Keetowah Band of Cherokee THPO
Jim Bates, USFS
Bill Argentieri, SCE&G
Amy Bresnahan, SCE&G**

Document Content(s)

14364059.tif.....1-2



September 29, 2016

Mr. William R. Argentieri
South Carolina Electric and Gas Company
Mail Code A221
220 Operations Way
Cayce, SC 29033-3701

Subject: Parr-Fairfield Hydroelectric Project (FERC No. 1894)
Downstream Navigational Flow Assessment and Downstream Recreational Flow
User Survey Memo-September 2016

Dear Mr. Argentieri:

American Rivers today received a copy of the September 2016 packet entitled “Downstream Navigational Flow Assessment and Downstream Recreational Flow User Survey Memo” which includes the final version of the downstream navigational flow assessment report (report) for the above project. The final report continues to assert that navigation requirements can be achieved at flows that do not meet the state of South Carolina’s navigation criteria. As explained in our April 8, 2016 comments and recommendations regarding a draft version of the report (attached below), the state’s criteria set a clear mark for what flow is needed to meet navigation needs. In this case, South Carolina Electric and Gas Company’s navigational flow study demonstrated that a flow of 1,000 cfs is needed to meet state navigation criteria. We disagree with the report’s conclusion that flows of 500 cfs or 700 cfs which *almost* meet the state’s criteria would be sufficient to meet navigation requirements.

American Rivers recommends that PM&E measures for the license application include a condition stating that a flow of at least 1,000 cfs will be provided by project operations to meet state navigation requirements. We recognize that there will be periods of low inflow which will limit the ability of the project to provide releases of 1,000 cfs for navigation, and look forward to working with South Carolina Electric and Gas Company and other stakeholders to develop alternative downstream flow scenarios for such periods.

Sincerely,

Gerrit Jöbbsis
Senior Director

cc: SC Department of Health and Environmental Control
SC Department of Natural Resources
Recreation Technical Working Committee

April 8, 2016

Mr. William R. Argentieri
South Carolina Electric and Gas Company
Mail Code A221
220 Operations Way
Cayce, SC 29033-3701

Subject: Comments and Recommendations: Downstream Navigational Flow Assessment
Parr-Fairfield Hydroelectric Project (FERC No. 1894)

Dear Mr. Argentieri:

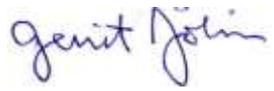
Ensuring downstream navigation and recreation needs are met through a new license for the Parr-Fairfield Hydroelectric Project is fundamental to American Rivers' interests in this relicensing and for the future of the Broad River which is directly affected by project operations. We are a member of the Recreation Technical Working Committee, and participated in numerous meetings and the development of the study plan for assessing downstream flows to meet the state's minimum standards for recreational navigation. American Rivers has reviewed the April 2016 Downstream Navigational Flow Assessment report and offer the following comments and recommendations.

The flow assessment report clearly indicates that a flow of 1,000 cfs is needed to satisfy the State of South Carolina's navigation requirements as a determined by state guidance (South Carolina Water Resources Commission 1988: Instream Flow Study Phase II: Determination of Minimum Flow Standards to Protect Instream Uses in Priority Stream Segments: A Report to the South Carolina General Assembly. The Water Resources Commission is now part of the South Carolina Department of Natural Resources which has adopted this method for determining navigation flow requirements.)

Despite the findings of the navigation assessment, the report recommends a flow of 500 cfs for navigation requirements. A flow of 500 cfs clearly does not meet the state's criteria for determining minimum navigation flows. We are baffled why the report recommends a flow which is clearly in conflict with the state's method and study results.

American Rivers recognizes that based on the findings of the Downstream Navigation Flow Assessment a flow of at least 1,000 cfs is needed to meet navigation requirements. We recommend that the report be changed to conclude that a 1,000 cfs flow, not a 500 cfs flow, is needed to meet navigation requirements.

Sincerely,



Gerrit Jöbsis
Senior Director, Southeast Conservation

cc: SC Department of Health and Environmental Control
SC Department of Natural Resources
Recreation Technical Working Committee

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426
October 11, 2016

OFFICE OF ENERGY PROJECTS

Project No. 1894-207- South Carolina
Parr Hydroelectric Project
South Carolina Electric & Gas Company

William Green, M.A., RPA
Terracon Consultants, Inc.
521 Clemson Road
Columbia, SC 29229

**Subject: Comments on the Draft Historic Properties Management Plan,
Dated August 26, 2016; SHPO Project No. 12-ED0073**

Dear Mr. Green:

On January 5, 2015, South Carolina Electric & Gas Company (SCE&G) filed with the Federal Energy Regulatory Commission (Commission) its notice to relicense the Parr Hydroelectric Project No. 1894 (Parr Project, or project), a Pre-Application Document, and a request to use the Traditional Licensing Process (TLP). The project is located on the Broad River, near the City of Columbia, in Newberry and Fairfield Counties, South Carolina. On February 20, 2015, the Commission authorized SCE&G to use the TLP. The license expires on June 30, 2020.

On behalf of SCE&G, you mailed a draft “Historic Properties Management Plan (HPMP), Parr Hydroelectric Project, Fairfield and Newberry Counties, South Carolina, FERC Project No. 1894,” dated August 2016, to the South Carolina State Historic Preservation Office (SHPO), Catawba Indian Nation, United Keetoowah Band of Cherokee Indians in Oklahoma, U.S. Forest Service, SCE&G, and Commission staff for review and comment. On September 26, 2016, Elizabeth M. Johnson, Director, Historical Services, Deputy SHPO, provided comments to you and the entities above, which Commission staff placed in the record for the project on September 27, 2016.

We appreciate the opportunity to provide comments and find the draft HPMP is comprehensive overall. We recommend, however, that the final HPMP address Ms. Johnson’s comments. Also, to provide clarity for the final HPMP, we offer the following detailed comments:

(1) Section 8.2, General Operations - Reservoir Operation:
Second bullet - Activities taking place along the shoreline of the Parr Reservoir and the Monticello Reservoir related to previously developed properties or residential parcels.

Comment: Please revise the sentence to (1) refer only to those activities within the project boundary, and (2) identify the type of activities.

Additionally, if SCE&G proposes to modify the project boundary during the relicensing process, please revise the sentence accordingly to take into account those lands that may be added to, or removed from, the project boundary.

(2) Section 9.2, Public Education. The educational material/signage will be completed prior to issuance of the new license.

Comment: Please add to Section 9.2 that the public education material/signage will be available for the term of a new license.

(3) Section 9.4, Reporting. SCE&G will provide a biennial report to the SHPO, Advisory Council on Historic Preservation, FERC (Commission), Catawba Indian Nation, and United Keetoowah Band of Cherokee Indians in Oklahoma regarding cultural resource management activities for the project conducted during that two year period.

Comment: To reduce the administrative burden on the Commission, we no longer require the filing of biennial reports. Therefore, please remove notifying Commission staff from the section.

(4) Section 10.0, Definitions.

Comment: We suggest that this section be identified as Acronyms and Abbreviations because as is, not all terms are defined, nor is it necessary to do so. To this list, we suggest adding (1) Federal Energy Regulatory Commission (FERC or Commission), (2) South Carolina Electric & Gas Company (SCE&G), (3) South Carolina Institute of Archaeology and Anthropology (SCIAA), (4) Tribal Historic Preservation Officer (THPO); and (5) U.S. Forest Service (Forest Service or USFS).

If you have any questions, please contact Patti Leppert at (202) 502-6034 or at patricia.leppert@ferc.gov.

Sincerely,

Stephen Bowler, Chief
South Branch
Division of Hydropower Licensing

cc:

Elizabeth M. Johnson, Director,
Historical Services
Deputy SHPO
South Carolina Department of
Archives & History
8301 Parklane Road
Columbia, SC 29223

Emily Dale, Archaeologist
South Carolina Department of
Archives & History
8301 Parklane Road
Columbia, SC 29223

William R. Argentieri, P.E., Manager
South Carolina Electric & Gas
Company
220 Operation Way, Mail Code A221
Cayce, SC 29033-3701

Dr. Wenonah Haire, THPO
Catawba Indian Nation
1536 Tom Steven Road
Rock Hill, SC 29730

Eric Oosahwee-Voss, THPO
United Keetoowah Band of Cherokee
Indians in Oklahoma
P.O. Box 746
Tahlequah, OK 74465

James Bates, Archaeologist
U.S. Forest Service
Sumter National Forest
20 Work center Road
Whitmire, SC 29178

Robert Morgan, Heritage Program
Manager
U.S. Forest Service
Sumter National Forest
2967 Steed Creek Road
Huger, SC 29450

Public Files

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

December 9, 2016

Federal Energy Regulatory Commission
Kimberly D. Bose, Secretary
888 First Street, NE
Washington, District of Columbia 20426

Re: FERC Project No. 1894 – Parr Hydroelectric Project
Request for Study and information Pursuant to 18 C.F.R. 4.38(B) (5)

Dear Secretary Bose:

On June 9, 2015, pursuant to the Code of Federal Regulation's section cited above, I filed a Request for Study and Information in regard to FERC Project No. 1894. This request was filed with South Carolina Electric & Gas (SCE&G -the owner of the Project,) Kleinschmidt Associates (the Consulting Firm assisting the owner with the re-licensing of the project) and Monte TerHaar (an employee within your organization.) I am enclosing a copy of this request with this correspondence. As I had no response from either of these entities, on July 22, 2016, I contacted SCE&G to inquire as to the status of my request. In a letter to me dated August 8, 2016, SCE&G's Civil Engineering Manager, William Argentieri, replied, "Hence, there is no apparent need to conduct another study." Accordingly, I am forwarding this request to your agency and ask that you forward it to your Director of the Office of Energy Projects, Ann F. Miles, according to C.F. R. 4.38 (b) (6), for resolution of my Request for further Information and Study in regard to FERC Project No. 1894.

While the request is self-explanatory, I will review what the issues are below.

Article 48 of the License issued for this project is quite specific and clear as to what property is to be purchased and included in the project boundary for the project, "*Shoreline lands up to the 270-foot contour or up to 50-feet, horizontal measure , from the 266-foot contour of the lower reservoir, whichever is greater;.....Provided , that the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure , from the 266-foot...*" While all of the documents and plans that SCE&G has filed with FERC and are developing as part of this re-licensing process reflect the

wording of Article 48 within the body of the documents, in reality the lands that were acquired for this project greatly exceed the requirements of the Article. Elevations of the lands within the project boundary range from 270' up to 285' – 19' above the crest level of the dam and the project's Maximum Reservoir Operating Level and 16.5' above the Maximum Rated Capacity of the Dam's Spillway (Table of Standard Project Numbers.)

As a result of various meetings and correspondence with SCE&G, I am informed that SCE&G contends that the acquisition of property within the Project Boundary Line was based on a study they commissioned from the United States Geological Survey (USGS) to study the backwater effect of the crest gates. SCE&G contends this was done in conjunction with their efforts to comply with Article 39 of the license which requires that *"releases from the lower reservoir during flood flows shall be no greater than flows which would have occurred in the absence of the project."* SCE & G further contends that based on this referenced study and its projected flood levels, they acquired lands along the shores of the Broad River that would be inundated at a river flow of 240,000 cubic feet per second for the first 6.19 miles of the project and 40,000 cubic feet per second for the remainder 8.81 miles of the project. There are two key problems with SCE&G's assertion: (1.) SCE&G has been unable to produce a copy of the USGS study and has admitted that neither they or the USGS has a copy. In a letter to me dated March 18, 2015, SCE&G's Manager of Civil Engineering writes, "With regard for copies of those studies the Company has explored its archives and has discussed the matter with the USGS. That effort failed to locate any copies of the reports upon which the maximum power level was established, as reflected on Sheets 1 and 15 of Exhibit K." (2.) Even if they were to produce a document that reflected the flood levels they are claiming, there would be no requirement or cause under Article 39 for them to acquire property upstream from the dam that would be inundated in times of natural flooding, having nothing whatsoever to do with the dam. Incredibly, the 240,000 cubic feet per second flow that was used for land acquisition is six (6) times the flow of water where SCE&G lowers the gates of the dam and lets water spill over the dam. This figure is also higher than the measured flows of the Broad River during the record flooding event South Carolina experienced in October of 2015.

The discrepancies between what was required by the License and what was actually acquired are reflected throughout the Exhibit K documents which reflect and describe the Project Boundary Line (PBL):

(1.) Notes on Sheet One of Exhibit K dated 6/26/1981 state, "2. THE P.B.L. AROUND PARR RESERVOIR IS GENERALLY ALONG THE FLOOD OF RECORD AS ADJUSTED FOR THE INFLUENCE OF PARR DAM, AS INDICATED ON TABLE THIS SHEET."

(2.) Notes on Sheet One of Exhibit K dated 6/26/1981 state "1)a. ELEVATIONS SHOWN ON LINES C1 THROUGH C8 ARE FLOWS FOR MEAN ANNUAL FLOOD ON CANNON'S CREEK DURING OCTOBER 1929 FLOOD ON BROAD RIVER."

(3.) Note on Sheet One of Exhibit K dated 6/26/1981 states, "THE FLOOD LINE ELEVATIONS UP HELLER'S CREEK SHALL BE AT ELEVATION 278.3. THE P.B.L. CANNOT BE LESS THAN THIS ELEVATION, ARTICLE 48 OF THE LICENSE IS APPLICABLE." – **there is nothing in Article 48 of license that mentions anything about this.**

(4.) Note on Sheet One of Exhibit K dated 6/26/1981 states, "2) b "ARTICLE 48 OF LICENSE IS APPLICABLE HOWEVER, WHEN FLOWS EXCEED THE 270" CONTOUR THEN THE FLOW ELEVATION SHOWN ON SECTION LINES WOULD APPLY." - **there is nothing in Article 48 of license that mentions anything about this.**

(5.) Note on Sheet One of Exhibit K dated 6/26/1981 states, "THE FLOOD LINE ELEVATIONS UP ENOREE RIVER SHALL BE AT ELEVATION 275.3. THE PBL CANNOT BE LESS THAN THIS ELEVATION. ARTICLE 48 OF THE LICENSE IS APPLICABLE." - **there is nothing in Article 48 of license that mentions anything about this.**

(6.) All of SCE&G's documents and presentations for this relicensing state the Parr Reservoir is 13 miles long. Additionally, on page three of the license for this project, FERC reflects that the reservoir is 13 miles long. Exhibit K – Sheet One shows a Table outlining Project Boundary Line Elevations for Parr Reservoir that establishes the reservoir as being 15 miles long.

(7.) All of the Exhibit K sheets delineate a 257-Minimum Power Pool, a 266 Normal Power Pool and a Maximum Power Pool. On all of the Exhibit K sheets the PBL virtually mirrors the Maximum Power Pool. In many cases, these sheets show a Maximum Power Pool level of 276' to 285' in elevation – 10' to 19' higher than the elevation of the top of the crest gates of the dam and the Maximum Reservoir Operating Level (Table of Standard Project Numbers.) During a Technical Working Meeting held on October 6, 2016, I was informed by Raymond Ammarell, a Senior Engineer and Hydrologist for SCE&G, that he had no idea what the term Maximum Power Pool was referencing on these Exhibit K sheets or how the levels could have been arrived at.

The second aspect of my Request for Study and Information involves the survey method used to establish the PBL. Throughout the license, all references to the establishment of the PBL call for a horizontal measurement from a specific elevation. This was not the method that SCE&G used on the Parr Reservoir or the Monticello Reservoir. SCE&G has previously confirmed that the method of surveying used did not reflect the requirements of the license and have done exactly what I am asking them to do now. In an Application for Amendment of License (Change of Project Boundary) on Monticello Reservoir, dated March 7, 1984, SCE&G states, "Apparently during the course of establishing the PBL along that portion of the shoreline affecting the property in question, the surveying crews took long shots to avoid a high number of traverse sides. While this did not cause a violation of the criteria established in the license, it was inconsistent with the surveying method used for property adjacent to this area of the

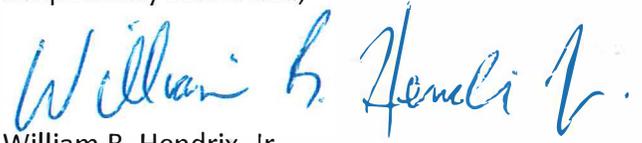
shoreline. The property owner and Licensee have become aware of this and the property owner has requested a resurvey, using shorter shots and adhering more closely to the minimum property acquisition requirements as contained in the license. In going back and resurveying the shoreline, and establishing a project boundary more in accordance with the minimum property requirements set forth in the license, there is acreage in excess of our minimum needs as set forth in the license. As referenced above, this amounts to approximately 7.04 acres. It is this acreage which Licensee is requesting permission to remove from the project. The object to be served is reconveyance of this property to the original property owner." The use of "long shots to avoid a high number of traverse sides" was also used on Parr Reservoir in direct violation of the Project's License requirements for a "horizontal measure from the 266 - foot contour." The use of these long survey shots is reflected on the Exhibit K documents. Exhibit K – Sheet 1 has a Table labeled "Project Boundary Line Elevations for Parr Reservoir (Minimum)." Under this table is a heading "USGS Station No." These station numbers are then reflected and plotted on Exhibit K. Sheets 5-17. As you can see the survey plotted these Station Numbers on either side of the Project and then ran survey lines along straight lines ignoring the requirements of the license.

It is apparent and quite clear that FERC never intended for the PBL of this project to be more than 200 feet horizontal measure from the 266 foot elevation which is the elevation of the crest gates that were added to the dam during the construction of the project. This requirement is consistent with the current requirements set forth by FERC which require a project boundary no more than 200 feet from the normal high water level and FERC's "Guidance for Shoreline Management Planning at Hydropower Projects" (July 2012) – Pg. 8 "Typically a license will own or have the necessary rights to all submerged lands and any lands that fall within the operating levels of the reservoir, as well as a shoreline buffer (the exact boundary will be specified in the license.)" As discussed earlier the Maximum Reservoir Operating Level of this project is at 266 feet of elevation (Table of Standard Project Numbers.) Accordingly the PBL could be no more than 200 feet horizontal measure from the 266 foot elevation. The PBL that SCE&G established and acquired land for goes to extreme elevations that they have no way of justifying. The PBL, as reflected on the Exhibit K documents, was established based on Maximum Power Pool elevations of 276 feet to 285 feet. It is impossible for a dam at 266' to influence water levels at these elevations. Accordingly, it would only be correct that during the relicensing process of such a project as this one, that any errors and or omissions be corrected.

I am serving a copy of this request on SCE&G as well as the resource agencies and Indian tribes shown on the attached sheet. I ask that you inform me in the event there are other entities or individuals on whom I should serve a copy of this letter and exhibits. Thank you and your agency for the service you perform for the citizens of this Country and for consideration of my request. I look forward to receiving a timely response.

THIS SPACE INTENTIONALLY LEFT BLANK

Respectfully submitted,

A handwritten signature in blue ink that reads "William B. Hendrix, Jr." with a stylized flourish at the end.

William B. Hendrix, Jr.

Cc: William Argentieri
Civil Engineering Manager
SCE&G

Distribution List:

Elizabeth Johnson
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8302 Parklane Road
Columbia, SC 29223

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Union, SC 29379

Phil Gaines
SCPRT
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Columbia, SC 29201

Honorable Mick Mulvaney
U.S. House of Representatives
1207 Longworth HOB
Washington, DC 20515



December 19, 2016

VIA E-FILING

Kimberly Bose, Secretary
Attn: Ann F. Miles, Director – Office of Energy Projects
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Subject: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No. 1894-SC
Response to Mr. Hendrix Request for Dispute Resolution for the Parr Hydroelectric
Project (1894-207)

Dear Secretary Bose:

South Carolina Electric & Gas Company (“SCE&G” or “Applicant” or “Licensee”), Licensee for the Parr Hydroelectric Project (Project) (FERC No. 1894), in accordance with the requirements of 18 CFR §16.8(b)(6)(ii), herein electronically files with the Federal Energy Regulatory Commission (Commission), Director of the Office of Energy Projects (Director) a response to Mr. William B. Hendrix, Jr. letter dated December 9, 2016 regarding a request for dispute resolution for an additional study during the new license application process for this Project.

The study request discussed herein is neither based on the goals and objectives for the resource (§16.8(b)(5)(iii)), nor is the study useful to furthering resource goals or objectives (§16.8(b)(5)(vi)) beyond the personal goals of Mr. Hendrix. As such, SCE&G respectfully requests the Director to issue a dispute resolution order finding that the disputed study is not reasonable or necessary.

If you have any questions regarding this filing, please contact me at (803) 217-9162 or bargentieri@scana.com.

Sincerely,

William R. Argentieri, Manager of Civil Engineering
Fossil/Hydro Technical Services

Kimberly Bose, Secretary

Attn: Ann F. Miles, Director – Office of Energy Projects

Parr Hydroelectric Project, Project No. 1894-SC

Response to Mr. Hendrix Request for Dispute Resolution for the Parr Hydroelectric Project
(1894-207)

Page 2

WRA/wa

Enclosure

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J. H. Hamilton, Jr.
Corporate Records

PARR HYDROELECTRIC PROJECT
FERC PROJECT No. 1894

RESPONSE TO WILLIAM B. HENDRIX, JR. LETTER DATED: DECEMBER 9, 2016,
REGARDING REQUEST FOR DISPUTE RESOLUTION FOR AN ADDITIONAL STUDY

South Carolina Electric & Gas Company (“SCE&G” or “Licensee”) Response: Mr. Hendrix owns property adjacent to the Project. His December 9, 2016 letter to the Federal Energy Regulatory Commission (“Commission” or “FERC”) contains an information and study request that South Carolina Electric & Gas Company (“Licensee” or “SCE&G”) has previously discussed with him. As background to these previous discussions this response includes the following correspondence between the Licensee and Mr. Hendrix: Mr. Hendrix’s January 28, 2015 letter (Attachment 1), Licensee’s March 18, 2015 reply (Attachment 2), Mr. Hendrix’s May 4, 2015 letter (Attachment 3), and Licensee’s May 27, 2015 reply (Attachment 4), Mr. Hendrix’s July 22, 2016 letter (Attachment 5), and Licensee’s August 8, 2016 reply (Attachment 6), Mr. Hendrix’s August 17, 2016 letter (Attachment 7), and Licensee’s August 30, 2016 reply (Attachment 8).

Mr. Hendrix is the grandson of R. M. Blair from whom, records reveal, the Licensee acquired 234.45 acres of land on May 31, 1977. This purchase was a standard real estate sale/purchase transaction. No condemnation was involved. Of that land, 174.21 acres was inside the Project Boundary Line (PBL), and 60.24 acres were outside the PBL. Though contained in the FERC records, and therefore already publicly available, the Licensee encloses a copy of its June 26, 1981 letter of transmittal for its completed Exhibits F and K in accordance with License Articles Nos. 6 and 48, to which is attached, the Exhibit F accompanying the letter (Attachment 9). The Licensee directs the Commission’s attention to Exhibit F, Ref. Exhibit K-15, sheet 1 of 1, Exhibit K - 15 Index FF 46, acquired on May 31, 1977. The Licensee also attaches for the sake of convenience, the Commission’s August 19, 1981 “Order Approving Revised Exhibits F and K” (16 FERC ¶62,250) (Attachment 10). Mr. Hendrix has made it clear that he wants the property from that 1977 acquisition to be declared unnecessary for project purposes, so that it will be removed from within the PBL, as a first step in his effort to secure the deeding of the land to him.

Mr. Hendrix’s recent request to revisit the accuracy of the Parr PBL has resulted in a review of the United States Geological Survey (USGS) study water surface profiles (contained in Attachment 2), the current FERC license, and the current PBL. As part of the Licensee’s efforts to expand the Parr Hydroelectric Project in the 1970s to include the Fairfield Pump Storage Facility and the addition of 9 ft. of spillway gates at the Parr Shoals Dam, the USGS was contracted to perform a backwater study on the Parr Project to determine what lands would be necessary for project operations. The initial intended operation was to pass 40,000 CFS from upstream flows, all units at Fairfield operating, and all spillway gates in the down position. The USGS backwater study which evaluated this mode of operation was focused on determining the extent of upstream flooding due to the addition of the nine foot crest gates, and was discussed in several of the Licensee and FERC Board of Consultants meetings during the construction of the Fairfield Pumped Storage Facility.

In the area of Mr. Hendrix’s property, the Licensee purchased lands to accommodate the proposed mode of operation and in compliance with License Article 48 which identified the minimum amount of land that should be acquired. In addition, the Licensee purchased an additional one foot

of elevation as buffer which was added to the anticipated elevations to ensure that no flooding of private property would occur along the Parr Reservoir.

In order to comply with Article 39 of the current license, which provided requirements regarding downstream flows from the project and associated flooding of private property, the Licensee considered alternate operating regimes in order to address both upstream and downstream constraints. It was determined that the requirements of license Article 39 with limiting flood flows downstream of Parr Dam required a combination of reduction in Fairfield operations and lowering of spillway gates so that operations would not “add to” a flood flow of 40,000 CFS. It was finally determined that License Article 39 would be the governing condition for project operations. Therefore, during the current license term, the project has been operated with Fairfield being completely shut down and the crest gates in the down position when inflow, as measured as the sum of the three USGS gauges upstream of the Project, reached 40,000 CFS. Based on the USGS backwater profiles the difference in project operations elevations is negligible between the originally intended operation of 40,000 CFS inflow, all units at Fairfield operating and all spillway gates in the down position (providing 84,000 CFS total river flow downstream of Parr Dam) and the current operation of 40,000 CFS inflow, no generation at Fairfield and all spillway gates in the down position (providing 40,000 CFS downstream of Parr Dam). This is shown by the 40,000 CFS (Table 1 Dated 3-31-77, Gibbs & Hill 7-20-77 letter 280) graph line and the 84,000 CFS (Table 6 – Gates Down, Revised Section USGS Data of March 4, 1975) graph line at Cross Sections 33 and 34 on Sheet 2 of the USGS backwater profile (contained in Attachment 2). Based on this small difference of operations elevations, the purchase of Hendrix’s property complies with license Article 48 requirements. The FERC originally instructed Licensee to acquire lands for compliance with License Article 48 and the Licensee included an additional one foot buffer, which results in a difference between elevation 275 (USGS backwater profile limit) and elevation 276 (current PBL) of less than 2½ acres of land in the vicinity of Mr. Hendrix’s property.

The rationale for locating the PBL using the results of the USGS backwater study for the two cases described in the previous paragraph above was reviewed by the Fairfield Pumped Storage Project Board of Consultants during the construction of the Fairfield Development. In the report summarizing the 13th Board of Consultants Meeting held in June 1977 (excerpted in Attachment 11), the Board states that the “...criteria adopted for establishing the Project Boundary Line seems adequate and logical.” The Licensee has determined that nothing has occurred during the last 45 years that would change the USGS findings. The current PBL is adequate for project operation and conforms to the current FERC license requirement of “(t)he lands encompassed by the project boundary shall include, but not be limited to:” as stated in License Article 48.

The Licensee does not believe that a new hydraulic study is justified. The land was acquired in accordance with the FERC license article requirements, and the results of an independent study performed by the USGS. That study identified areas that would be flooded as a result of the FERC approved project modifications, and the results were reviewed and agreed to by an independent Board of Consultants intimately familiar with the proposed design and operation of the modified

Project. The Licensee does not believe that a new hydraulic study will further the resource goals or objectives (§16.8(b)(5)(vi)) beyond the personal goals of Mr. Hendrix.

If during the relicensing process lands are identified that should be removed from the PBL, the Licensee will share that information with the relicensing stakeholders and gather and document their recommendations for inclusion in the final license application.

In response to specific comments by Mr. Hendrix in his letter dated December 9, 2016 SCE&G provides the following point-by-point replies for your consideration.

On Page 1, Mr. Hendrix states: “Article 48 of the License issued for this project is quite specific and clear as to what property is to be purchased and included in the project boundary for the project, "Shoreline lands up to the 270-foot contour or up to 50-feet, horizontal measure, from the 266-foot contour of the lower reservoir, whichever is greater; Provided , that the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure , from the 266-foot..."

SCE&G Response: As discussed with Mr. Hendrix in the past, he is leaving out one important phrase in License Article 48, “The lands encompassed by the project boundary shall include, **but not be limited to.**” (Emphasis added.) The words “but not be limited to” signifies that what follows is a minimum level of compliance and if more land is “necessary or appropriate for project operations” then the Commission expects the Licensee to obtain that land accordingly. This is illustrated by the Licensee’s acquisition of the additional one foot of elevation as buffer to ensure that no flooding of private property would occur along the Parr Reservoir, as discussed above, and as approved by Commission order (16 FERC ¶62,250).

On Page 2, Mr. Hendrix states: “SCE&G further contends that based on this referenced study and its projected flood levels, they acquired lands along the shores of the Broad River that would be inundated at a river flow of 240,000 cubic feet per second for the first 6.19 miles of the project and 40,000 cubic feet per second for the remainder 8.81 miles of the project.”

SCE&G Response: The license Exhibit K drawings reference the flood of record as 224,000 cubic feet per second and this was used as the basis for land acquisition along the first 6.19 miles of the reservoir.

On Page 2, Mr. Hendrix states: “This figure is also higher than the measured flows of the Broad River during the record flooding event South Carolina experienced in October of 2015.”

SCE&G Response: Even though there was record flooding in portions of South Carolina during the October 3 – 5, 2015 rain event, the flows in the Broad River Basin did not experience anywhere near the record flood flow of 224,000 CFS for the Broad River. The peak streamflow for the referenced event measured at the USGS Alston station one mile below Parr Dam is recorded at 73,200 CFS on October 4, 2015.

On Page 2, Mr. Hendrix states: “The discrepancies between what was required by the License and what was actually acquired are reflected throughout the Exhibit K documents...”

SCE&G Response: SCE&G takes exception to Mr. Hendrix’s assertion that there are discrepancies between what lands were required to be obtained by the license and what lands were acquired by the Licensee. SCE&G, as a steward of the Project, and of the lands and waters within the PBL, acquired in fee lands in accordance with the requirements of license Article 48, which specified a minimum amount of land that was to be acquired as “necessary and appropriate for project operations” due to the addition of crest gates on top of the existing dam, and the resulting higher upstream water surface elevations. Therefore, there are no “discrepancies” between license requirements and Commission-approved Exhibit K documents.

On Page 3, Mr. Hendrix states: “(6.) All of SCE&G's documents and presentations for this relicensing state the Parr Reservoir is 13 miles long. Additionally, on page three of the license for this project, FERC reflects that the reservoir is 13 miles long. Exhibit K- Sheet One shows a Table outlining Project Boundary Line Elevations for Parr Reservoir that establishes the reservoir as being 15 miles long.”

SCE&G Response: SCE&G has already discussed this issue with Mr. Hendrix during one of the relicensing Technical Working Committee meetings. This discrepancy will be addressed and corrected in the final license application. On the surface, it appears that the original reservoir was 13 miles long and when the crest gates were added the reservoir became 15 mile long. This would explain why the current license references 13 miles since it was issued prior to installation of the crest gates. This reference was merely carried over within the Project description included in the license study documents. Although there apparently has been an editorial mistake in the general description of the Parr Reservoir size, the Parr PBL has not changed since the current Exhibit K drawings were filed with and approved by the FERC in 1981.

On Page 4, Mr. Hendrix states: “It is apparent and quite clear that FERC never intended for the PBL of this project to be more than 200 feet horizontal measure from the 266 foot elevation which is the elevation of the crest gates that were added to the dam during the construction of the project.”

SCE&G Response: SCE&G once again refers to the statement at the beginning of license Article 48 which clearly identifies that “lands encompassed by the project boundary shall include, but not be limited to” the criteria of sub-paragraphs (a) and (b) of this license article. Therefore, it is apparent and clear that the Licensee was expected to “purchase in fee and include within the project boundary all lands necessary or appropriate for project operations,” which is what was done and has been approved by the FERC.

ATTACHMENT 1

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

January 28, 2015

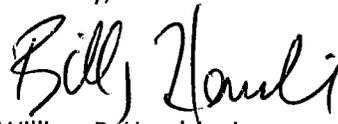
Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way
Mail Code A221
Cayce, South Carolina 29033-3701

Re: Relicensing FERC Project 1894

Dear Bill:

Pursuant to our last meeting, I have requested and received from FERC a copy of the Final Report of the Board of Consultant's for the above-referenced project. After reviewing the document, I still have some questions and would ask that you please help clarify them for me. The only report I see referenced is a report prepared by Gibbs and Hill entitled, "Lower Reservoir Operation Study," dated May 1978. Is this the same report as the "USGS Study" that you referenced in our last meeting as well as in the materials presented in your Companies meetings of September 19 and December 4, 2012? I would also ask that you confirm our conversations in our last meeting that the land acquisition for this project was based on an USGS Study. Finally, I would ask that you please provide me copies of these studies/plans.

Sincerely,

A handwritten signature in black ink that reads "Billy Hendrix". The signature is written in a cursive, slightly slanted style.

William B. Hendrix, Jr.

ATTACHMENT 2



March 18, 2015

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated January 28, 2015

Dear Mr. Hendrix:

With this letter I am responding to your letter of January 28, 2015, in which you requested that South Carolina Electric & Gas Company (Company), as the licensee for the Parr Hydroelectric Project, FERC Project No. 1894 (Project), provide you with certain information and materials concerning the basis upon which the Federal Energy Regulatory Commission (FERC) established the Project boundary line (PBL) in the upper reaches of the Parr Reservoir in the vicinity of a tract of land which you own. From public meetings convened in 2012 as part of the ongoing FERC relicensing of the Project and from individual conversations with you in 2014, we understand that you consider that the PBL need not be set between the 275.3- and 276-foot contours in the upper reaches of the reservoir near your property.

As detailed below and consistent with our prior oral discussions, the PBL along the full length of the reservoir was established in conformity with the specific obligations set forth in the Project's license, and has been approved by FERC. For these reasons, there is no reason to revisit the matter.

The placement of the PBL was established in accordance with the requirements of the current license for the Project as issued by the Federal Power Commission (FPC), the predecessor agency to the FERC, in *South Carolina Electric & Gas Co.*, 52 FPC 537 (1974). The FPC's order authorized, among other things, the redevelopment of the Parr Dam and Reservoir and the development of the Fairfield pumped storage facility with its associated Monticello Reservoir. Included in the redevelopment of the Parr Dam was the installation of crest gates that raised the height of the dam. For your reference, a copy of the FPC's license order is enclosed.

For purposes of your inquiry regarding the PBL, Article 6 of the license directed that, within five years from the issuance of the license, the Company was to acquire title in fee or the right to use in perpetuity all lands, except those of the United States, necessary or appropriate for

the construction, maintenance, and operation of the Project. 52 FCP at 555. This is a standard obligation of all hydroelectric licenses issued under the Federal Power Act. Then, in Article 48(b) the FPC established specific minimal conditions concerning the level of the boundary for the Parr Reservoir by stating that the “lands encompassed by the project boundary shall include, but not be limited to . . . [s]horeline lands up to the 270 foot contour or up to 50-feet, horizontal measure, from the 266-contour of the [Parr] reservoir . . .” 52 FPC at 564.

In order to determine what properties would be affected by the operation of the Parr Dam with its new crest gates and be in compliance with Article 48, the Company obtained the assistance of the United States Geological Survey (USGS) to study the backwater effect of the crest gates. Related to this assessment is Article 39 of the license, which requires the Company to operate the Parr and Monticello Reservoirs in such a manner that the releases from the Parr Dam during flood flows are not to be greater than flows which would have occurred in the absence of the Project. Based on the requirements of Article 39, a flow in the Broad River of 40,000 cubic feet per second (cfs) was applied as the benchmark to determine a combination of backwater effects from natural river flows, the drawdowns from the pumped storage facilities, and the crest gates being lowered.

Using that stream flow, the USGS determined that the backflow up the Parr Reservoir would produce flood waters rising well beyond the minimum 270-foot contour level, set by license Article 48, to approximately the 278-foot contour. The backflow data was reflected on two sheets entitled “U.S.G.S. Backwater Profiles: Parr Hydroelectric Project No. 1894: South Carolina Electric & Gas Company.” Copies of those two sheets are enclosed with this letter.

With regard to the property that you have identified to the Company, please note on Sheet 2 of 2 and the rising graph lines between the line captioned “Enoree River” and the line marked “End of Project’s Influence.” You will note that at a flow of 40,000 cfs, the projected flood level rises from the 275.3-foot contour to approximately the 278-foot contour, at which point the backwater effect ceases.

Based on the flood levels projected by the USGS, the Company secured the necessary property rights to the lands along the shores of the Broad River that would be inundated at the 40,000 cfs river flow. By the autumn of 1977, the Company had purchased fee title to the lands lying on either side of the Broad River upstream from the confluence of the Broad and Enoree Rivers. The Company then prepared and filed with the FERC on June 26, 1981 a list of the property acquisitions, designated as Exhibit F, and the property maps depicting the PBL, designated as Exhibit K to the Project’s license. By order date August 19, 1981, the FERC approved both exhibits.

For your records, I am providing you with the FERC-approved Exhibit K, Sheet 1 of 20 (an overall map of the Project Area) and Sheet 15 of 20. Sheet 15 covers the area of your concern. On Sheet 15, you will observe the flood levels as transposed from the USGS

Mr. William B. Hendrix, Jr.
Parr Hydroelectric Project, FERC Project No.1894
Response to letter dated January 28, 2015
Page 3

Backwater Profiles with the figures matching the USGS Station Numbers appearing on the upper left hand corner of Sheet 1 of Exhibit K.

In your letter of January 28, 2015, you inquired whether the Company could confirm that the report prepared by Gibbs and Hill, entitled "Lower Reservoir Operation Study," dated May 1978, is the same as the USGS study. While the Lower Reservoir Operation Study did include some consideration of possible flooding upstream of the Parr Dam, that study, undertaken in compliance with Article 39 of the license, was more concerned with the operation of the new crest gates and flooding downstream of the dam, all based on certain flooding scenarios. The study conducted by the USGS was concerned solely with the flooding above the dam. With regard for copies of those studies the Company has explored its archives and has discussed the matter with the USGS. That effort failed to locate any copies of the reports upon which the maximum power pool level was established, as reflected on Sheets 1 and 15 of Exhibit K.

As expressed at the beginning of this letter, the Company considers establishment of the PBL fully resolved. The Company has acquired all property rights along the shores of the Parr Reservoir and its tributaries which remain necessary for the operation and maintenance of Project No. 1894. The FERC has approved the placement of the PBL, and the Company does not see any need to revisit the issue at this time. Moreover, even if the Company were to see a need in the future to reexamine the placement of the PBL, any such change that might be approved by the FERC does not mean that the Company would necessarily convey such lands then outside of the PBL as excess property. Article 48 of the license, quoted above, does not preclude, but, in fact, recognizes the possibility of acquisition of lands beyond the minimal requirements of the license.

The Company appreciates your interest in the relicensing of the Project, and trusts that this letter has responded to the matters posed in your letter. If you have any further questions concerning the PBL, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,



William Argentieri, Manager Civil Engineering
Fossil/Hydro Technical Services

Enclosures

c: H. E. Delk/PH File
J. H. Hamilton/ J. Stuckey

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Before Commissioners: John N. Nassikas, Chairman; Albert B. Brooke, Jr., Rush Moody, Jr., William L. Springer and Don S. Smith.

SOUTH CAROLINA ELECTRIC & GAS COMPANY, PROJECT NO. 1894

ORDER ISSUING NEW LICENSE (MAJOR), AUTHORIZING PROJECT REDEVELOPMENT, PERMITTING USE OF PROJECT WATERS FOR CONDENSER COOLING PURPOSES, VACATING HEARING ORDER, AND PERMITTING WITHDRAWAL OF INTERVENTION

(Issued August 28, 1974)

On July 26, 1972, South Carolina Electric & Gas Company (Applicant) of Columbia, South Carolina, filed an amended application for new license requesting: (1) a new license under Section 15 of the Federal Power Act (Act) for the existing 14.9 megawatt (mW) Parr Hydroelectric Project No. 1894, (2) authorization to construct a 518.4 mW pumped storage development (Fairfield Pumped Storage Facility) which would utilize the enlarged Parr Reservoir as the lower pool, and (3) authorization to use the upper pool (Monticello Reservoir) of the Fairfield facility as a cooling impoundment for a proposed 900 mW nuclear steam-electric generating facility, known as Unit 1 of the V. C. Summer Nuclear Complex, for which a construction permit was issued by the Atomic Energy Commission in A.E.C. Docket No. 50-395 on March 21, 1973.

This amended application supersedes parts of the original new license application for the existing hydroelectric project filed June 19, 1969, and amended February 27 and November 16, 1970, as well as parts of a subsequent application filed September 30, 1971, and revised March 1, 1972, which embraces the concept of project redevelopment to include the Fairfield Facility and the use of water from the Monticello Reservoir for cooling purposes in connection with the V. C. Summer Nuclear Complex. Public notice of the June 19, 1969, new license application was issued January 14, 1971, with March 3, 1971, as the last day for filing protests or petitions to intervene. Notice was published in the *Federal Register* on January 23, 1971 (36 Fed. Reg. 1171). No protests or petitions to intervene were filed in response to such notice. Public notice of the amended application was issued November 1, 1972, with January 8, 1973, as the last day for filing protests or petitions to intervene. Notice of the amended application was published in the *Federal Register* on November 8, 1972 (37 Fed. Reg. 23750).

Petitions to intervene out-of-time were tendered for filing by Robert A. and Martha M. Westbrook on April 9, 1973, as amended August 3, 1973, and by W. R. Robinson on March 6, 1974. By orders issued October 4, 1973, and April 23, 1974, the respective petitions to intervene were accepted for filing and granted.

On September 7, 1973, W. R. Robinson and Robert A. and Martha M. Westbrook were served with a copy of the Draft Environmental Impact Statement and a copy of Commission Order No. 415-C, 18 CFR § 2.81 (1974), 48 FPC 1442. No comments were received in response to the Draft Environmental Impact Statement from the intervenors.

By our order issued in this proceeding on August 9, 1974, we set a hearing on the application and permitted the withdrawal of the petition to intervene filed by W. R. Robinson. Subsequent to our order of August 9, 1974, John D. McLeod, attorney for intervenors Robert A. and Martha M. Westbrook, by a telegram dated August 16, 1974, requested that the Westbrook's petition to intervene be withdrawn. On August 19, 1974, Applicant filed a motion for reconsideration of our order of August 9, 1974.

We believe that Robert A. and Martha M. Westbrook should be permitted to withdraw their petition to intervene. In so doing, we realize that the controversy which formed the basis of our previous order providing for hearing in this proceeding is no longer present. Therefore, we are also vacating those portions of our order of August 9, 1974, which provided for a hearing.

Notice of Availability of Commission Staff's Draft Environmental Impact Statement was issued on August 31, 1973, and published in the *Federal Register* on September 7, 1973 (38 Fed. Reg. 24418). Notice of Availability of Commission Staff's Final Environmental Impact Statement was issued on March 13, 1974, and published in the *Federal Register* on March 20, 1974 (39 Fed. Reg. 10486). On March 20, 1974, 10 copies of the Staff's Final Environmental Impact Statement were transmitted to the Council on Environmental Quality.

The redeveloped project will be located in Newberry and Fairfield Counties, South Carolina, on the Broad River a navigable water of the United States, approximately 26 river miles upstream from the City of Columbia, South Carolina. The project will affect lands of the United States within the Sumter National Forest. The project will include the existing and redeveloped works of the 14.9 mW Parr hydroelectric development which consists of a steel-frame brick powerhouse containing 6 generators rated at 2,480 kilowatts (kW) each, and provision for 2 additional units; a 2,715-foot-long dam composed of a 300-foot integrally constructed powerhouse section, a 300-foot earth dike, a 90-foot non-overflow section, and a 2,000-foot concrete overflow section, 35 feet high, with crest at elevation 257.0 feet mean sea level (m.s.l.), surmounted by Bascule gates; a, 4,400-acre reservoir at maximum controlled surface elevation 266 feet, m.s.l., at the dam, extending upstream for 13 miles, having a useable storage capacity of 29,000 acre-feet in a drawdown of 10 feet, providing water for operation of the conventional hydroelectric development and serving as the lower reservoir of the Fairfield facility; and transmission and appurtenant facilities hereinafter described. The project further includes works of the Fairfield Pumped Storage Facility comprising the reservoir of the 14.9 mW Parr hydroelectric development heretofore described; the 6,800-acre Monticello Reservoir having a total capacity of 400,000 acre-feet at the 425-foot, m.s.l., maximum pool elevation, and a useable storage capacity of 29,000 acre-feet in an operating drawdown of 4.5 feet; four random-fill dams impounding Monticello Reservoir having lengths of 5,000, 3,400, 1,700, and 900 feet, each with crest at elevation 434 feet m.s.l.; a 400-foot-wide, 600-foot-long, intake channel in the south abutment of the 5,000-foot-long dam; a gated intake structure with invert at elevation 375 feet m.s.l. and four 800-foot-long, 26-foot-diameter, surface penstocks bifurcating into eight 18-foot-diameter concrete-encased penstocks; a semi-outdoor generating station (Fairfield Powerhouse) housing 8 reversible pump-turbine units, each having a minimum capacity of 83,000 horsepower at the minimum head of 150 feet, to be operated by remote-automatic, local-automatic, or local-manual control option, directly coupled to 8 motor-generators, each with a nameplate rating of 64,800 kW in the generating mode and 100,000 horsepower when operated as a motor; and transmission and appurtenant facilities hereinafter described. Recreational features of the project comprise a boat launching area adjacent to the crossing of Heller's Creek by County Road 28 in Parr Reservoir; a 300-acre subimpoundment to be created in the northern end of Monticello Reservoir having a public boat launching area with parking and sanitary facilities on land acquired for recreational purposes; a scenic overlook on the eastern shore of Monticello Reservoir with parking, picnic, and sanitary facilities; and appurtenant facilities.

The South Carolina Pollution Control Authority issued a Water Quality Certificate, pursuant to Section 401 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. §§ 1251-1376, 1341, by letter dated January 11, 1973, which stated that, assuming the operation of the 900 mW Unit 1 of the V. C. Summer Nuclear Complex, there is reasonable assurance that the construction and operation of the Monticello impoundment and the Fairfield Pumped Storage Facility will not violate applicable water quality standards. By letter dated February 13 1973, the South Carolina Pollution Control Authority issued a permit for the dredging of a tailrace canal for the Fairfield Pumped Storage Facility along Frees Creek. By letter dated June 26, 1974, the South Carolina Department of Health and Environmental Control stated that there is reasonable assurance that the redeveloped Parr Hydroelectric Development will not violate applicable water quality standards and stated its intent to certify this development.

Study of the existing and proposed structures indicates that the project, its structures and appurtenant facilities will be safe and adequate provided proper materials and accepted construction practice and procedure are used.

With respect to economic feasibility, even before the recent escalation of fuel costs¹ and lack of supplies, studies show that estimated annual project costs of the redeveloped project to include authorization to use Monticello Reservoir for cooling the proposed 900 mW Unit 1 of the V. C. Summer Nuclear Complex compare favorably to costs for a gas turbine alternative and are more feasible than either nuclear or other fossil fuel alternatives. Estimated annual project costs of the redeveloped project to include use of Monticello Reservoir for cooling a second potential 900 mW nuclear unit would make the project more economically feasible than any nuclear or fossil fuel alternative. Studies show that no other conventional and pumped storage hydroelectric sites located within the Applicant's service area are as economically feasible for development.

Pursuant to Section 2.81 of the Commission's Rules then in effect, 18 CFR § 2.81 (1972), Applicant submitted an Exhibit W or environmental report. Based upon an independent analysis of information contained in this report, the Final Environmental Statement, Virgil C. Summer Nuclear Station of the Atomic Energy Commission dated January 25, 1972, and independent investigations by Commission Staff, Commission Staff compiled a Draft Environmental Impact Statement on the proposed project and circulated it among the interested Federal, State, and local agencies as well as to individuals and organizations for comment pursuant to Commission Order No. 415-C, issued December 18, 1972, 48 FPC 1442 (1972). After consideration and review of these comments, a Final Environmental Impact Statement was prepared by Commission Staff. On the basis of the information contained in the Staff Final Environmental Impact Statement and other data on file with the Commission, we believe that the beneficial effects to be derived from redevelopment of the Parr Project No. 1894 to include the use of Monticello Reservoir for cooling the 900 mW Unit 1 of the V. C. Summer Nuclear Complex, subject to the conditions hereinafter imposed, outweigh the adverse effects upon the environment. We discuss hereinafter the relevant environmental impacts which we have considered pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969, 42 U.S.C. § 4432 (2)(C).

Construction of the redeveloped Parr Project No. 1894 and the V. C. Summer Nuclear Station will result in the influx of a construction force of 1,800 workers,

¹ FPC Form 423 reports pursuant to 18 CFR § 141.61 (1974) show that fuel costs for the gas turbine alternative are more than twice as high as those costs used in the economic feasibility studies referred to in the Staff Final Environmental Impact Statement.

600 of which would be employed in connection with the construction of the Parr project. It is estimated that approximately 30% of the anticipated 1,800 workers are now living within a 25-mile radius of the project area. Since the majority of the remaining labor force would relocate in Columbia, South Carolina, the number of workers relocating in the project area will probably be small. Local area service facilities should absorb these workers without any great difficulty. After construction a small permanent increase in local population would result in connection with operation and maintenance of the project and the nuclear station. For the above noted reasons we do not believe that the disruption of local services and local businesses will be significant.

Disruption of traffic, schools, and school busing could occur during construction of the proposed project. State Highway 215 will be the primary road used in connection with construction. The Applicant has consulted with the South Carolina Highway Department and arranged for necessary improvements at two places of concern, the intersection of State Highways 213 and 215 and the entrance to the proposed nuclear station, to insure maximum highway safety. Furthermore, the Applicant has discussed with the School Bus Division of the South Carolina Department of Education, the need to arrange construction shift times and related travel in order to minimize conflicts with school bus schedules.

The major adverse impact on the area's human resources would result from the relocation of up to 25 families, 5 small cemeteries, and portions of State Route 215 and County Route 99 due to the inundation of 6,800 acres of land by the upper reservoir.

In the license this day issued, we are requiring Applicant to establish a relocation advisory service and to provide reasonable financial assistance for relocation purposes. With respect to the 5 cemeteries in the project area, we note that the Applicant has relocated and marked these cemeteries as stated in the South Carolina Department of Archives and History's letter dated October 20, 1972. While the relocation of State Route 215 and County Route 99 is unavoidable if the project is built, we note that County Route 99 will be relocated at Applicant's expense. Furthermore, we are requiring Applicant to provide access roads for those individuals not displaced by the project but adversely affected by the road relocations.

The inundation of the area within the proposed upper reservoir will result in the loss of 700 acres of agricultural lands. Agriculture is neither a major land use nor major source of income and constitutes only 17 percent of total land use in Fairfield and Newberry Counties. Furthermore, agricultural use has declined 4.3 percent in the period 1958 to 1967. Low fertility and high soil erodibility makes the land unsuitable for intertilled crops. Agricultural land is now used for small scale crop production or for pastureland.

In addition, 3,000 acres of pine plantations and 3,000 acres of mixed pine and bottomland hardwood will be lost by creation of the reservoir. The pine stands have commercial value as timber and pulp. The mixed pine and bottomland hardwood stands support commercial timber operations and provide wildlife cover and food. Fairfield County is the most heavily forested county in the State of South Carolina. Five major paper and pulp companies own 76,200 acres of forested land in Fairfield County. The Sumter National Forest comprises another 12,100 acres in Fairfield County. The volume of softwood harvested has increased considerably since the year 1958 while the hardwood harvest has decreased. Forestry is a major commercial resource adversely affected by the proposed project.

The installation of Bescule gates on top of the existing Parr dam will result in the inundation of 2,550 acres of bottomland hardwoods in Parr Reservoir. Additionally, 300 acres of national forest land presently used as a waterfowl management area would be lost. However, an existing quarry operation 10 miles upstream from the existing Parr dam would not be affected.

The proposed project would affect the Davis Plantation, a registered National Historic Site. The shoreline of the Monticello Reservoir would be 1,000 feet from the plantation at the nearest point. Views from the Davis Plantation would be changed from a view of rolling wooded hills to a view of water, which would include periodic mud flats, as noted below.

Two sites listed on the South Carolina survey of historic places, Fonti Flora and Monticello Church, will be in the area of the Monticello Reservoir. The South Carolina Department of Archives and History by letter dated October 20, 1972, stated that there would be no adverse effect on these historic properties. Four archaeological sites located in the project area would not be inundated. However, in view of the fact that some unknown sites may be inundated, we are providing for archeological survey and salvage excavations before construction and inundation.

The 4.5 foot daily fluctuation of the Monticello Reservoir would create mud flats when drawn down. However, less fluctuation and high water levels would be present on weekend days when the greatest recreational use would occur. More extensive fluctuation of water levels (10 feet) would occur on the Parr Reservoir. Mud flats of an average width of 375 feet would be created with the reservoir fully drawn down. This adverse visual impact would occur during early morning hours on weekdays and, more significantly, during the weekend period of greatest recreational use. However, the only views of the reservoir from roads would be at points where a secondary road crosses Cannon's and Heller's Creek. We believe the planting of selected species of plants will minimize the adverse visual impacts at both reservoirs and are so conditioning this license.

None of the species considered endangered in South Carolina by the United States Fish and Wildlife Service (America alligator, eastern brown pelican, southern bald eagle, Eskimo curlew, American ivory-billed woodpecker, Backman's warbler) are known to nest or reside in the project area. Some wildlife species, however, would be affected by the inundation of 2,550 and 6,800 acres for the Parr and Monticello Reservoirs, respectively.

Loblolly pine-hardwood forest and longleaf pine forest generally support 1 deer per 30 to 50 acres and 1 deer per 73 acres, respectively. South Carolina bottomland hardwoods, however, support 1 deer per 13 acres. Thus, the beneficial habitat and food producing characteristics of a bottomland hardwood environment are normally significant for whitetailed deer populations. We do not believe, however, that these general carrying capacities of South Carolina forests are representative of carrying capacities in the project area for the following reasons.

As noted in the Final Environmental Impact Statement, pine plantations, mixed pine-hardwood plantations, and hardwood forests are the three forest communities in the areas proposed to be inundated. The pine plantations contained a sparse understory. No shelter, forage, or browse is significantly available. Limited amounts of Walter's smilax, honeysuckle, blackberry, and dogwood are found; but no deer have been observed or trapped. Thus, the carrying capacity of the 3,000 acres of pine plantations to be inundated by the Monticello Reservoir is low.

The carrying capacity of the mixed pine and bottomland hardwood forest, on the other hand, is fair. Walter's smilax and sedge constitute the most abundant

browse for wildlife. Understory vegetation is diverse although none of the vegetative types can be considered abundant. This forest type, primarily located along Frees Creek, represents the best quality wildlife habitat in the project area and produces deer at or near the 1 deer per 30 to 50 acres carrying capacity heretofore noted.

The bottomland hardwood stands along the Parr Reservoir do not produce significant understory vegetation because these stands are mature and dense, thus restricting light penetration. Understory vegetation is most significant near railroad and transmission line rights-of-way, abandoned farm fields, and abandoned roads. However, these openings do not constitute a substantial portion of this area. The carrying capacity of this area is substantially less than 1 deer per 13 acres. Thus, the total number of white-tailed deer adversely affected by the inundation of Monticello and Parr Reservoirs will not be as great as would be expected on the basis of representative South Carolina standards.

Other game species found within the project area include rabbit, squirrel, quail, and dove. Wild turkeys were reintroduced into the adjacent Sumter National Forest during the years 1953 to 1956. Turkeys, singly and in small flocks, have been occasionally sighted in the project area. Opossum and raccoon were also noted in the project area. Populations of these species were low in the pine plantations. Only songbirds and small mammals (cotton mouse, golden mouse, short-tail shrew, pine vole) were observed. The mixed pine and bottomland hardwood areas contained opossum and raccoon. Small mammals were more abundant here than in the pine plantations. Songbirds were less abundant than in the pine plantations. The mature trees of the bottomland hardwood forest near Parr Reservoir produce an annual mast crop (acorns, seeds) which is primarily utilized by squirrel and turkey. Populations of other wildlife species do not appear to be significant due to the restricted light penetration previously noted.

Waterfowl have historically used the Broad River as a migratory flyway and meeting area. Fluctuations in the Parr Reservoir will not preclude use of the reservoir for feeding purposes either for resident or migratory waterfowl species.

Some wood duck nesting areas along Parr Reservoir will be eliminated by the 2,500-acre inundation. Wood duck is the only resident waterfowl species. The 10-foot daily fluctuation of Parr Reservoir will curtail successful shoreline nesting and rearing of wood duck young. More importantly, the inundation of lands in connection with Parr Reservoir will destroy 300 acres of Sumter National Forest used as a waterfowl management area, resulting in further loss of wood duck nesting habitat. The absence of suitable nesting habitat is a major limiting factor at present. Additionally, fluctuation of Parr Reservoir will adversely affect a small existing population of fur bearers.

We note that a memorandum of understanding between the Applicant and the South Carolina Wildlife and Marine Resources Department has been negotiated which provides for the dedication of 90 acres of suitable Broad River bottomland by Applicant for development as a greentree reservoir site. Additionally, Applicant has entered into an agreement with the United States Forest Service which provides for land exchanges between the parties, the dedication of a minimum of 90 acres for greentree reservoirs,² and the payment of money by Applicant to revise the Broad River Waterfowl Management Plan, with \$4,000 specified as the initial advance deposit. These agreements should minimize the adverse environmental impacts on waterfowl and furbearers.

The inundation of 2,550 and 6,800 acres for Parr and Monticello Reservoirs, respectively, will adversely affect wildlife populations to the extent that species migrating from the inundated areas could not be absorbed in adjacent areas. This

² A greentree reservoir, as defined in the agreement, is a reservoir with controlled fall and winter water levels surrounded by mast bearing hardwood forest species.

will occur if these areas have species populations at or near the carrying capacity of the area. If all adjacent areas have species population at or near the carrying capacity, species populations will be reduced by disease, starvation, or hunting pressure until a new ecological balance is established. In this context, we note that construction of the 1-mile-long Fairfield-Summer transmission tieline and relocation of a Duke Power Company Transmission line will also displace wildlife during the construction period. However, after the construction period, edge habitat management along these lines will provide a greater variety of food and cover for wildlife in these areas and thus mitigate to some extent adverse effects on wildlife. Furthermore, we note that extensive timber cutting operations in Fairfield and Newberry Counties will increase forest openings and understory vegetation. These operations increase the carrying capacity of the area for wildlife and increase the possibility that wildlife migrating from the project area can be absorbed in adjacent areas.

In the interest of further mitigating any potential adverse effects on waterfowl and wildlife, we are, however, requiring Applicant to file for Commission approval a waterfowl habitat mitigation plan as part of a revised Exhibit S in cooperation with the South Carolina Wildlife and Marine Resources Department and the United States Department of the Interior's Bureau of Sport Fisheries and Wildlife. We have also provided for the filing of a revised Exhibit S within 5 years after issuance of this license which shall set out a schedule for protecting and enhancing the fish and wildlife affected by the project. Finally, we are requiring Applicant to study the feasibility of constructing subimpoundments on Heller's and Cannon's Creeks for the purpose of providing recreational benefits, including additional waterfowl and wildlife habitat and to submit such study and any plans for implementation as part of its revised Exhibit R within one year after issuance of the license. These subimpoundments, if found to best serve public recreational needs, would be constructed in lieu of developing the 180.5 acre parcel on Heller's Creek and the 387 acre parcel near Fairfield Powerhouse for recreational purposes as proposed in the application. We believe the implementation of these memoranda of understanding and license conditions should mitigate most, if not all, of the adverse effects on wildlife and waterfowl heretofore noted.

The effects of proposed project operation on the aquatic environment include the effects of construction and operation of the Fairfield and Parr project components (water level fluctuations in both reservoirs; pumping operations) as well as the effects of operation of the V. C. Summer Nuclear Station. These effects are considered below.

During construction of the proposed project works, turbidity in the Broad River will increase and result in the reduction of rooted algae necessary to support higher food chain aquatic organisms. We are requiring Applicant to take reasonable measures to prevent soil erosion and stream siltation during construction of the project in order to minimize this short-term adverse environmental impact.

Operation of the proposed project is not expected to substantially increase soil erosion so as to result in siltation of Parr Reservoir. Such adverse effects will be more pronounced during the construction period and for a short time thereafter. The Applicant will be required to take all reasonable measures to prevent soil erosion and stream siltation caused by the operation and mainte-

nance of the project. Soil erosion should also be minimized by the planting of selected species of plants, heretofore noted.

Pumping operations at the Fairfield facility will cause an exchange of fish and associated aquatic organisms between reservoirs. A review of the species and populations of fish involved and, more importantly, the particular design of and operational mode for the pump-turbines shows that fish mortalities will not be substantial.

Daily fluctuations in the Parr Reservoir of the magnitude heretofore noted will adversely affect benthic organisms which are relatively immobile. Consequently, an increase in biomass and carrying capacity of Parr Reservoir will not be realized even though such an increase would normally be expected where 2,550 surface acres of aquatic habitat are created. Water level fluctuations in Monticello Reservoir will have a minimal effect on the spawning of nest building centrarchids. Spawning of largemouth bass and bluegill would be adversely affected by the decreased surface area caused by the 10-foot fluctuation of Parr Reservoir.

Operation of the Summer station will have a significant impact on the biota of Monticello Reservoir in the intake structure, heat exchangers, effluent discharge canal, and mixing zones. Impingement of fish on the cooling water intake screens will not be significant since approach velocities of water to and water velocities through these screens are sufficiently low. Fish impinged on the screen will be suffocated. Plankton and small fish will also be drawn through the screen. Thermal and mechanical stresses will be imposed on these organisms as they travel through the condenser system.

Significant mortalities will occur when reservoir temperatures are 80°F or higher. Such mortalities pose a serious threat to the viability of the reservoir's ecosystem where the volume of cooling water pumped through the condenser system is a significant part of that reservoir's volume. However, only approximately 0.5 percent of the reservoir's volume will be pumped through the condenser system daily. Assuming the worst possible temperature conditions and complete planktonic kills, this planktonic loss will be small when compared to the size of the reservoir's standing crop. We note that a mechanical cleaning system, rather than biocides, will be used to prevent condenser tubing fouling. This cleaning system will mitigate adverse impacts on plankton.

Thermal discharges from the Summer Nuclear Station will raise water temperatures in the discharge canal to a maximum of 113°F. The discharge canal and pond will occupy 40 acre-feet of water out of the 440,000 acre-feet volume of Monticello Reservoir. Surface temperatures in the mixing zone between the pond and the rest of the reservoir would be lethal to fish life, through subsurface temperatures in the mixing zone will be acceptable. Furthermore, fish will be able to avoid areas in the mixing zone with unfavorable temperatures.

Under the worst conditions of low water and high withdrawal rates, waters released from Monticello to Parr will be no greater than 3°F warmer than Parr Reservoir water. This temperature increment could alter the species diversity of aquatic organisms in Parr Reservoir in the vicinity of Frees Creek but will have no discernible impact on fish in Parr Reservoir or the Broad River downstream.

We note, however, a more serious potential problem with respect to thermal discharges. Fish are attracted to warm areas in reservoirs during the winter. Sudden decreases in temperature in these areas during the winter as a result of nuclear station shutdown on the Monticello Reservoir can result in significant fish mortality. Furthermore, these zones may adversely affect fish populations through changes in maturation time, disease resistance, behavior and metabolic

rates. Although the commercial and sport fishing in Monticello Reservoir is expected to be slight, we are providing that the Applicant monitor this particular aspect of the project operation for inclusion in the revised Exhibit S.

The adverse effects on water quality of chemical discharges from the nuclear station to Monticello Reservoir have been discussed in the Atomic Energy Commission's Final Environmental Statement. These chemical discharges were separated into the following categories: start-up wastes, floor drain and oil-contaminated wastes, ion exchange regenerant wastes, sewage and other sanitary wastes, and steam generator blowdown. We believe that none of these discharges would significantly alter water quality and adversely affect aquatic biota.

In light of these potential adverse environmental impacts on the water quality of project waters, we are requiring Applicant to monitor the water quality of Parr and Monticello Reservoirs at selected locations as set out in the Final Environmental Impact Statement. This monitoring program will be for a period of five years from the date of commencement of project operation. At the end of this period Applicant will be required to file a final report on the monitoring program, including recommendations for further monitoring and proposals for the maintenance and improvement of the aquatic environment.

Enlargement of Parr Reservoir will create conditions conducive to actinomycete growth and odor production by increasing the amount of organic nutrients. Odor problems in the Columbia municipal water supply were found by the U.S. Environmental Protection Agency to be caused by nutrients in the Broad River upstream from the Parr Reservoir. The maximum increase in temperature of water discharged through the Fairfield Facility will not greatly increase actinomycete development. As previously noted, this water temperature increase will be greatest in the vicinity of Frees Creek. This water will be diluted by waters of the Parr Reservoir so that no increase in water temperature and conditions conducive to actinomycete development would be apparent below Parr Dam. In any event, we are requiring Applicant to monitor odors in its water quality station downstream of Parr Dam and promptly alert the Columbia municipal water treatment plant personnel should musty odors be detected.

In addition, we are requiring Applicant to monitor dissolved oxygen, temperature, stream flow, conductivity, and pH at its water quality station downstream of Parr Reservoir on a continuous basis. We are also requiring Applicant to monitor turbidity and heavy metals on a monthly basis, or more often if found necessary.

Turning to recreational development, we are approving a 300-acre subimpoundment planned for the north corner of Monticello Reservoir. This subimpoundment will be only slightly affected by thermal discharges from the nuclear station and the periodic intermixing with turbid waters from the Monticello Reservoir. We note that the existing fishery in Parr Reservoir and the Broad River is classified as very poor due to turbidity. We are requiring Applicant to study and develop fish management plans to maximize the sport fishing potential of Parr Reservoir, particularly Heller's and Cannon's Creeks, and of the Monticello Reservoir subimpoundment. Development and implementation of satisfactory plans should offset any losses to the existing fishery.

We note that the 300-acre subimpoundment recreational facilities will be the first in Fairfield County. Problems may arise due to maximum use of the picnic area, and possible overuse of the fishing impoundment could occur within a short period of time. We are requiring the filing of revisions to the Exhibit R within one year from the date of the issuance of this license which will show

additional proposed recreational facilities. We believe recreational use of Frees Creek as proposed by Applicant will be inhibited by the combined effects of drawdown and rapid stream flow due to the operation of the Fairfield facility. However, as previously noted, we are further requiring Applicant to study the feasibility of constructing recreational subimpoundments on Heller's and Cannon's Creeks in lieu of developing the 180.5-acre recreational parcel on Heller's Creek and the 387-acre recreational parcel on Frees Creek near Fairfield Powerhouse. Required minimum flow releases averaging 800 cfs daily should adequately protect downstream public recreational use and development.

Construction and operation of the proposed project by Applicant will result in certain adverse effects which are considered unavoidable. The displacement of 25 families, the loss of 700 acres of agricultural and 8,550 acres of forest land, the influx of construction workers, and scenic and aesthetic changes are the primary unavoidable adverse impacts on the human environment. Approximately 9,400 acres of wildlife habitat will be lost. The extent and severity of the resulting displacement of wildlife to adjacent areas is presently unknown. As heretofore noted, we do not believe this adverse effect upon wildlife will be substantial.

Some unavoidable fish mortality will occur as a result of the operation of the Fairfield pump-turbines. Many aquatic organisms in the condenser cooling water for the V. C. Summer nuclear plant will be killed, especially in the warmer months of the year. However, as heretofore noted, we do not believe that the adverse impacts on aquatic organisms will be significant.

We have considered alternatives to the proposed project. The alternatives were: licensing of the redeveloped Parr project without allowing the use of Monticello Reservoir for condenser cooling purposes; licensing of the project with a smaller upper reservoir; denial of the application; Federal takeover of the project; power purchases from other systems; coal-fired and nuclear steamelectric plants; oil-fueled gas turbines; other conventional and pumped-storage hydroelectric projects; and conservation of energy.

Our review of the alternative sources of power production convinces us that they are less attractive than the proposed project. The adverse environmental impacts of such alternatives would include noise, visual impacts, emissions, and increased heat rejection. In addition, the operation of alternative thermal power sources would deplete even further the Nation's critically short fossil fuel supplies.

At the same time that we attempt to make the most efficient use of our non-depleting hydroelectric resources consistent with environmental protection, it is our opinion that electrical energy conservation practices are desirable and should be promoted vigorously. Though conservation cannot eliminate growth in energy demand and the need to expand electric generating capacity, such a program could effect a significant reduction in the need for new generating capacity over the next decade.

We believe that relicensing the redeveloped Parr Project best meets the standard of Section 10(a) of the Act. 16 U.S.C. § 803(a). That section requires that a project approved shall "be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water power development, and for other beneficial public uses, including recreational purposes * * *."

We have examined the question of comprehensive development in terms of resource conservation, water quality control, fish and wildlife protection, navi-

gation, coordination of project capacity with facilities in the region, and the economic consequence of takeover. With respect to water quality control, fish and wildlife protection, and navigation, we believe that relicensing with appropriate license conditions will adequately protect such resource values. The redevelopment of the Parr Project will also provide needed public recreation facilities.

We do not believe that Federal takeover of the existing project pursuant to Section 14 of the Act (16 U.S.C. § 807) would be in the public interest. Project No. 1894 subject to Federal takeover has an installed capacity of 14.9 mW. The substantial reconstruction proposed by Applicant includes a 518.4 mW pumped-storage facility and a 900 mW nuclear plant. The proposed redevelopment would not be subject to takeover. Applicant's redevelopment will maximize the energy-producing capacity of the region. For example, the installed capacity of the existing Parr Project amounts to approximately .49 percent of the Applicant's total system capacity for 1974, while the redeveloped Parr Project and associated V. C. Summer Nuclear Unit #1 would represent approximately 32 percent of the Applicant's system capacity for 1978.³

The Applicant is a member of Southeastern Electric Reliability Council (SERC). Elimination of the Parr Project from the Applicant's system would decrease member reserves, and consequently, system reliability. Without the Parr redevelopment, it is estimated that Applicant's system reserve for 1978 would be about 6.9 percent versus 19.8 percent with redevelopment which compares favorably with the planned reserve capacity for SERC.

There are no existing Federal projects within the Santee River Basin. The only Federal facilities within reasonable transmission distance are the Hartwell (264 mW) and Clark Hill (280 mW) hydroelectric projects, which are not available to fulfill the necessary pumping requirements. Thus, were the Federal Government to take over the existing plant and develop on its own an associated project with a similar capacity of 518.4 mW as proposed by the Applicant without the nuclear plant, there is no generation available from Federal projects to support its operation.

The Applicant estimates the fair value of the existing project to be \$15,000,000. As of June 30, 1971, it estimates its net investment at \$1,533,000 and reasonable severance damages in excess of \$190,000. The Applicant further estimates that the total amount due it upon Federal takeover would be approximately \$1,743,000.

Even assuming that takeover of this project would result in some additional income to the Federal treasury in excess of direct expenses, it would appear that any such amounts would be to some extent offset by the corresponding losses in Federal income taxes. In addition, the impacts upon local governments by reason of takeover would be substantial. Approximately 7 percent of Fairfield County's and 3 percent of Newberry County's annual tax revenues are attributable to the existing Parr Project. The estimated annual taxes contributed by the project to local, State, and Federal governments is \$214,000. It is estimated that the potential tax revenues and fees to local, State, and Federal governments after development and expansion would be \$1,000,000 annually.

The short-term use of the local environment as represented by a license period of up to 50 years would provide benefits in power generation, recreational use and economic growth. These benefits contrast, however, with the effects of the ecological alterations, heretofore noted, caused by the construction and operation of the project. For instance, the inundation of 2,550 additional acres of land by enlargement of the existing Parr Reservoir and construction of the

³ Table 1-1, Final Environmental Impact Statement for South Carolina Electric & Gas Company, Project No. 1894, pages 1-5.

6,800-acre Monticello Reservoir would result in the relocation of as many as 25 families and loss of forest and agricultural resources and wildlife habitat. Notwithstanding these short-term local impacts, we believe the maintenance and enhancement of long-term productivity will best be achieved by devoting the land and water resources of the area to the highest use they are capable of supporting *i.e.*, the production of electric power.

The Parr Project will result in the irreversible and irretrievable commitment of those construction materials and supplies which will not be salvaged after their use, as well as water lost through evaporation from both Parr and Monticello Reservoirs. It will be possible to remove structures, drain the impoundment, and replant trees at the end of the license period. To the extent that the project area were not restored to its natural state, the elimination of forest land would also be an irretrievable commitment of resources.

By letter dated September 15, 1972, the Secretary of the Commission requested comments pursuant to Section 4(e) of the Act from appropriate Federal, State and local agencies on the amended application. Federal agencies were also requested to submit comments and recommendations on takeover of the project pursuant to Section 14 of the Act and Section 16.8 of the Commission's Regulations under the Federal Power Act. No recommendation for Federal takeover of the project has been received.

The U.S. Department of the Army, Corps of Engineers (Corps), by letter dated December 14, 1972, stated it had no objection to issuance of a license. The Corps discussed the possible effect which the proposed 9-foot increase in the elevation of Parr Reservoir would have on a potential upstream Federal development, known as the Blairs Project. The Blairs Project was recommended in a plan for development of the Santee River. S. Doc. No. 189, 78th Cong., 2d Sess. (1944). The Corps stated that construction of this facility in the near future was unlikely. Furthermore, the redeveloped Parr Project would not significantly affect plans for redevelopment of the Santee River Basin. Therefore, the Corps stated that it had no objection to issuance of the license containing the usual conditions for the protection of the public interest. The Corps has approved the plan of the Parr Dam as it affects navigation by letter dated May 1, 1974.

The U.S. Atomic Energy Commission by letter dated December 13, 1973, which transmitted a copy of its Draft Environmental Impact Statement and a copy of its Safety Evaluation Report for A.E.C. Docket No. 50-395, stated that no license conditions to protect the interests of the Atomic Energy Commission were recommended.

The U.S. Department of the Interior (Interior) by letter dated June 15, 1973, stated that the proposed project will not directly affect any existing or proposed units of the National Park System or any sites that are eligible or recommended for registration as National, Historical, Natural, or Environmental Education Landmarks. Interior did recommend against issuance of a license until an acceptable Exhibit S is filed. We believe the public interest will be better served by issuance of the license with provision for the filing of a revised Exhibit S pursuant to Article 54 of the license. Such a revised Exhibit S will be based on the results of the comprehensive long-term post operational monitoring programs which will determine the effects on fish and wildlife. The availability of this information will enable us to further protect and enhance fish and wildlife in the area as may be necessary or appropriate.

Interior also discussed the impact of the redeveloped Parr project on a potential downstream Federal development, known as the Frost Shoals Project.

S. Doc. No. 189, *supra*. We note that there is no present plan or schedule for construction of this facility.

Interior further objected to the inclusion of the 55 acres of islands in the Monticello Reservoir for future recreational use since 20 of these acres are within a proposed nuclear exclusion zone. Atomic Energy Commission regulations state that "activities unrelated to operation of the reactor may be permitted in an exclusion area under appropriate limitations, provided that no significant hazards to the public health and safety will result." 10 CFR § 100.3(a) (1973). With appropriate safeguards we believe these islands may serve public recreational needs and are requiring their inclusion within the project boundary.

Interior stated that the 387-acre recreational parcel adjacent to Fairfield Powerhouse is inappropriate for recreational development due to the limited recreation capability of Monticello and Parr Reservoirs, lack of public access, proposed restricted public use of the Fairfield tailrace, transmission lines, railroad right-of-way, and steep and hilly topography. We are reserving decision on the suitability of the 387-acre recreational parcel pending the completion of a study which will compare the recreational advantages and disadvantages of this site and the 187-acre recreational parcel heretofore noted with possible subimpoundments on Cannon's and Heller's Creeks.

Finally, Interior requested that recreational lands extend a minimum of 200 horizontal feet from the high water mark. We are requiring Applicant to acquire in fee shoreline lands up to the 270-foot contour or up to 50 feet horizontal measure from the 266-foot contour, whichever is greater, on Parr Reservoir and shoreline lands up to the 430-foot contour or up to 50 feet horizontal measure from the 425-foot contour, whichever is greater, on Monticello Reservoir. This license condition will provide a strip of land 50 to 200 feet in horizontal measure along these reservoirs.

We do not preclude the possibility of requiring Applicant to acquire additional land for recreational purposes in the future. At this time, however, with the exception of those areas of intensive recreational use heretofore considered, we believe the acquisition of a strip of land 50 to 200 feet in width around the Monticello and Parr Reservoirs adequately protects the public interest. Other comments submitted by Interior have been addressed in the Final Environmental Impact Statement and considered by this Commission.

The U.S. Department of Agriculture, Forest Service (Forest Service) transmitted with its letter dated December 20, 1973, a Memorandum of Agreement between the Forest Service and the Applicant providing, in part, for the interests of the Forest Service. The details of this agreement have been heretofore noted. The Forest Service also suggested that a detailed development plan for the 300-acre subimpoundment be drafted which would include a parking lot for a minimum of 40 cars. We have conditioned the license to require the filing of such a detailed plan within one year from the date of issuance of this license. Finally, the Department of Agriculture recommended that the entire area within the triangle bounded by State Route 215, relocated State Route 99, and County Road 347 be considered for dedicating to public recreation in connection with the Monticello Reservoir subimpoundment. We are requiring that the Applicant include such land in the feasibility study to be filed pursuant to Article 45.

By letter dated November 7, 1972, the U.S. Department of Health, Education, and Welfare commented on the health aspects of proposed recreational facilities and recommended that the plans for sanitary facilities be submitted to the South Carolina State Board of Health for approval. In Article 43 we have

provided for the filing of a solid waste management plan approved by the appropriate State agency.

The U.S. Department of Transportation by letter dated November 9, 1972, noted that the enlargement of the Parr Project will have a minimal effect on the highway system but will require the relocation of portions of South Carolina Highway Route 99 and Route 215, both of which are included in the Federal Aid Secondary System of highways. The Department expressed concern regarding the cost of these road relocations. We note that legislation has been passed by the South Carolina General Assembly and approved by the Governor which provides for relocation of State Route 99 at Applicant's expense.

The South Carolina Water Resources Commission by letter dated December 12, 1972, stated that approval of the application would have less adverse environmental effects than its alternatives and urged the issuance of a license.

The South Carolina Recreation Commission by letter dated October 27, 1972, stated that they supported the project, primarily in light of the recreational benefits of the Monticello subimpoundment.

The South Carolina Department of Agriculture (Department) by letter dated November 3, 1972, stated that the benefits to be derived from the project far outweigh the adverse effects. The Department also stated that the adverse impact of the project on agriculture is not substantial.

The South Carolina Public Service Commission, the State Development Board, the South Carolina State Commission of Forestry, the Town of Winnsboro, the County of Newberry, and the City of Columbia by letters dated October 18, 1972, October 16, 1972, November 6, 1972, December 18, 1972, November 14, 1972, and November 16 1972, respectively, offered no objection to issuance of a license.

The South Carolina Department of Archives and History by letter dated October 20, 1972, commented on the project's effect on historical places and five small cemeteries. These comments have been addressed in this order heretofore.

The South Carolina Wildlife and Marine Resources Department (Department) by letter dated February 16, 1973, stated that a memorandum of understanding had been signed by the Department and the Applicant concerning water flow and land management. We have provided for minimum flow releases in Article 14 of the license.

The South Carolina Land Resources Conservation Commission (Commission) by letter dated December 22, 1972, offered no objection to the project. The Commission did recommend that an erosion control plan be developed to control erosion arising during and after construction. We have provided for these concerns in Articles 21, 40, and 47 of the license.

Applicant indicates that it plans at some future date to construct a second, and perhaps a third, 900 mW nuclear steam-electric generating unit. We note that the application for this project only includes a request for the use of the Monticello Reservoir "as a cooling impoundment for the proposed V. C. Summer Nuclear Complex (A.E.C. Docket No. 50-395)," and the only unit which was the subject of licensing before the Atomic Energy Commission was the 900 mW Unit 1 of the V. C. Summer Nuclear Complex. Although the Staff's Draft and Final Environmental Impact Statement considered the impacts of future nuclear units, we are approving in this license order only the use of Monticello Reservoir waters to cool the 900-mW Unit 1 of the V. C. Summer Nuclear Complex. If, in the future, Applicant desires to construct any steam electric generating plants on project lands or wishes to construct any plants which would utilize project waters for cooling purposes, then prior to construction it must file an appropriate application for Commission approval.

We believe that the subject matter of the instant application has been fully developed and considered by this Commission. These facts have been fully developed in the Draft Environmental Impact Statement and comments thereon, as set out in the Final Environmental Impact Statement, and other data on file with the Commission. Therefore, we do not believe that a public hearing will contribute any new and relevant information and conclude that it is not in the public interest to hold a hearing in this proceeding.

Turning to the transmission facilities connected with this project, we conclude that the generator leads and 2.3-kV lines for six units, the three 2.3/13-kV transformers at the hydro station, the 13-kV tie from the hydro station to the 72.5 mW Parr Steam Plant, the 2.3-kV tie from the hydro station to the nearby 2.3/23-kV Parr distribution substation, the 2.3/23-kV, 5,000 kVA transformer bank at the Parr distribution substation, and appurtenant facilities at the existing Parr Hydroelectric Project are primary lines within the meaning of Section 3(11) of the Act. At the Fairfield Pumped-Storage Facility, the generator leads, the step-up facilities, the two 230-kV lines from Fairfield Powerhouse to the V. C. Summer Nuclear Station switchyard, and appurtenant facilities are "primary lines". All other lines connected to the V. C. Summer Nuclear Station switchyard are part of Applicant's interconnected system.

We have previously noted that no recommendation for Federal takeover of the existing Parr Hydroelectric Project has been received. We believe, also, that a recommendation to Congress for Federal takeover of the project on our own motion, pursuant to Section 16.9 of the Regulations, would be inappropriate for the reasons discussed hereinbefore. For many of the same reasons we believe it would also be inappropriate to issue a non-power license on our own motion.

No conflicting applications for a license pursuant to Section 15 of the Act are pending before this Commission. We conclude on the basis of the facts before us that a new power license should be issued to the Applicant effective on the first day of the month in which this order is issued and terminating June 30, 2020. We believe that such a term is appropriate because of the substantial amount of new construction which will occur in connection with this redeveloped project. This also takes into consideration the operation of the project under annual licenses since July 1, 1970.

The Commission finds:

(1) The Parr Project No. 1894 affects lands of the United States and is located on a navigable waterway of the United States.

(2) The Applicant, South Carolina Electric & Gas Company, is a corporation incorporated under the laws of the State of South Carolina and has submitted satisfactory evidence of compliance with the requirements of all applicable State laws insofar as necessary to effectuate the purposes of a license for the project.

(3) Public notice of the filing of the application was given on November 1, 1972. Robert A. and Martha M. Westbrook and W. R. Robinson filed petitions to intervene out-of-time.

(4) The petition of Robert A. and Martha M. Westbrook and the petition of W. R. Robinson have been granted.

(5) Intervenors Robert A. and Martha M. Westbrook should be permitted to withdraw their petition to intervene. Therefore, a public hearing is neither warranted nor in the public interest.

(6) No conflicting application is before the Commission.

(7) The project does not affect a government dam, nor will the issuance of a license therefor, as hereinafter provided, affect the development of any water resources for public purposes which should be undertaken by the United States.

(8) Subject to the terms and conditions hereinafter imposed, the project is best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes.

(9) The installed horsepower capacity of the project hereinafter authorized for the purpose of computing the capacity component of the administrative annual charge based on such capacity to be paid under the license for the project for the cost of administration of Part I of the Act is reasonable as hereinafter fixed and specified.

(10) It is desirable to reserve for a later date a determination as to the amount of annual charges for the use, occupancy and enjoyment of lands of the United States.

(11) The plans of the structures affecting navigation have been approved by the Corps of Engineers.

(12) The term of the license hereinafter authorized is reasonable.

(13) The following described transmission facilities which are included in the application for license, are parts of the project within the meaning of Section 3(11) of the Act and should be included in the license for the project: at the existing Parr Hydroelectric Project, the generator leads and 2.3-kV lines for six units, the three 2.2/13-kV transformers at the hydro station, the 13-kV tie from the hydro station to the 72.5 mW Parr Steam Plant, the 2.3-kV tie from the hydro station to the nearby 2.3/23-kV Parr distribution substation, the 2.3/23-kV, 5,000 kVA transformer bank at the Parr distribution substation, and appurtenant facilities; and at the proposed Fairfield Pumped Storage Facility, the generator leads, the step-up facilities, the two 230-kV lines from Fairfield Powerhouse to the V. C. Summer Nuclear Station, and appurtenant facilities.

(14) The Exhibits designated and described in paragraph (B) below conform to the Commission's Rules and Regulations and should be approved as part of the license for the project.

(15) The estimated cost of the redeveloped project compared to the estimated cost of suitable alternatives is reasonable.

(16) The Applicant has demonstrated satisfactory evidence that it has the necessary financial capabilities to undertake the redevelopment and operation of the project.

(17) No recommendation for Federal takeover has been received.

(18) Takeover of the existing Parr Hydroelectric Project No. 1894 is unwarranted at this time and it is appropriate and in the public interest to issue a new power license to Applicant subject to the terms and conditions hereinafter imposed.

The Commission orders:

(A) This license is hereby issued to South Carolina Electric & Gas Company (hereinafter Licensee) under the Act for a period commencing the first day of the month in which this order is issued and terminating June 30, 2020, for the redevelopment, operation and maintenance of the Parr Project No. 1894, located on the Broad River, in Fairfield and Newberry Counties, South Carolina, and which occupies lands of the United States within the Sumter National Forest, and further would affect navigable waters of the United States, subject to the terms and conditions of the Federal Power Act which is incorporated herein by reference as part of this license, and subject to such rules and regulations as the Commission has issued or prescribed under the provisions of the Act.

(B) The Parr Project No. 1894 consists of :

(i) all lands constituting the project area and enclosed by the project boundary, the limits of which are otherwise defined and/or interests in such lands necessary or appropriate for the purposes of the project, whether such lands or interests therein are owned or held by the Licensee or by the United States; such project area, project boundary, and other facilities being generally shown and described by certain exhibits which form part of the application for license and which are designated and described as follows :

Exhibit J: Sheet 1 (FPC No. 1894-25) filed September 30, 1971, revised March 18, 1974, and entitled : "General Area Map"

Sheets 2 and 3 (FPC Nos. 1894-26 and 27) filed September 30, 1971, revised March 18, 1974, and entitled "Operating Territory", showing Licensee's transmission system, power plant locations, and interconnections ; and

Exhibit K: Sheet 8 (FPC No. 1894-44) filed March 1, 1972, revised July 26, 1972 and March 18, 1974, and entitled : "General Map of Project Area"

(ii) project works consisting of :

(a) Existing and redeveloped works of the Parr Hydroelectric Development consisting of : (1) a steel-frame brick powerhouse containing 6 generators rated at 2480 kW, each, and provisions for 2 additional units ; (2) a 2715 foot long dam composed of a 300-foot integrally constructed powerhouse section, a 300-foot earth dike, a 90-foot non-overflow section, and a 2000-foot concrete overflow section, 35 feet high, with crest at elevation 257.0 feet, m.s.l., surmounted by Bascule gates ; (3) a 4400 acre reservoir at maximum controlled surface elevation 266 feet, m.s.l., at the dam, extending upstream for 13 miles, having a useable storage capacity of 29,000 acre-feet in a drawdown of 10 feet, providing water for operation of the conventional hydroelectric development and serving as the lower reservoir of the pumped storage facility ; and (4) transmission facilities composed of generator leads and 2.3-kV lines for six units, three 2.3/13-kV transformers at the hydro station, the 13-kV tie from the hydro station to the 72.5 mW Parr steam-electric plant, the 2.3-kV tie from the hydro station to the nearby 2.3/23-kV Parr distribution substation, and the 2.3/23-kV, 5,000 kVA transformer bank at the Parr distribution substation ;

(b) The Fairfield Pumped Storage Facility, consisting of : (1) the Parr Reservoir which serves as the lower pool ; (2) a 6800-acre upper pool (Monticello Reservoir having lengths of 5000, 3400, 1700, and 900 feet, each with crest at elevation pool elevation, and a useable storage capacity of 29,000 acre-feet in an operating drawdown of 4.5 feet ; (3) four random-fill dams impounding Monticello Reservoir having lengths of 5000, 3400, 1700, and 900 feet, each with crest at elevation 434 feet, m.s.l. ; (4) a 400-foot-wide, 600-foot-long, intake channel in the south abutment of the 5,000-foot-long dam ; a gated intake structure with invert at elevation 375 feet, m.s.l. ; and four 800-foot-long, 26-foot diameter, surface penstocks bifurcating into eight 18-foot-diameter concrete-encased penstocks ; (5) a semi-outdoor type generating station (Fairfield Powerhouse) housing 8 reversible pump-turbine units, each having a minimum capacity of 83,000 horsepower at the minimum head of 150 feet, to be operated by remote-automatic, local-automatic, or local-manual control option, directly coupled to 8 motor-generators, each with a nameplate rating of 64,800 kilowatts in the generating mode and 100,000 horsepower when operating as a motor ; and (6) associated transmission facilities including generator leads, the step-up facilities, and the two 230-kv transmission lines from Fairfield Powerhouse to the V. C. Summer Nuclear Station ;

(c) Recreational features consisting of : (1) a boat launching area adjacent to the crossing of Heller's Creek by County Road 28 in Parr Reservoir ; (2) a 300-

acre subimpoundment in the northern end of Monticello Reservoir having a public boat launching area with parking and sanitary facilities; and (3) a scenic overlook on the eastern shore of Monticello Reservoir with parking, picnic, and sanitary facilities; and

(d) Appurtenant facilities:

* * * the location, nature, and character of which are shown and described by exhibits hereinbefore cited and by certain other exhibits which also form part of the amended application for license and which are designated and described as follows:

Exhibit L	FPC No. 1894-	Date filed	Showing
Sheet 2.....	36	Sept. 30, 1971	Fairfield Powerhouse and Switchyard Plans.
Sheet 3.....	46	Mar. 18, 1974	Section through Units, Fairfield Powerhouse.
Sheet 4.....	47	Mar. 18, 1974	Intake and Penstocks, Fairfield Powerhouse.
Sheet 5.....	39	Sept. 30, 1971	Frees Creek Dam.
Sheet 6.....	40	Sept. 30, 1971	One Line Electrical Schematic Diagram, Fairfield Powerhouse.
Sheet 7.....	41	Mar. 1, 1972	Parr Dam and General Layout.
Sheet 8.....	42	Mar. 1, 1972	Parr Powerhouse and Section through Units.
Sheet 9.....	43	Sept. 30, 1971	Sectional Plan of Parr Power Structure and One Line Electrical Schematic Diagram.

Exhibit M: Three typewritten pages entitled "Fairfield Pumped Storage Facility—Major Equipment", pages 1, 2, and 3 of 4 pages of Exhibit M filed July 26, 1972. One typewritten page entitled "Part Hydroelectric Facility—Major Equipment", page 4 of 4 pages of Exhibit M filed July 26, 1972.

Exhibit R: Eleven typewritten pages and two sketches (Typical Boat Launching Facility and Typical Overlook and Picnic Area—Exhibits R-1 and R-2, respectively) entitled "Recreation Use Plan" filed July 26, 1972; and one tracing, Exhibit R, Sheet 3 (FPC No. 1894-45) filed March 1, 1972, revised July 26, 1972, entitled "Proposed Recreational Development".

Exhibit V: Twenty-four typewritten pages of text entitled "Natural, Historic, and Scenic Values and Resources" filed July 26, 1972, and above listed Exhibit K, Sheet 8 (FPC No. 1894-44).

(iii) All of the structures, fixtures, equipment, or facilities used or useful in the maintenance and operation of the project and located within the project area, and such other property as may be used or useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as part of the project is approved or acquiesced in by the Commission; together with all riparian or other rights, the use or possession of which is necessary or appropriate in the maintenance or operation of the project.

(C) This license is also subject to the following terms and conditions:

Article 1. The entire project, as described in the order of the Commission, shall be subject to all the provisions, terms and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: *Provided, however,* That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project property; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in uses of project property or the project works or divergence from such approved exhibits may be made if such changes will not result in decrease in efficiency, in material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 5. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project. Construction of the project works or any feature thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow him and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may from time to time prescribe for the protection of life, health, or property.

Article 6. The Licensee within five years from date of issuance of the license shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance and operation of the project. The Licensee, its successors and assigns shall,

during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 7. In event the project is taken over by the United States upon the termination of the license, as provided in Section 14 of the Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section 15 of the Act, the Licensee, its successors and assigns will be responsible for and will make good any defect of title to or of right of occupancy and use in any of such project property which is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and will pay and discharge, or will assume responsibility for payment and discharge, of all liens or incumbrances upon the the project property created by the Licensee or created or incurred after the issuance of the license: *Provided*, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new Licensee, to acquire any different title to or right of occupancy and use in any of such project property than was necessary to acquire for its own purposes as Licensee.

Article 8. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Act and the Commission's Rules and Regulations thereunder.

Article 9. After the commencement of operation of the project under the license, six percent per annum shall be the specified rate of return on the net investment in the project for determining surplus earnings of the project for the establishment and maintenance of amortization reserves, pursuant to Section 10(d) of the Act; one-half of the project surplus earnings, if any, accumulated under the license, in excess of six percent per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year: *Provided*, That, if and to the extent that there is a deficiency of project earnings below six percent per annum for any fiscal year or years under the license, the amount of such deficiency shall be deducted from the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any thus cumulatively computed, shall be set aside in the project amortization reserve account; and the amounts thus established in the project amortization reserve account, including such amounts established under previous license or licenses, shall be maintained therein until further order of the Commission.

Article 10. For the purpose of determining the stage and flow of the stream or streams on which the project is located the amount of water held in and withdrawn from storage, and the effective head on the turbines, the Licensee shall install and thereafter maintain such gages and stream-gaging stations as the Commission may deem necessary and best adapted to the requirements; and shall

provide for the required readings of such gages and for the adequate rating of such stations. The Licensee shall also install and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission and may be altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval of the Commission or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of said project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such times and in such forms as the Commission may prescribe.

Article 11. The Licensee shall install additional capacity or make other changes in the project as directed by the Commission to the extent that it is economically sound and in the public interest to do so, after notice and opportunity for hearing.

Article 12. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 13. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvements of the United States the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the costs of making the determinations pursuant to the then current Commission Regulations under the Federal Power Act.

Article 14. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoirs at such rate in cubic feet per second, or such volume in acre-feet per specified period of time as the Secretary of the Army may prescribe in the interest of navigation, or as the

Commission may prescribe for the other purposes hereinbefore mentioned. Pending further order by the Commission on its own motion or at the request of others, including the State of South Carolina Wildlife and Marine Resources Department and the Fish and Wildlife Service of the U.S. Department of the Interior, after notice and opportunity for hearing, the Licensee shall :

(a) discharge from the Parr powerhouse during initial filling of the project reservoirs and during all months of the year, except March, April, and May, a minimum flow of 150 cfs and a minimum daily average flow of 800 cfs, or the daily natural inflow to the Parr Reservoir (less evaporative losses from the Parr and Monticello Reservoirs), whichever is the lesser amount; and

(b) discharge from the Parr powerhouse during the striped bass spawning season in the months of March, April, and May a minimum flow of 1,000 cfs or the average daily natural inflow into the Parr Reservoir (less evaporative losses from the Parr and Monticello Reservoirs), whichever is the lesser amount :

Provided, That Licensee shall take reasonable measures to determine the daily natural inflow to the Parr Reservoir : *Provided further*, That, whenever it is foreseeable that the daily natural inflow into the Parr Reservoir (less evaporative losses from Parr and Monticello Reservoirs) will be released, the Licensee shall promptly notify the State of South Carolina Wildlife and Marine Resources Department : *And provided further*, That such flows may be modified temporarily if required by operating emergencies beyond the control of the Licensee and for short periods for fishery management purposes upon mutual agreement between the Licensee and the State of South Carolina Wildlife and Marine Resources Department.

Article 15. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall, after notice and opportunity for hearing, permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission in the interest of comprehensive development of the waterway or waterways involved and the conservation and utilization of water resources of the region, for water supply, or for the purpose of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation, at least full reimbursement for any damages or expenses which the joint use causes him to incur, for use of its reservoir or other project properties or parts thereof for such purposes, any such compensation to be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot be concurrently submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 16. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or en-

dangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by other lawful authority for avoiding or eliminating inductive interference.

Article 17. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance and operation of such reasonable facilities and comply with such reasonable modifications of the project structures and operation as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 18. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of Licensee's lands and interest in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 19. The Licensee shall construct, maintain and operate or shall arrange for the construction, maintenance and operation of such reasonable recreational facilities including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities and utilities, and shall comply with such reasonable modifications of the project structures and operations as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal and State agencies, after notice and opportunity for hearing.

Article 20. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting; *Provided*, That the Licensee may reserve from public access, such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property. Licensee, in the interests of promoting optimum recreational use and protecting the scenic values of project lands and waters, may to a reasonable extent grant permits to individuals or groups of individuals for landscape planting on project lands, or for the construction of access roads, wharves, landings, and other similar facilities, the occupancy of which may, under appropriate circumstances, be subject to the payment of rent in a reasonable amount: *Provided*, That Licensee in granting such permits, shall require that permittees provide for multiple occupancy and use of such facilities, where feasible, and shall ensure that such facilities are constructed and maintained in such a manner so as to be consistent with shoreline aesthetic values: *Provided further*, That the Licensee, prior to the granting of said permits and construction of such facilities, shall file for Commission approval as part of its Exhibit R a master plan for the entire proj-

ect showing the location and typical design of such facilities and the use of project lands adjacent thereto. The master plan shall be prepared in conformance with the requirements of the then existing Rules and Regulations of the Commission.

Article 21. The Licensee shall be responsible for and shall take reasonable measures to prevent soil erosion on lands adjacent to any stream(s) or body of water, natural or artificial, and to prevent siltation of waters within the project or downstream or other forms of water or air pollution resulting from construction, operation or maintenance of the project. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission may find to be necessary or appropriate for these purposes, after notice and opportunity for hearing.

Article 22. The Licensee shall install appropriate instrumentation and other devices to monitor seepage, uplift, and performance of the project structures and reservoir slopes. A plan of instrumentation and a schedule of recording instrument readings shall be filed with the Commission prior to initial filling of the upper reservoir. The Licensee shall furnish periodically to the Commission, as may be requested by the Commission or its authorized representative, a report and analysis of the instrument readings.

Article 23. Insofar as any material is dredged or excavated in the prosecution of any work authorized under the license, or in the maintenance of the project, such material shall be removed and deposited in such a manner that said removal and deposit will reasonably preserve the project environmental values and will not interfere with traffic, both land and water. Dredging and filling in a navigable water of the United States will be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 24. Whenever the United States shall desire to construct complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and its rights-of-way and such right of passage through its dams or other structures, and permit such control of pools as may be required to complete and maintain such navigation facilities.

Article 25. The operation of any navigation facilities which may be constructed as a part of or in connection with any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 26. The Licensee shall furnish free of cost to the United States power for the operation and maintenance of navigation facilities at the voltage and frequency required by such facilities and at a point adjacent thereto whether said facilities are constructed by the Licensee or by the United States.

Article 27. The Licensee shall for the protection of navigation, construct, maintain and operate at its own expense such lights and other signals on fixed structures in or over navigable waters of the United States as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 28. Timber on lands of the United States cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for and the resulting slash and debris disposed of in accordance with the requirement of the agency of the United States having jurisdiction over said lands. Payment for merchantable timber will be at current stumpage rates, and payment for young growth timber below merchantable size will

be at current damage appraisal value. However, the agency of the United States having jurisdiction may sell or dispose of the merchantable timber to others than the Licensee, with the provision that timber so sold or disposed of will be cut and removed from the area prior to or without undue interference with clearing operations of the Licensee and in coordination with his project construction schedules. Such sale or disposal to others will not relieve the Licensee of the responsibility for the clearing and disposing of all slash and debris from project lands.

Article 29. The Licensee shall do everything reasonably within its power and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned to prevent, make advance preparations for suppression, and suppress fires on the lands to be occupied or used under the license. The Licensee shall be liable for and pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the work appurtenant or accessory thereto under the license.

Article 30. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the department or agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or to the intake by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

Article 31. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 32. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other means of transportation and communication not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 33. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 34. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license,

and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 35. The Licensee shall cooperate with the United States in the disposal by the United States of mineral and vegetative materials, under the Act of July 31, 1947, 61 Stat. 681, *as amended* (30 U.S.C. § 601, *et seq.*) from lands of the United States occupied by the project or any part thereof: *Provided*, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: *Provided further*, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission, after notice and opportunity for hearing.

Article 36. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and take any such other action necessary to restore the project stream(s), lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or provide for the continued operation and maintenance of non-power facilities and fulfill such other obligations under the license as the Commission may prescribe. The Commission, in its discretion, may also terminate the license.

Article 37. The right of the Licensee and of its transferees and successors to use or occupy waters, over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 38. The Licensee shall, to the satisfaction of the Commission's authorized representative install and operate such signs, lights, sirens or other devices below the powerhouses to warn the public of fluctuations in flow from the project, and shall install such signs, lights and other safety devices above the spillway and powerhouse intakes, as may be reasonably needed to protect the public in its recreational use of project lands and waters.

Article 39. The Licensee shall operate the project reservoirs in such a manner that releases from the lower reservoir during flood flows shall be no greater than flows which would have occurred in the absence of the project.

Article 40. Licensee shall clear the project area in accordance with the Land Clearing Plan consisting of seven typewritten pages filed as Exhibit R-4 in the amended application filed July 26, 1972. Further, the Licensee shall avoid or minimize any disturbance caused by construction and maintenance of the project works to the natural, scenic, historical and recreational values of the area, blending project works with the natural view, and revegetating, stabilizing and landscaping any construction areas located outside the area of the project reservoir. Licensee shall clear and keep clear to an adequate width lands along

open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other unneeded material resulting from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of reservoirs which may die during operations of the projects shall be removed. All clearing of the lands and disposal of the material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State and local statutes and regulations.

Article 41. The Licensee shall, prior to commencement of construction, consult with the University of South Carolina to determine the extent of any archaeological survey and salvage excavations that may be necessary prior to any construction activities and provide funds in a reasonable amount for any needed surveys or salvage excavations to be conducted and completed prior to construction and/or flooding, whichever is applicable.

Article 42. Licensee shall take such measures as may be necessary for control of vectors at the project and shall seek, in this regard, the recommendations of the South Carolina Department of Health and Environmental Control. In the event of Licensee's failure to undertake effective control measures, the Commission reserves the right to order, after notice and opportunity for hearing, Licensee to take appropriate measures for the control of vectors at the project.

Article 43. Licensee shall consult and cooperate with the South Carolina Department of Health and Environmental Control, and comply with local regulations in planning and providing for the collection, storage, and disposal of solid wastes generated through public access and use of project lands and waters and, within one year after the commencement of operation of the project, shall file with the Commission a solid waste management plan which has been approved by the Department of Health and Environmental Control. This plan shall provide: (a) the location of solid waste receptacles to be provided at public areas including campgrounds, picnicking areas, and boat access areas; (b) schedules of collection for the above receptacles; (c) provisions for including in the subject plan any public use areas as they are developed; and (d) disposal sites and methods of disposal.

Article 44. Licensee, following consultation and cooperation with the Bureau of Outdoor Recreation of the U.S. Department of the Interior; the South Carolina Wildlife and Marine Resources Department; and the South Carolina Department of Parks, Recreation, and Tourism, shall study the feasibility of constructing recreation subimpoundments (reservoirs with stable water surface elevations) with adjacent access or recreation areas at suitable locations on Cannon's and Heller's Creeks, or other arms of Parr Reservoir, in lieu of reserving and developing for recreational purposes the 180.5-acre parcel on Heller's Creek at County Road 28 and the 387-acre parcel opposite Fairfield Powerhouse, as shown on Exhibit R-3 (FPC No. 1894-45). Within one year following issuance of the license, Licensee shall file, for Commission approval, revisions of Exhibit R implementing findings of the study including, but not limited to, a schedule for development of (1) said 180.5-acre and 387-acre parcels for recreational purposes, or (2) said alternative recreation subimpoundments and adjacent recreation areas for fishing, waterfowl hunting, sightseeing, and other uses. Such revisions of Exhibit R shall conform to the Commission's then existing Rules and Regulations, including the economic effect of such development on project operation.

Article 45. Licensee, following consultation with the Bureau of Outdoor Recreation of the U.S. Department of the Interior and the South Carolina Department

of Parks, Recreation, and Tourism, shall within one year following the date of issuance of the license file, for Commission approval, revisions of Exhibit R showing: (1) appropriate site development plans, construction costs, and development schedules for the scenic overlook generally as shown on Exhibit R-2 approved herein, and (2) recreation facilities additional to those proposed for the Monticello subimpoundment boat launch area, to include water supply, picnicking, and additional parking facilities, following feasibility studies.

Article 46. The Licensee shall retain a Board of three or more qualified independent consultants who have not participated substantially in the design of the proposed project works, to review the design, specifications and construction of the project for safety and adequacy. Among other things, the Board shall assess the geology of the project site and surroundings; the proposed design, specifications, and construction of the dam, powerhouse, electrical and mechanical equipment involved in water control and emergency power supply; the construction inspection program; construction procedures and progress; instrumentation; the filling schedule for the upper reservoir and plans for surveillance during the initial filling. The Licensee shall submit to the Commission copies of the Board's report on each meeting. The Licensee shall also submit a final report of the Board upon completion of the project.

Article 47. The Licensee shall, during the construction and operation of the project, continue to consult and cooperate with the Bureau of Sport Fisheries and Wildlife, the South Carolina Wildlife and Marine Resources Department, the South Carolina Pollution Control Authority, and other appropriate environmental agencies for the protection and development of the natural resources and values of the project area. The Commission reserves the right, after notice and opportunity for hearing, to require such reasonable changes in the project and its operation as may be found necessary or appropriate to preserve and promote the environment of the project area, as provided herein by Articles 11 and 14.

Article 48. Licensee shall purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to:

(a) All islands formed by the 226-foot contour of the lower reservoir and by the 425-foot contour of the upper reservoir.

(b) Shoreline lands up to the 270-foot contour or up to 50-feet, horizontal measure, from the 266-foot contour of the lower reservoir, whichever is greater; and shoreline lands up to the 430-foot contour or up to 50-feet, horizontal measure, from the 425-foot contour of the upper reservoir, whichever is greater: *Provided*, That the project boundary except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontal measure, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given:

Provided further, That the project boundary in the area of the V. C. Summer Nuclear Station shall be the 425-foot contour, as shown on Sheet 8 (FPC No. 1894), Exhibit K. Licensee within one year after completion of land acquisition shall file an Exhibit F and, for Commission approval, a revised Exhibit K.

Article 49. Following consultation with the South Carolina Wildlife and Marine Resources Department, Licensee shall file for Commission approval within six months after the date of issuance of the license its plans for a study to determine suitable plant species which would be tolerant to living in the alternately flooded and dewatered shoreline zones on Parr and Monticello reservoirs caused

by pumped storage operation of the project, for the purpose of preventing erosion and shoreline sedimentation, improving the scenic values, and improving the fish and wildlife habitat. Following completion of such study, Licensee shall file for Commission approval its proposals for implementing the findings of the study. The study report and implementation proposals shall be filed as revision to Exhibit V and shall include test plot plantings, follow-up evaluations, costs, and schedules.

Article 50. Licensee, for the purpose of monitoring and determining the quality of the aquatic environment of Parr Reservoir and Monticello Reservoir, including the 300-acre subimpoundment, so as to realize its full recreational potential, shall conduct a water quality monitoring program at selected locations for a period of five years from the date of commencement of project operation. Sampling shall be done at least monthly and include measurements of dissolved oxygen, pH, conductivity, temperature profiles, carbon dioxide, total dissolved solids, total alkalinity, total hardness, chloride, sulfate, phosphate, nitrate, BOD, COD, heavy metals, silica, calcium, magnesium, sodium, and turbidity. Annual progress reports and, within one year following conclusion of the monitoring program, a final report shall be filed showing the findings of this program together with recommendations of any need for further sampling or for proposals for maintenance or improvement of the aquatic environment to such reservoirs as shown to be desirable by the studies. The Commission reserves the right, after notice and opportunity for hearing, to require such reasonable changes in the project and its operation as may be found necessary or appropriate to maintain or improve the aquatic environment of such reservoirs, as provided herein by Articles 11 and 14.

Article 51. Licensee, at its water quality station in the Broad River downstream of Parr Reservoir, shall monitor on a continuous basis dissolved oxygen, temperature, stream flow, conductivity, and pH; and on a monthly basis, or more often if found necessary, turbidity and heavy metals. To assist the personnel of the Columbia, South Carolina, water treatment plant in the early detection of musty odors in Broad River waters, the Licensee shall include odor samples in its water quality monitoring program and, should musty odors be detected, promptly alert the Columbia water treatment plant personnel.

Article 52. The use of Monticello Reservoir as a source and repository of condenser cooling water for the 900-mW Unit 1 of the V. C. Summer Nuclear Station is hereby approved and authorized. If Licensee desires to use project lands or project waters for any other planned fossil fuel or nuclear steam-electric generating units, Licensee shall file for Commission approval an application for amendment of license, conforming to the then existing Rules and Regulations of the Commission, requesting authorization for such use or uses.

Article 53. The Licensee shall, in cooperation with the South Carolina Wildlife and Marine Resources Department and the U.S. Bureau of Sport Fisheries and Wildlife, conduct studies to determine the sport fishing potential of Parr reservoir and the 300-acre subimpoundment within Monticello reservoir, and shall develop appropriate fish management plans from these studies. Results of studies, proposals for any programs, and copies of any cooperative agreements shall be filed for Commission approval as parts of the revised Exhibit S.

Article 54. Following consultation and cooperation with the South Carolina Wildlife and Marine Resources Department and the Fish and Wildlife Service of the U.S. Department of the Interior, Licensee, within five years after issuance of the license, shall file for Commission approval a revised Exhibit S, prepared in accordance with the then existing Rules and Regulations of the Commission.

The revised Exhibit S shall include, *inter alia*, specific management plans with costs and implementation schedules, for the protection and enhancement of fish and wildlife resources affected by the project and shall be based on results of biological studies and post operational monitoring conducted to help determine such effect, as outlined in Licensee's Exhibit W. The plan shall also include plans for mitigation of waterfowl habitat loss and disruption of the Broad River Waterfowl Management Plan caused by the redevelopment of the project and shall consider the development of bottomland hardwood areas which can be shallowly flooded during hardwood dormant growth periods for the purpose of attracting waterfowl.

Article 55. Licensee shall, within one year following issuance of a license, file for Commission information an amendment to the Exhibit V, showing estimated costs of measures for preserving and enhancing the natural, historic, and scenic values and resources during the construction and operation of the project, as proposed in the Exhibit V.

Article 56. The Licensee shall make use of the Commission guidelines as issued in Order No. 414* and other recognized guidelines for treatment of transmission line rights-of-way and shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 57. The Licensee shall establish a relocation advisory service and give reasonable financial assistance to assist in the relocation of persons now located in the project area and to minimize any hardship to such persons arising from such relocation, and within six months of the date of issuance of the license and annually thereafter during the construction of the project, shall report to the Commission on the success of its efforts. The provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. § 4601, *et seq.* shall be used as a guide to implement this article.

Article 58. The Licensee shall provide, or arrange for the provision of, an access road to the nearest existing or relocated highway for those persons not displaced by the project but who have lost any access to the highways relocated as a consequence of this project. The location of such access roads shall be determined after consultation with said persons. Each access road shall be of a type and construction equivalent to existing access roads used by said person and shall be constructed without expense to said person.

Article 59. The Licensee shall commence construction of the project within one year from the effective date of the license and shall thereafter in good faith and with due diligence prosecute such construction and shall complete construction of such project works within five years from the effective date of the license.

Article 60. The Licensee shall pay the United States the following annual charge effective the first day of the month in which the order issued :

(i) For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge as determined by the

* [Editor's note : Reported, 44 FPC 1491].

Commission in accordance with the provisions of its regulations, in effect from time to time. The authorized installed capacity for such purposes is 711,040 horsepower.

(ii) For the purpose of recompensing the United States for the use, occupancy, and enjoyment of Sumter National Forest lands an amount to be established at a future date, upon Commission approval of revised Exhibit K filed pursuant to Article 48.

Article 61. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

(D) The exhibits designated and described in Paragraph (B) above are hereby approved and made a part of this license to the extent heretofore noted.

(E) Intervenors Robert A. and Martha M. Westbrook are hereby permitted to withdraw their petition to intervene.

(F) The hearing provided in our order of August 9, 1974, in this proceeding is hereby vacated.

(G) This order shall become final 30 days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313(a) of the Act, and failure to file such an application shall constitute acceptance of this license. In acknowledgment of the acceptance of this license it shall be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.

Before Commissioners: John N. Nassikas, Chairman; Albert B. Brooke, Jr., Rush Moody, Jr., William L. Springer and Don S. Smith.

TEXAS GAS TRANSMISSION CORPORATION, DOCKET NO. CP74-297

FINDINGS AND ORDER AFTER STATUTORY HEARING PERMITTING AND APPROVING
ABANDONMENT OF FACILITIES

(Issued August 28, 1974)

On May 17, 1974, Texas Gas Transmission Corporation (Applicant) filed in Docket No. CP74-297 an application pursuant to Section 7(b) of the Natural Gas Act for permission and approval to abandon approximately 10.22 miles of its Scottsville 3-inch pipeline, together with certain measuring and regulating equipment associated therewith which were constructed in 1931, all as more fully set forth in the application in this proceeding.

Applicant proposes to abandon in place a 10.22-mile portion of its Scottsville 3-inch pipeline located in Warren and Allen Counties, Kentucky, and to salvage, at a value of \$258, associated measuring and regulating equipment. The facilities to be abandoned have deteriorated to the point where they cannot be operated and meet the requirements of the Natural Gas Pipeline Safety Act of 1968 (49 U.S.C. 1671, *et seq.*) and the regulations promulgated thereunder.

The subject facilities are currently used to supply 16 farm tap or rural customers of Western Kentucky Gas Company (Western Kentucky) in Applicant's Zone 3. Western Kentucky and all the farm tap customers have agreed to the proposed abandonment and the latter have made arrangements for alternate fuels. Applicant states that there will be no change in the contract demand or the quantity entitlements of Western Kentucky in Zone 3.

56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

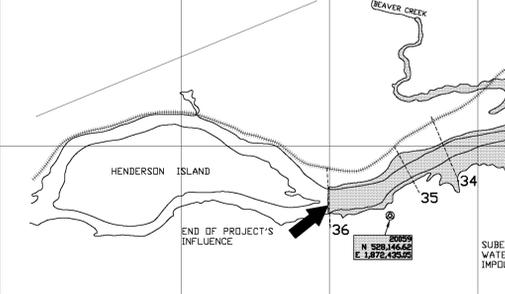
PROJECT BOUNDARY LINE ELEVATIONS FOR PARR RESERVOIR (MINIMUM)

USGS STATION NO.	DISTANCE FROM PARR DAM (FT.)	ELEVATION OF PROJECT BOUNDARY LINE (MINIMUM)	BASED ON
1	100	270.0	Flood of record (224,000 CFS) in river with Fairfield built but not operating. All Spillway Gates fully down.
2	1,000	270.0	
3	3,000	270.0	
4	6,000	270.8	
5	7,800	271.3	
6	9,850	272.1	
7	12,300	272.8	
8	14,600	274.1	
9	15,500	274.3	
10	17,700	275.3	
11	20,400	275.8	
12	25,700	276.7	
13	25,600	277.4	
14	30,600	279.2	
15	32,700	279.7	
16	35,300	270.0	40,000 CFS in river and all Fairfield units operating. All Spillway Gates fully down. (Table 4-AIS-21-74).
17	37,400	270.0	
18	40,100	270.0	
19	42,600	270.0	
20	45,300	270.0	
21	48,100	270.0	
22	49,800	270.0	
23	51,000	270.0	
24	53,600	270.2	
25	54,900	270.4	
26	55,100	270.5	
27	58,000	271.3	
28	61,000	272.2	
29	64,100	273.1	
30	66,800	274.1	
31	69,000	274.7	
32	71,600	275.3	
33	74,800	276.0	
34	76,600	276.5	
35	79,200	278.0 P.B.L. CLOSES HERE	
36	82,500	280.3	
37	87,400	282.1	
38	91,100	283.6	
39	94,800	285.6	

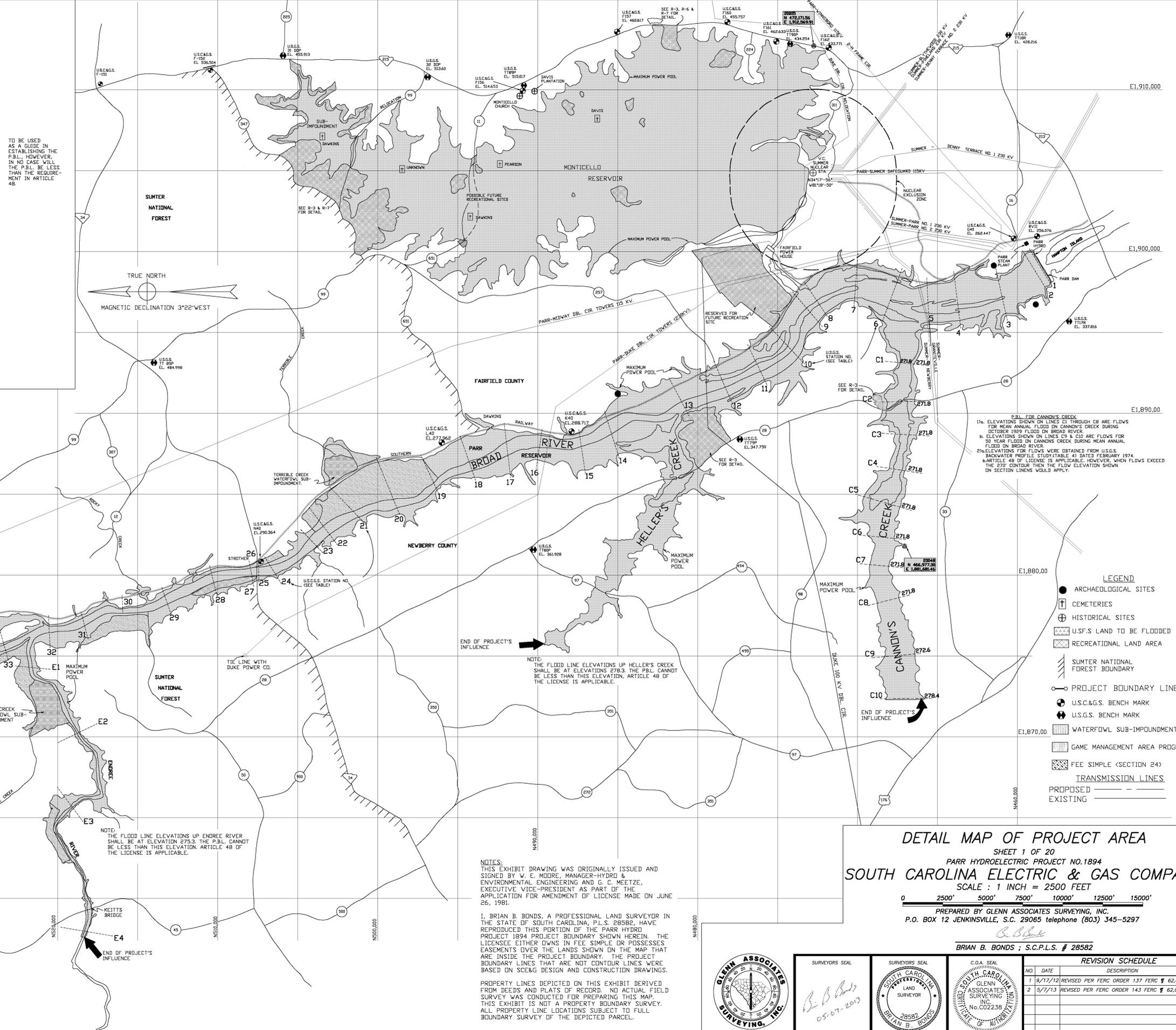
ARTICLE 48 OF THE F.P.C. LICENSE STATES THAT ON THE PARR RESERVOIR, WE SHALL DOWN IN FEE AND INCLUDE WITHIN THE P.B.L. ALL LANDS UP TO THE 270 FOOT CONTOUR OR UP TO 50 FEET, HORIZONTAL MEASURE, FROM THE 266 FOOT CONTOUR, WHICHEVER IS GREATER. ALL P.B.L. SHALL BE RUN IN STRAIGHT LINE SEGMENTS EQUAL TO OR SLIGHTLY GREATER THAN ELEVATIONS SHOWN. HOWEVER, THE P.B.L. SHALL NOT EXCEED 200 FEET, HORIZONTAL MEASURE, FROM THE 266 FOOT CONTOUR UNLESS IT CAN BE JUSTIFIED.

Federal Acreage Occupied by the Project Boundary

Drawing No.	Tract No.	Federal Acreage (Flowage Easement)	SCE&G Owned Section 24 Lands (Fee Simple)
K-14	193	-	72.14
K-17	198	17.88	-
K-15/16	200	120.55	25.35
K-14	211	-	26.13
K-13	213	-	28.26
K-10/13	214	-	390.65
K-17	226	3.09	-
K-16/17	227	12.52	-
K-17	232	3.14	-
K-17	248	0.33	-
K-17	264	0.93	-
K-15	266	0.05	-
K-10	271	4.12	-
Total		162.61	542.53



- NOTES:**
- ON THE MONTICELLO RESERVOIR & SUB-IMPONDEMENT THE PROJECT BOUNDARY LINE IS GENERALLY A MAXIMUM 800 FEET FROM THE 450' CONTOUR EXCEPT IN RECREATIONAL AREAS OR DEEMED NECESSARY BY FIELD INSPECTION (SEE "K" SHEETS 2-20 FOR DETAILS).
 - THE P.B.L. AROUND PARR RESERVOIR IS GENERALLY ALONG THE FLOOD OF RECORD AS ADJUSTED FOR THE INFLUENCE OF PARR DAM, AS INDICATED ON TABLE THIS SHEET.
 - ALL LANDS WITHIN THE PROJECT BOUNDARY LINE ARE OWNED IN FEE SIMPLE BY SOUTH CAROLINA ELECTRIC AND GAS COMPANY, UNLESS OTHERWISE SHOWN ON K-2 THRU K-17.
 - PROJECT BOUNDARY LINE IS NOT SHOWN ON THIS SHEET, EXCEPT IN RECREATIONAL AREAS, BUT IS SHOWN IN DETAIL ON SHEETS K-2 THRU K-20.
 - ELEVATIONS SHOWN CORRECTED ACCORDING TO RECENT SURVEY BASED ON U.S.C&G.S.M.S.L.
 - SOUTHERN RR. R/W IS EXCLUDED FROM PROJECT, EXCEPT TO THE EXTENT OF FLOWAGE RIGHTS (SEE EXHIBIT "F").
 - NO TREES ARE TO BE CUT ON AREAS INDICATED AS ISLANDS OR RECREATIONAL AREAS.
 - CO-ORDINATES SHOWN ARE BASED ON THE STATE GRID SYSTEM.



TO BE USED AS A GUIDE IN ESTABLISHING THE P.B.L., HOWEVER, IN NO CASE WILL THE P.B.L. BE LESS THAN THE REQUIREMENT IN ARTICLE 48.



P.B.L. FOR CANNON'S CREEK
 1. ELEVATIONS SHOWN ON LINES C1 THROUGH C8 ARE FLOWS FOR MEAN ANNUAL FLOOD ON CANNON'S CREEK DURING OCTOBER 1999 FLOOD ON BROAD RIVER.
 2. ELEVATIONS SHOWN ON LINES C9 & C10 ARE FLOWS FOR 50 YEAR FLOOD ON CANNON'S CREEK DURING MEAN ANNUAL FLOOD ON BROAD RIVER.
 3. ELEVATIONS FOR FLOWS WERE OBTAINED FROM U.S.G.S. BACKWATER PROFILE STUDY (TABLE 4) DATED FEBRUARY 1974. ARTICLE 48 OF LICENSE IS APPLICABLE. HOWEVER, WHEN FLOWS EXCEED THE 270' CONTOUR THEN THE FLOW ELEVATION SHOWN ON SECTION LINES WOULD APPLY.

- LEGEND**
- ARCHAEOLOGICAL SITES
 - CEMETERIES
 - HISTORICAL SITES
 - U.S.F.S. LAND TO BE FLOODED
 - RECREATIONAL LAND AREA
 - SUMTER NATIONAL FOREST BOUNDARY
 - PROJECT BOUNDARY LINE
 - U.S.C.&G.S. BENCH MARK
 - U.S.G.S. BENCH MARK
 - WATERFOWL SUB-IMPONDEMENTS
 - GAME MANAGEMENT AREA PROGRAM
 - FEE SIMPLE (SECTION 24)
 - TRANSMISSION LINES
 - PROPOSED
 - EXISTING

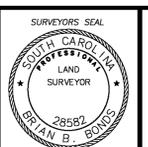
NOTES:
 THIS EXHIBIT DRAWING WAS ORIGINALLY ISSUED AND SIGNED BY W. E. MOORE, MANAGER-HYDRO & ENVIRONMENTAL ENGINEERING AND G. C. MEETZE, EXECUTIVE VICE-PRESIDENT AS PART OF THE APPLICATION FOR AMENDMENT OF LICENSE MADE ON JUNE 26, 1981.

I, BRIAN B. BONDS, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF SOUTH CAROLINA, P.L.S. 28582, HAVE REPRODUCED THIS PORTION OF THE PARR HYDRO PROJECT 1894 PROJECT BOUNDARY SHOWN HEREIN. THE LICENSEE EITHER OWNS IN FEE SIMPLE OR POSSESSES EASEMENTS OVER THE LANDS SHOWN ON THE MAP THAT ARE INSIDE THE PROJECT BOUNDARY. THE PROJECT BOUNDARY LINES THAT ARE NOT CONTOUR LINES WERE BASED ON SCE&G DESIGN AND CONSTRUCTION DRAWINGS.

PROPERTY LINES DEDICATED ON THIS EXHIBIT DERIVED FROM DEEDS AND PLATS OF RECORD. NO ACTUAL FIELD SURVEY WAS CONDUCTED FOR PREPARING THIS MAP. THIS EXHIBIT IS NOT A PROPERTY BOUNDARY SURVEY. ALL PROPERTY LINE LOCATIONS SUBJECT TO FULL BOUNDARY SURVEY OF THE DEPICTED PARCEL.

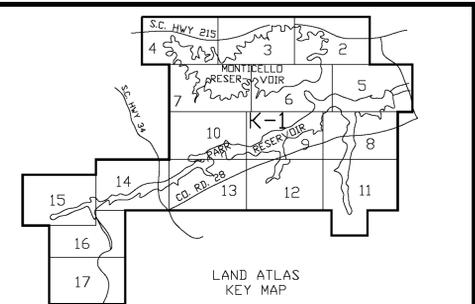
DETAIL MAP OF PROJECT AREA
 SHEET 1 OF 20
 PARR HYDROELECTRIC PROJECT NO. 1894
SOUTH CAROLINA ELECTRIC & GAS COMPANY
 SCALE : 1 INCH = 2500 FEET
 0 2500' 5000' 7500' 10000' 12500' 15000'
 PREPARED BY GLENN ASSOCIATES SURVEYING, INC.
 P.O. BOX 12 JENKINSVILLE, S.C. 29065 telephone (803) 345-5297

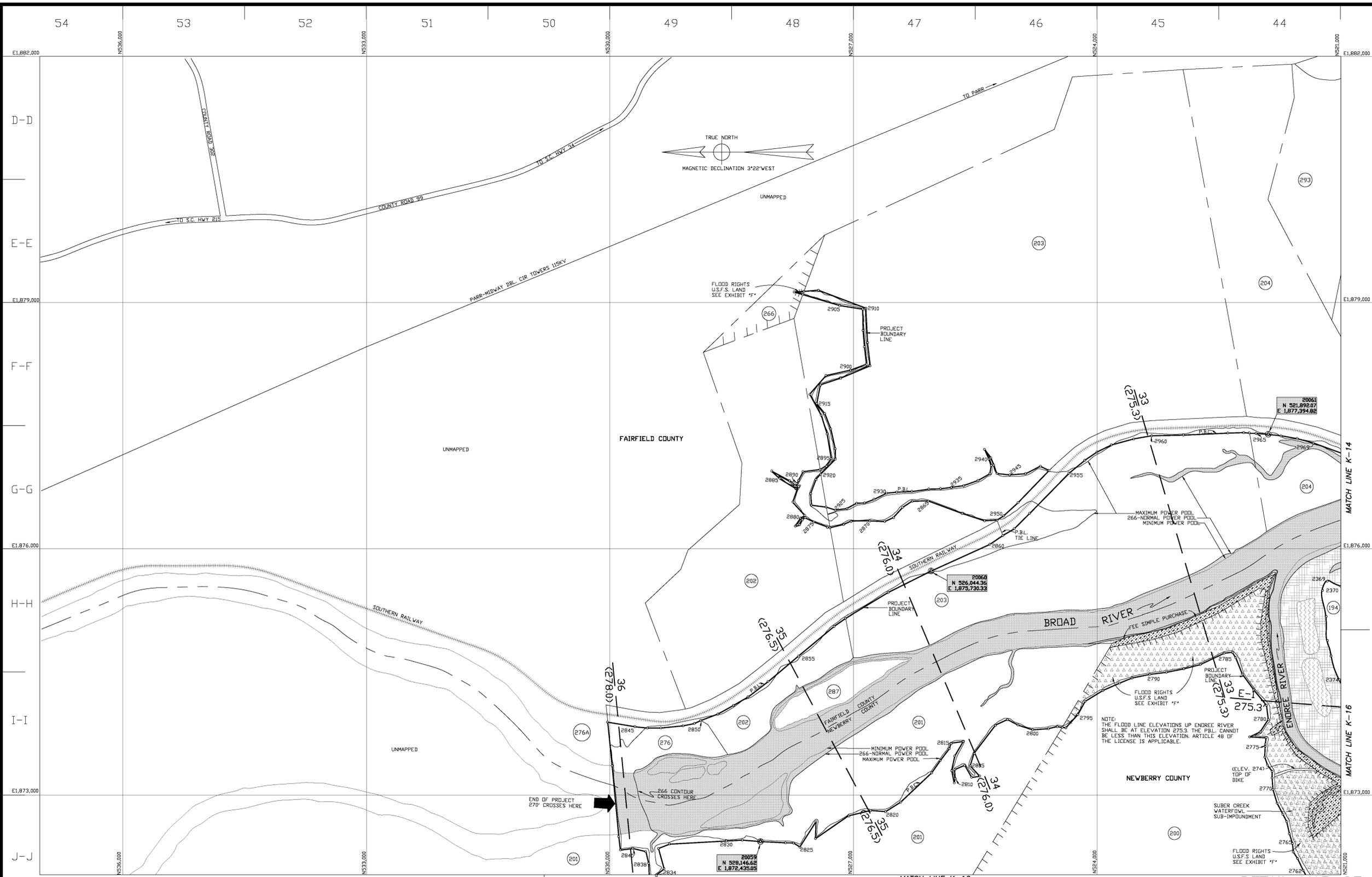
BRIAN B. BONDS ; S.C.P.L.S. # 28582



REVISION SCHEDULE

NO.	DATE	DESCRIPTION	CHECKED
1	9/17/12	REVISED PER FERC ORDER 137 FERC # 62,033	BBB
2	5/7/13	REVISED PER FERC ORDER 143 FERC # 62,095	BBB





ORIGINAL NOTES:

1. ALL PROPERTY WITHIN THE PROJECT BOUNDARY LINE IS OWNED IN FEE SIMPLE BY S.C.E.&G. CO. UNLESS OTHERWISE SHOWN ON EXHIBIT "F".
2. ALL PROPERTIES & PROPERTY LINES WERE SHOWN OUTSIDE P.B.L. AS A CONVENIENCE FOR HISTORICAL PURPOSES FOR S.C.E.&G. CO.
3. DETAILED DESCRIPTION FOR PROJECT BOUNDARY LINE IS SHOWN ON SHEETS K-18 THRU K-20.
4. LAND PARCELS ARE KEPT FOR EXHIBIT "F" BY ENCIRCLED NUMBERS. EX (3)
5. LANDS ABUTTING P.B.L. ON THE EXTERIOR ARE IN PRIVATE OWNERSHIP UNLESS SHOWN OTHERWISE ON EXHIBIT "F".
6. CO-ORDINATES SHOWN ARE BASED ON THE STATE GRID SYSTEM (NAD27)
7. ELEVATIONS SHOWN ARE BASED ON THE U.S.C.&G.S. DATA (M.S.L.)
8. THE P.B.L. AROUND PARR RESERVOIR IS GENERALLY ALONG THE CONTOUR OF THE FLOOD OF RECORD AS ADJUSTED TO ACCOUNT FOR THE INFLUENCE OF PARR DAM, AS INDICATED ON EXHIBIT K-1.
9. ALL ISLANDS ARE TO REMAIN IN THEIR NATURAL STATE.
10. SOUTHERN R.R. R/W IS EXCLUDED FROM PROJECT, EXCEPT TO THE EXTENT OF FLOWAGE RIGHTS. SEE EXHIBIT "F".

NOTES:

THIS EXHIBIT DRAWING WAS ORIGINALLY ISSUED AND SIGNED BY W. E. MOORE, MANAGER-HYDRO & ENVIRONMENTAL ENGINEERING AND G. C. MEETZE, EXECUTIVE VICE-PRESIDENT AS PART OF THE APPLICATION FOR AMENDMENT OF LICENSE MADE ON JUNE 26, 1981.

I, BRIAN B. BONDS, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF SOUTH CAROLINA, P.L.S. 28582, HAVE REPRODUCED THIS PORTION OF THE PARR HYDRO PROJECT 1894 PROJECT BOUNDARY SHOWN HEREIN. THE LICENSEE EITHER OWNS IN FEE SIMPLE OR POSSESSES EASEMENTS OVER THE LANDS SHOWN ON THE MAP THAT ARE INSIDE THE PROJECT BOUNDARY. THE PROJECT BOUNDARY LINES THAT ARE NOT CONTOUR LINES WERE BASED ON SCE&G DESIGN AND CONSTRUCTION DRAWINGS.

PROPERTY LINES DEPICTED ON THIS EXHIBIT DERIVED FROM DEEDS AND PLATS OF RECORD. NO ACTUAL FIELD SURVEY WAS CONDUCTED FOR PREPARING THIS MAP. THIS EXHIBIT IS NOT A PROPERTY BOUNDARY SURVEY. ALL PROPERTY LINE LOCATIONS SUBJECT TO FULL BOUNDARY SURVEY OF THE DEPICTED PARCEL.

LEGEND

- ARCHAEOLOGICAL SITES
- ⊕ CEMETERIES
- ⊕ HISTORICAL SITES
- ⊕ U.S.F.S. LAND TO BE FLOODED
- ⊕ RECREATIONAL LAND AREA
- ▨ SUMTER NATIONAL FOREST BOUNDARY
- PROJECT BOUNDARY LINE
- ⊕ U.S.C.&G.S. BENCH MARK
- ⊕ U.S.G.S. BENCH MARK
- ▨ WATERFOWL SUB-IMPOUNDMENTS
- ▨ GAME MANAGEMENT AREA PROGRAM
- ▨ FEE SIMPLE (SECTION 24)
- TRANSMISSION LINES
- PROPOSED
- EXISTING

DETAIL MAP OF PROJECT AREA

SHEET 15 OF 20

PARR HYDROELECTRIC PROJECT NO. 1894

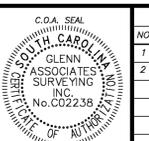
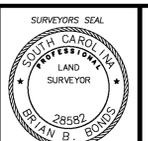
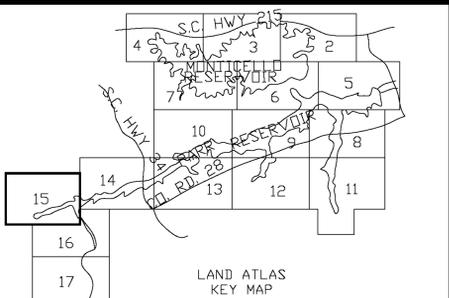
SOUTH CAROLINA ELECTRIC & GAS COMPANY

SCALE : 1 INCH = 500 FEET

0 500' 1000' 1500' 2000' 2500' 3000'

PREPARED BY GLENN ASSOCIATES SURVEYING, INC.
P.O. BOX 12 JENKINSVILLE, S.C. 29065 telephone (803) 345-5297

BRIAN B. BONDS ; S.C.P.L.S. # 28582



REVISION SCHEDULE				
NO.	DATE	DESCRIPTION	CHECKED	
1	9/17/12	REVISED PER FERC ORDER 137 FERC # 62,033	BBB	
2	5/7/13	REVISED PER FERC ORDER 143 FERC # 62,095	BBB	

ATTACHMENT 3

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

May 4, 2015

Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way Mail Code A221
Cayce, South Carolina 29033-3701

Re: Relicensing FERC Project 1894

Dear Bill:

Thank you for your letter dated March 18, 2015. Could you please provide me with copies of the list of the property acquisitions, designated as Exhibit F, and the property maps depicting the PBL, designated as Exhibit K to the Project's license that were filed with FERC on June 26, 1981 as well as FERC's order dated August 19, 1981 approving both exhibits, as referenced in the second page of said letter?

Sincerely,



William B. Hendrix, Jr.

ATTACHMENT 4



May 27, 2015

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated May 4, 2015

Dear Mr. Hendrix:

I am responding to your letter dated May 4, 2015 requesting additional information concerning the Federal Energy Regulatory Commission's (FERC) establishment of the Project boundary line (PBL) of the Parr Reservoir. As noted in my previous letter dated March 18, 2015, the Company considers establishment of the PBL fully resolved. The Company has acquired all property rights along the shores of the Parr Reservoir and its tributaries which remain necessary for the operation and maintenance of FERC Project No. 1894. There is no reason to revisit the matter as the reservoir was established in conformity with the specific obligations set forth in the Project's license and has been approved by FERC. Moreover, even if the Company were to see a need in the future to reexamine the placement of the PBL, any property removed from the PBL with the FERC approval would then become non-Project lands and precluded from the jurisdiction of the FERC. In reference to your request for various documents, we must respectfully decline that request. We consider this matter closed and are unwilling to expend additional time and resources retrieving documents for you on this matter.

If you have any further questions, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,

A handwritten signature in blue ink that reads "William Argentieri". The signature is fluid and cursive.

William Argentieri, Manager Civil Engineering
Fossil/Hydro Technical Services

c: H. E. Delk, Jr./PH File
J. H. Hamilton/ J. Stuckey

ATTACHMENT 5

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

July 22, 2016

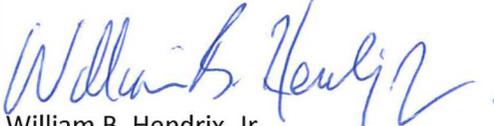
Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way Mail Code A221
Cayce, South Carolina 29033-3701

Re: Relicensing FERC Project 1894
Request for Study Request

Dear Mr. Argentieri:

Could you please provide me with the status of the Request for Information and Study Request, in regard to the above-referenced Project, which I submitted to your office in June of 2015?

Sincerely,



William B. Hendrix, Jr.

ATTACHMENT 6



August 8, 2016

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated July 22, 2016

Dear Mr. Hendrix:

In your letter dated July 22, 2016, you asked the status of our response to your June 9, 2015 comments to the Pre-Application Document (PAD). The following paragraph sets out our current thinking on that matter.

In your June 9, 2015 letter, you requested that there be a new study to determine the Project boundary of the Parr Hydroelectric Project. The current Project boundary was determined and lands were acquired in accordance with the FERC license Article 48 and approved by the FERC by letter dated August 19, 1981 (16 FERC ¶62,250). There is nothing apparently deficient in the proceedings associated with SCE&G's compliance with the Article 48 in regards either to the establishment of the Project Boundary or the acquisition of properties necessary and appropriate to meet the license requirements. Hence, there is no apparent need to conduct another study. Even were that not so, and were there to be the discovery of some basis for concluding that some of the properties acquired then for the Project are not now essential to the Project, there is no basis for requiring SCE&G to give up ownership and control of that property, through sale or otherwise. All lands acquired by SCE&G based on the original hydraulic study were done so by purchasing the land at negotiated, fair market prices from the property owners and not by condemnation. Nevertheless, to be absolutely sure that we give full and fair consideration of all comments received, we are still evaluating the following: 1) any technical deficiencies in the work supporting the Project Boundary establishment that might create a necessity to conduct another hydraulic flow study; 2) how any new study would further the resource goals and objectives; 3) how possible new restrictions due to environmental considerations such as reservoir fluctuations or downstream flows, which are being discussed during the current relicensing process, could require this land to be inundated more frequently than is currently the case; and 4) concerns raised by the resource agencies during recreation and shoreline management relicensing meetings relating to removal of lands from the Project boundary. Once we have thoroughly considered these factors, responses to your PAD comments will be composed and included in the license application along with responses to all other PAD comments received.

Mr. William B. Hendrix, Jr.
Parr Hydroelectric Project, FERC Project No.1894
Response to letter dated July 22, 2016
Page 2

If you have any further questions, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,



William Argentieri, Civil Engineering Manager
Fossil/Hydro Technical Services

c: H. E. Delk, Jr./PH File
J. H. Hamilton/ J. Stuckey

ATTACHMENT 7

William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

August 17, 2016

Mr. William R. Argentieri, P.E.
Manager of Civil Engineering
South Carolina Electric & Gas Company
220 Operation Way Mail Code A221
Cayce, South Carolina 29033-3701

Re: Relicensing FERC Project 1894

Dear Mr. Argentieri:

Thank you for your letter dated August 8, 2016. I do have one question that I would appreciate your help clarifying. In your letter you state, "All lands acquired by SCE&G based on the original hydraulic study were done so by purchasing the land at negotiated, fair market prices from the property owners and not by condemnation." Is this original hydraulic study you are referencing one in the same as the USGS backwater study that we have discussed before and is referenced throughout the Exhibit K documents for this project? Is this original hydraulic study the same document you reference in your E-mail to me of October 30, 2014 stating, "...even though I cannot find the final report, the USGS backwater study drawings have enough information on them to help us understand the reasoning used to determine the location of the Parr Reservoir project boundary line. " ?

I look forward to hearing back from you.

Sincerely,

A handwritten signature in black ink that reads "William B. Hendrix, Jr." in a cursive style.

William B. Hendrix, Jr.

ATTACHMENT 8



August 30, 2016

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Re: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No.1894
Response to letter dated August 17, 2016

Dear Mr. Hendrix:

In your letter dated August 17, 2016, you asked for clarification of terminology used in previous letters and emails regarding a hydraulic study and USGS backwater study. The term hydraulic study is referring to the USGS backwater study document.

If you have any further questions, please contact me at (803) 217-9162 or bargentieri@scana.com.

Very truly yours,

A handwritten signature in blue ink that reads "William Argentieri". The signature is fluid and cursive.

William Argentieri, Civil Engineering Manager
Fossil/Hydro Technical Services

c: H. E. Delk, Jr./PH File
J. H. Hamilton/ J. Stuckey

ATTACHMENT 9

1.155

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764
COLUMBIA, SOUTH CAROLINA 29218

GRAYSON C. MEETZE
EXECUTIVE VICE PRESIDENT
OPERATIONS

June 26, 1981

The Honorable Kenneth F. Plumb
The Secretary
Federal Energy Regulatory Commission
825 N. Capitol Street, N. E.
Washington, DC 20426

Dear Secretary Plumb:

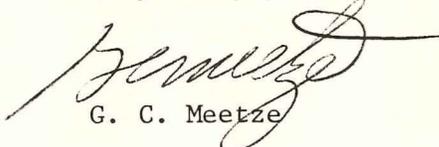
Subject: PWR-LP
Project 1894
South Carolina Electric & Gas Company
License Articles Nos. 6 and 48

The South Carolina Electric and Gas Company herewith files 14 complete sets of its completed Exhibits F and K in accordance with License Articles Nos. 6 and 48.

My Company's understanding concerning the processing of these exhibits is that after any deficiencies identified by your staff are satisfied, the Commission will notify me that the exhibits are acceptable and will request microfilm copies for the Commission's files. This is in lieu of the past practice of the licensee filing the original mylar.

Should you or others of the Commission staff have any questions for my Company concerning these exhibits, please contact Mr. W. E. Moore.

Very truly yours,



G. C. Meetze

WEM:rm

Enclosures

CC: Messrs. A. O. Kauranen (FERC Regional Engineer, Atlanta) - w/attachment
H. M. Bryant - w/attachment

Exh. K-2 Index	Tract No.	SCE&G Drawing No.	From Whom Acquired	Acreage Acquired in Fee		Date Acquired	Recorded in Plat Book		County
				Inside PBL	Outside PBL		Book	Page	
R-14	1	B-14877	Ruby Martin		Non-Project				Fairfield
R-14	2	B-14872	F. L. Baten		Non-Project				Fairfield
R-14	3	B-14874	W. M. Baten		Non-Project				Fairfield
R-14	4	B-14875	James Baten	6.32		1/18/73	9	2	Fairfield
R-14	5	B-14730	Alphonse Baten	17.21		1/18/73	9	3	Fairfield
S-15	6	B-14727	Alean Baten	0.71		1/17/77	9	148	Fairfield
R-15	7	B-14728	Celese Cook	38.47		2/1/73	FH	237	Fairfield
R-16	8	B-14731	Delilah Baten	37.73		1/24/74	9	30	Fairfield
Q-14	17	B-14878	J. H. Guignard	1.37		11/5/76	9	134	Fairfield
Q-15	20	B-14897	Anna Bell Willingham	6.31		3/8/73	9	8	Fairfield
P-15	21	B-14908	E. L. Ginyard	0.15		12/12/72	FH	221	Fairfield
Q-16	22	B-14906	Catawba Timber Co.	62.21		3/13/73	9	15	Fairfield
P-15	23	B-14905	Elmer Pearson	18.32		4/23/73	FH	226	Fairfield
P-15	24	B-14909	H. B. Lyles	0.23		12/26/78	FI	316	Fairfield
P-16	25	B-14913	Frank Willingham	71.69		5/1/73	9	9	Fairfield
O-16	26	B-14912	Ella C. Wilburn	121.30		5/30/73	FH	220	Fairfield
N-9	33	B-14953	Catawba Timber Co.	120.27	1.80	1/22/73	FH	230	Fairfield
L-15	35	B-14968	Geddings H. Crawford, Est.	773.78		2/17/77	9	236	Fairfield
O-13	36	B-14970	Patsie McLeod	75.06		8/13/73	FH	217	Fairfield
N-10	37	B-14967	Champion Paper Co.	294.90		12/17/75	9	40	Fairfield
O-12	38	B-14972	Mose White	61.94		4/19/73	9	13	Fairfield
O-14	39	B-14973	J. B. Martin, Est.	135.45		7/22/74	9	130	Fairfield
P-13	40	B-14975	Francis Carter	44.86		2/24/76	9	131	Fairfield
Q-13	41	B-14974	David "Tom" Martin	37.18		6/26/72	FH	185	Fairfield
P-10	42	B-14979	Eloise Thompson		Non-Project				Fairfield
P-10	43	B-14980	John Henry Martin	1.25		8/26/72	7	296	Fairfield
P-10	44	B-14981	Julia Mae Curtis	8.98		8/26/72	7	298	Fairfield
P-11	45	B-14982	Sarah Hollins	8.42		8/10/72	FH	224	Fairfield
P-11	46	B-14983	Ernestine Rabb	8.67		7/7/72	FH	223	Fairfield
P-11	47	B-14984	Walker Martin, Jr.	0.47		11/30/76	FH	216	Fairfield
L-11	48	B-15395	S.C.E. & G. Co.	831.32	16.64	5/27/77	9	179	Fairfield
M-7	56	B-14990	Booker T. Martin	76.70	201.51	5/4/73	9	99	Fairfield
O-10	57	B-14995	Abraham Martin	55.98	0.04	12/22/72	FH	222	Fairfield
P-12	60	B-15220	Arthur Kennedy Tract 2	160.31		12/28/73	9	25	Fairfield
P-11	62	B-14999	Minnie White	1.03		10/31/74	FH	229	Fairfield
P-11	63	B-14997	O'Dell Cook	1.00		8/6/73	FH	228	Fairfield
P-11	64	B-15001	Irvin Rikard	1.00		8/31/73	FH	227	Fairfield
O-11	65	B-15000	Charley Lyles	1.00		8/17/73	9	20	Fairfield

Exh. K-2 Index	Tract No.	SCE&G Drawing No.	From Whom Acquired	Acreage Acquired in Fee		Date Acquired	Recorded in Plat Book		County
				Inside PBL	Outside PBL		Book	Page	
O-11	66	B-14998	Roosevelt Stark	0.81		11/28/72	FH	215	Fairfield
Q-10	72	B-15009	Booker T. Martin	21.54		4/19/76	9	111	Fairfield
R-12	90	B-15139	Booker T. Martin	0.44		8/21/78	GS	296	Fairfield
R-12	91	B-15115	White Hall Church (A.M.E.)	Non-Project					Fairfield
R-12	92	B-15138	Plumie Martin	10.98		10/25/77	9	211	Fairfield
R-13	94	B-15096	Masonic Lodge	Non-Project					Fairfield
R-14	95	B-15097	Hattie Young (Tract No. 11)	Non-Project					Fairfield
R-14	96	B-15134	S. W. & Douglas Martin	18.01	21.72	7/5/75	9	225	Fairfield
R-14	97	B-15098	Mario Hollins, Jr.	Non-Project					Fairfield
R-14	98	B-15099	Elizabeth Hollins	Non-Project					Fairfield
R-14	99	B-15127	Maceo Hollins (Liquor St.)	0.79		12/28/73	9	228	Fairfield
R-14	100	B-15100	James Burns	Non-Project					Fairfield
R-14	101	B-15215	Hezakiah Burns	1.73		12/28/77	GS	295	Fairfield
R-14	102	B-15101	Maceo Hollins, Jr.	Non-Project					Fairfield
R-13	103	B-15102	Maceo Hollins (Home Pl.)	0.24		12/30/77	9	227	Fairfield
R-14	104	B-15103	Sam Mills	Non-Project					Fairfield
R-14	105	B-15104	Laura Burns	Non-Project					Fairfield
R-13	106	B-15244	Hattie Young (Tract No. 2)	3.12		11/24/76	9	136	Fairfield
O-9	114	B-15136	Alec Harper (Thomas)	13.85	9.66	5/6/74	9	100	Fairfield
R-13	115	B-15216	R. A. Hollins (Tract "A")	3.91		2/21/77	9	168	Fairfield
Q-13	116	B-15180	Arthur Kennedy (Tract 1)	36.65		12/28/73	9	26	Fairfield
R-13	117	B-15783	Hattie Young (Tract 3)	17.66		11/24/76	9	137	Fairfield
R-13	119	B-15185	Eugene & Wendell Martin	Non-Project					Fairfield
R-12	122	B-15217	S. W. Martin	17.92	3.20	7/9/75	FH	188	Fairfield
R-13	125	B-15186	Marion & Wilhemena Hollins	0.56		6/24/77	FH	187	Fairfield
R-13	126	B-15184	Geneva Feaster	Non-Project					Fairfield
R-13	127	B-15187	R. A. Hollins (Tract "B")	0.69		2/21/77	FH	186	Fairfield
Q-14	129	B-15265	Silas Crumpton	0.46		9/8/75	FH	184	Fairfield
Q-15	130	B-15262	John Willingham	2.72		8/31/73	FH	189	Fairfield
P-10	144	B-15996	Viola Spencer	8.86	14.68	7/1/74	9	59	Fairfield
P-10	145	B-15997	John Alexander Martin	0.20	0.46	8/24/76	FH	183	Fairfield
R-13	147	B-18450	R. A. Hollins (Tract "C")	Non-Project					Fairfield
R-14	148	B-18976	Maceo Hollins	Non-Project					Fairfield
P-10	F	B-17616	Family Reloc. Lot-Walker Martin	Non-Project					Fairfield
P-10	G	B-17617	Family Reloc. Lot-	Non-Project					Fairfield
P-10	H	B-17618	Family Reloc. Lot-	Non-Project					Fairfield
P-10	I	B-17619	Family Reloc. Lot-	Non-Project					Fairfield
Q-14	S	B-19023	Family Reloc. Lot-Ed.L. Keller	Non-Project					Fairfield

Exh. K-3 Index	Tract No.	SCE&G Drawing No.	From Whom Acquired	Acreage Acquired in Fee		Date Acquired	Recorded in Plat Book		County
				Inside PBL	Outside PBL		Book	Page	
R-16	8		See Exh.F-Ref.Exh.K-2 Sht. 1						Fairfield
S-16	9	B-14720	Jule Thompson	Non-Project					Fairfield
Q-18	10	B-14876	Geddings H. Crawford, Est.	580.87	58.43	2/17/77	FH	233	Fairfield
Q-20	11	B-14695	C. T. McGill	46.31		2/9/73	FH	235	Fairfield
R-21	12	B-14702	Mrs. Roberta R. Abrahamson	1.43		3/25/75	FH	225	Fairfield
P-21	13	B-14699	J. L. Robinson	45.28		6/8/74	FH	234	Fairfield
O-21	14	B-14697	Irvan Robinson	169.37		6/7/74	9	42	Fairfield
O-22	15	B-14700	W. R. Robinson	309.93		12/9/74	9	99-61	Fairfield
P-20	18	B-14889	Wade Herndon Estate	197.83		3/7/73	FH	232	Fairfield
Q-16	22		See Exh.F-Ref.Exh.K-2 Sht. 1						Fairfield
P-16	25		See Exh.F-Ref.Exh.K-2 Sht. 1						Fairfield
O-16	26		See Exh.F-Ref.Exh.K-2 Sht. 1						Fairfield
N-18	34	B-14936	J. B. Frazier, III	373.51		12/7/73	9	23	Fairfield
L-15	35		See Exh.F-Ref.Exh.K-2 Sht. 1						Fairfield
O-14	39		See Exh.F-Ref.Exh.K-2 Sht. 1						Fairfield
K-19	49	B-15284	Champion Paper Co.	1289.63	339.98	12/17/75	8-23 8-150	11	Fairfield
M-27	53	B-15133	Monticello Farms	58.70		2/24/75	FH	196	Fairfield
S-18	59	B-15023	Ravenel Keller, Sr.	10.74		8/8/77	FH-215		Fairfield
N-24	61	B-15109	C. H. Burley	57.66		4/15/76	9	110	Fairfield
M-24	67	B-15149	Josie McMeekin	217.98		8/26/75	9	86	Fairfield
S-16	68	B-19113	Westvaco Tract	Non-Project					Fairfield
S-17	75	B-15029	Russell White	0.48		12/8/76	9	159	Fairfield
S-18	76	B-15024	Edward Lee Keller	0.85		11/24/77	FH	236	Fairfield
S-18	77	B-15025	Lark Keller	0.85		8/8/77	9	201	Fairfield
S-18	78	B-15026	David Stone	0.41		1/14/77	FH	214	Fairfield
S-18	79	B-15027	Robert Anthony	0.57		12/20/76	FH	213	Fairfield
S-18	80	B-15028	James White	0.16		12/8/76	9	158	Fairfield
S-17	86	B-15041	Salley Ruth Thompson	0.98		8/8/77	9	202	Fairfield
S-17	87	B-15042	Ravenell Keller, Jr.	Non-Project					Fairfield
S-18	88	B-15043	Clementine Bowman	Non-Project					Fairfield
P-25	107	B-15107	Joe C. Burley	Non-Project					Fairfield
O-25	108	B-15111	M. H. Burley (Tract No. 1)	Non-Project					Fairfield
P-24	109	B-15110	M. H. Burley (Tract No. 2)	Non-Project					Fairfield
N-26	113	B-15398	Monticello Farms	90.51		2/24/75	GS	290	Fairfield
N-25	118	B-15165	C. L. Fuller	3.79		10/6/76	9	139	Fairfield
P-24	121	B-15160	Marie B. Burley	0.77		9/13/77	9	207	Fairfield
P-28	132	B-15287	E. K. Rabb (Tract 1)	2.23		2/24/75	FH	194	Fairfield
M-23	143	B-15732	Ida B. Long Tract 2	27.81		1/6/76	FH	206	Fairfield

Exh. K-8 Index	Tract No.	SCE&G Drawing No.	From Whom Acquired	Acreage Acquired in Fee		Date Acquired	Recorded in Plat Book		County
				Inside PBL	Outside PBL		Book	Page	
F-1	151A	B-15845	James M. Miller	Non-Project					Newberry
G-2	152		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
E-4	153		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
E-4	154		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
E-5	155		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
E-6	156		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
F-7	157		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
E-7	158	B-15934	Stuart C. Hope; James H. Hope, Jr.; Martha H. Tennant; J. Julian Hope; Francis M. Hope; Dorothy Edwards & Ruth Hope Ogden	4.07		1/30/78	AS	88	Newberry
E-7	159	B-15935	Stewart C. Hope, James H. Hope & Martha H. Tennant	2.26		1/30/78	AS	89	Newberry
D-7	161	B-15937	W. D. Summers	12.26		1/29/77	AS	90	Newberry
C-6	162	B-15966	Stuart C. Hope; James H. Hope, Jr.; Martha H. Tennant; J. Julian Hope; Francis M. Hope; Dorothy Edwards & Ruth Hope Ogden	0.04		1/23/78	AS	91	Newberry
B-7	163	B-15938	Willie Mae Eargle, Mary F. Mathis, Leola S. Johnson & W. D. Summers, Jr.	27.99		1/29/77	AS	92	Newberry
C-6	163A	B-15939	Mattie B. Summers	1.49		1/29/77	AS	93	Newberry
A-6	164	B-15940	William S. Hentz	8.97		4/13/76	AS	94	Newberry
BB-7	165	B-16010	David Sims	6.27		8/3/76	AS	95	Newberry
BB-10	172	B-18396	H. M. Hentz	235.68	9/2/76	4/13/76	AY	11	Newberry
B-10	173	B-15944	M. O. Mayer	37.272		9/23/77	AS	101	Newberry
E-9	174		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
D-9	174A	B-15946	Hobbs Cemetery	Non-Project					Newberry
E-10	175		See Exh.F-Ref.Exh.K-5 Sht. 1						Newberry
D-11	176	B-15948	T. D. Jacobs	12.63		9/1/76	AS	103	Newberry
D-5	221	B-15963	David	Non-Project					Newberry
E-11	245		See Exh.F-Ref.Exh.K-6 Sht. 1						Newberry
E-11	246		See Exh.F-Ref.Exh.K-6 Sht. 1						Newberry

Exh. K-9 Index	Tract No.	SCE&G Drawing No.	From Whom Acquired	Acreage Acquired in Fee		Date Acquired	Recorded in Plat Book		County
				Inside PBL	Outside PBL		Book	Page	
K-19	49		See Exh.F-Ref.Exh.K-3 Sht. 1						Fairfield
I-14	54		See Exh.F-Ref.Exh.K-6 Sht. 1						Fairfield
D-11	176		See Exh.F-Ref.Exh.K-8 Sht. 1						Newberry
C-12	177	B-15949	M. O. Mayer & Adam R. Mayer	60.96		9/23/77	AS	104	Newberry
C-14	178	B-15962	Minnie H. Wicker	13.13	106.73	2/27/76	AN	75	Newberry
B-16	179	B-16006	S. Downs Wright	183.80	33.48	5/10/73	AS	105	Newberry
BB-16	180	B-16295	Champion Paper Co.	164.48		10/31/77	AS	106	Newberry
AA-18	182	B-16297	Ray E. Wiedeman	34.35		1/4/80	AV	25	Newberry
A-19	183	B-16298	Continental Can Co.	128.68		11/5/76	AS	107	Newberry
AA-20	184	B-16299	W. B. Hentz	39.21		3/30/77	AP	109	Newberry
AA-22	185	B-15874	Hugh W. Hentz	127.71	123.51	3/8/73	AP	108	Newberry
B-23	217	B-16332	J. B. Frazier	16.25		12/22/76	9	153	Fairfield
C-21	218	B-16333	D. R. Cole	16.98		10/14/76	9	166	Fairfield
C-19	219	B-16334	Ed Burley	1.83		unknown	FH	200	Fairfield
D-18	220	B-16335	John Green	65.75	132.86	9/30/75	9	218	Fairfield
D-16	222	B-16928	S.C.E. & G. Co.	150.03		unknown	FH	199	Fairfield
AA-17	223	B-16930	Champion Paper Co.	2.90		10/31/77	AS	117	Newberry
B-18	229	B-17100	S. Downs Wright	22.06		5/10/73	AS	118	Newberry
AA-20	230	B-17101	W. B. Hentz	Non-Project					Newberry
D-14	234	B-17967	Joe Palmer	0.51		5/5/76	AS	120	Newberry
D-14	235	B-17968	Gav & Virginia Rhymer	0.41		5/5/76	AS	121	Newberry
D-14	236	B-17969	Luther M. Burch	0.37		5/5/76	AS	122	Newberry
D-13	237	B-17970	Ernest Knox	0.48		5/5/76	AS	123	Newberry
C-14	244	B-18405	J. D. Inman	Non-Project					Newberry
E-11	246		See Exh.F-Ref.Exh.K-6 Sht. 1						Newberry
BB-15	250	B-18470	Thomas L. Crooks, Jr. & Carolyn C. Bishop	0.56		12/14/78	AT	21	Newberry
C-19	267	B-18574	J. B. Frazier	32.61		11/17/77	9	215	Fairfield
D-20	268	B-18575	A. J. Wilson	14.59		11/18/76	FH	190	Fairfield
B-22	269	B-18576	Albert Barnado	0.28		1/20/77	9	150	Fairfield
E-21	279	B-18661	D. R. Cole	Non-Project					Fairfield
F-17	290		See Exh.F-Ref.Exh.K-6 Sht. 1						Fairfield

Exh. K-14 Index	Tract No.	SCE&G Drawing No.	From Whom Acquired	Acreage Acquired in Fee		Date Acquired	Recorded in Plat Book		County
				Inside PBL	Outside PBL		Book	Page	
EE-32	190		See Exh.F-Ref.Exh.K-13 Sht. 1						Newberry
FF-35	191	B-16305	Bess Bursinger	25.69		9/12/78	AS	68	Newberry
GG-38	192	B-16306	Helen H. Counts	53.70		10/21/76	AS	112	Newberry
GG-41	193	B-16307	U. S. Forestry Service	72.14		1/8/81	AY	20	Newberry
II-42	194	B-16308	W. N. Henderson	117.41		11/28/77	AS	113	Newberry
FF-44	204	B-16319	Francis Frazier	31.03		12/22/76	9	156	Fairfield
EE-42	205	B-16320	Ruby C. Blair	5.93		5/23/80	GI	229	Fairfield
FF-41	206	B-16321	Blair No. 2		Non-Project				Fairfield
EE-41	207	B-16322	Blair		Non-Project				Fairfield
FF-44	208	B-16323	Blair		Non-Project				Fairfield
FF-40	209	B-16324	C. H. Ragsdale	19.35	1.02	3/28/77	FH	191	Fairfield
EE-39	210	B-16325	J. B. Frazier	17.98		12/22/76	9	155	Fairfield
CC-36	211	B-16326	U. S. Forestry Service	26.13	8.23	1/8/81	10	221	Fairfield
DD-33	212		See Exh.F-Ref.Exh.K-13 Sht. 1						Fairfield
EE-40	254	B-18480	Lone Star Industries, Inc.	2.35		12/13/76	FH	205	Fairfield
EE-34	256	B-18531	M. O. Mayer	0.85	0.91	12/14/78	AT	19	Newberry
HH-39	270	B-18622	George Baxter	1.49		2/8/77	AS	142	Newberry
EE-41	277	B-18634	Champion Paper Co.	0.92		10/31/77	9	221	Fairfield
EE-38	281	B-18685	Peoples (J. B. Frazier)	2.39		12/22/76	9	151	Fairfield
DD-38	282	B-18692	Peoples (J. B. Frazier)	4.72		12/22/76	9	152	Fairfield
DD-40	283	B-18693	S. C. Granite Co.		Non-Project				Fairfield
DD-39	284	B-18694	J. B. Frazier		Non-Project				Fairfield
DD-35	285	B-18697	S. Downs Wright	4.78		6/16/77	9	187	Fairfield
FF-41	286	B-18732	T. J. Fogley	0.40		4/21/77	FH	198	Fairfield
FF-43	288	B-18772	C. L. Ligon	11.82		6/12/80	GJ	199	Fairfield
EE-41	291	B-18903	Lula Blair	5.47		5/23/80	GI	228	Fairfield
FF-43	292	B-18904	Larry Blair	1.05		5/23/80	GJ	48	Fairfield
DD-41	294	B-18906	Blair No. 1		Non-Project				Fairfield
DD-42	295	B-18907	Blair No. 2		Non-Project				Fairfield
FF-41	297	B-19212	Nancy B. Hendrix	0.49		9/29/77	9	224	Fairfield

ATTACHMENT 10

UNITED STATES OF AMERICA
 FEDERAL ENERGY REGULATORY COMMISSION

South Carolina Electric and Gas Company) Project No. 1894-008

ORDER APPROVING REVISED EXHIBITS F AND K

(Issued August 19, 1981)

South Carolina Electric and Gas Company, Licensee for the Parr Hydroelectric Project No. 1894, filed on July 6, 1981, an application for approval of revised Exhibits F and K. 1/

Article 48 of the license for Project No. 1894 required the Licensee to file within one year after completion of land acquisition, revised Exhibit F and, for Commission approval, revised Exhibit K to show all lands purchased in fee, or the right to use in perpetuity, lands that are necessary or appropriate for project operations, including lands for recreational use and shoreline control.

The revised exhibits have been examined and found to conform with the Commission's regulations.

It is ordered that:

(A) The following revised Exhibit K is approved and made a part of the license:

<u>Exhibit K-</u>	<u>FERC No. 1894-</u>	<u>Superseding Exhibit K, FERC No. 1894-</u>
1	76	54
2	77	55
3	78	56
4	79	57

1/ Authority to act on this matter is delegated to the Director, Office of Electric Power Regulation under 18 C.F.R. §375.308 (1980), as amended by 46 Fed. Reg. 14119 (1981).

<u>Exhibit K-</u>	<u>FERC No. 1894-</u>	<u>Superseding Exhibit K, FERC No. 1894-</u>
5	80	58
6	81	59
7	82	60
8	83	61
9	84	62
10	85	63
11	86	64
12	87	65
13	88	66
14	89	67
15	90	68
16	91	69
17	92	70
18	93	71
19	94	72
20	95	73

(B) This order is final unless a petition appealing it to the the Commission is filed within 30 days from the date of its issuance, as provided in Section 1.7(d) of the Commission's regulations, 18 C.F.R. 1.7(d), as amended, 44 Fed. Reg. 46449 (1979).


William W. Lindsay
Director, Office of Electric
Power Regulation

ATTACHMENT 11

V SPILLWAY AND LOWER RESERVOIR

D. Gate Operational Studies

As requested by the Board of Consultants, additional backwater profile studies for the flows of 6000 cfs to 40,000 cfs in the multiple of 5000 cfs have been prepared by the USGS. The two conditions are:

1. When all the gates are fully down
2. When the water level at Parr is at El. 266.00.

The respective storage between these two conditions have been computed by SCE&G Co. and have been tabulated in the Attachment #1.

From the review of these water surface profiles, it is seen that the Project Boundary Line which was delineated, seems adequate for flows up to 40,000 with the water level at Parr at 266.00, except perhaps in a small stretch beyond the USGS Section #35. But even this small stretch will be adequate if we consider the water surface profile run by the USGS previously for 40,000 cfs and full generation. This study reveals that for both the conditions,

1. When all the gates are fully down
2. When the water level at Parr is maintained at 266.00,

the water surface profiles for flows up to 40,000 cfs coincide beyond the Section #35. Hence, the holding back of water at El. 266.00 at Parr will not cause rise of water surface profile beyond Section #35. In this regard, the Attachment #3 may be seen and therefore, the criteria adopted for establishing the Project Boundary Line seems adequate and logical.

ATTACHMENT # 1

Date 5.31.77
 Calc By JN
 Chk'd/Apprd. By
 Subject

Gibbs & Hill, Inc.
 ENGINEERS, DESIGNERS, CONSTRUCTORS
 NEW YORK

Filing Code
 Sheet No. 1 of 4
 G & H Job No.

Ref. Dwg./Spec. No.

STORAGE AVAILABLE IN THE
 PARR RESERVOIR FOR THE
 TWO CONDITIONS

FLOW CFS (1)	BROAD RIVER AF (2)	TRC AF (3)	CANNONS CREEK AF (4)	HELLERS CREEK AF (5)	TOTAL STORAGE AF (6)	DURATION OF FLOW IN A YEAR DAYS (7)	FROM FLOW DURATION CURVE
6000	22,204	543	3,464	2,309	28,520		
10,000	20,420	493	3,223	2,149	26,285	48	
15,000	18,347	443	2,865	1,910	23,565	28	
20,000	16,062	394	2,621	1,747	20,824	19	
25,000	14,521	345	2,511	1,674	19,051	13	
30,000	13,055	308	2,333	1,555	17,251	11	
35,000	11,423	278	2,137	1,425	15,263	5	
40,000	10,223	242	1,865	1,243	13,573	4	

NOTE: THE ACTUAL CAP. WILL BE
 SLIGHTLY BE MORE THAN TABULATED
 IN THE COL. (6) IF WE ADD FOR THE
 SPACES NOT REPRESENTED BY THE
 CROSS SECTIONS & ADDING FOR ENOREE
 & OTHER SMALL TRIBUTARIES.

Date

Gibbs & Hill, Inc.

Filing Code

Calc By

ENGINEERS, DESIGNERS, CONSTRUCTORS

Sheet No. 1 Of

NEW YORK

Chk'd/Aprd. By

ATTACHMENT # 3

G & H Job No.

Subject Ref. Dwg./Spec. No.

USGS SEC. #	PBL EL	PREVIOUS STUDY	PRESENT		STUDY	
		WL FOR 40000+48000 CF'S GATES FULLY DOWN	WL FOR 35000 CF'S GATES FULLY ON	WL AT 266.00 AT PARR	WL FOR 40000 CF'S GATES FULLY ON.	WL AT 266.00 AT PARR.
35	276.5	276.5	275.4	275.5	276.4	276.5
36	278	278	277.4	277.5	278.3	278.4
37	280.3	280.3	280.4	280.4	281.0	281.1
38	282.1	282.1	282.5	282.5	283.3	283.4
39	283.6	283.6	284.2	284.2	285.0	285.1
40	285.6	285.6	285.9	285.9	286.9	286.9



December 19, 2016

Mr. William B. Hendrix, Jr.
18662 Newberry Road
Blair, SC 29015

Subject: South Carolina Electric & Gas Company
Parr Hydroelectric Project, FERC Project No. 1894-207
Response to Mr. Hendrix Request for Dispute Resolution for the Parr
Hydroelectric Project

Dear Mr. Hendrix:

South Carolina Electric & Gas Company, Licensee of the Parr Hydroelectric Project (FERC No. 1894) submitted electronically its response to your December 9, 2016 letter regarding a request to the Federal Energy Regulatory Commission Director of the Office of Energy Projects for dispute resolution for an additional study during the new license application process for this Project.

The electronic files associated with this filing may be accessed on the FERC website at this location: http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20161219-5132

If you have any questions regarding this filing, please contact me at (803) 217-9162 or bargentieri@scana.com.

Sincerely,

A handwritten signature in blue ink that reads "William R. Argentieri". The signature is fluid and cursive.

William R. Argentieri, Manager of Civil Engineering
Fossil Hydro Technical Services

WRA/wa

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
February 1, 2017

OFFICE OF ENERGY PROJECTS

Project No. 1894-207 - South Carolina
Parr Hydroelectric Project
South Carolina Electric & Gas Company

**REFERENCE: DRAFT PROGRAMMATIC AGREEMENT FOR THE PARR HYDROELECTRIC
PROJECT NO. 1894-207; SHPO PROJECT NO. 12-ED0073**

TO THE PARTIES ADDRESSED:

On January 5, 2015, South Carolina Electric & Gas Company (SCE&G) filed with the Federal Energy Regulatory Commission (Commission) a Notice of Intent, Pre-Application Document, and request to use the Traditional Licensing Process¹ for continued operation and maintenance of the Parr Hydroelectric Project No. 1894.² The existing project consists of two developments, from upstream to downstream: (1) the 511.2-megawatts (MW) Fairfield Pumped Storage Development; and (2) the 14.88-MW Parr Shoals Development. The project is located on the Broad River near the City of Columbia, in Newberry and Fairfield Counties, South Carolina, and occupies 162.61 acres of federal land administered by the U.S. Forest Service. The license expires on June 30, 2020.

We propose to execute a Programmatic Agreement with the South Carolina Department of Archives and History, but without the participation of the Advisory Council on Historic Preservation (Advisory Council), in accordance with the Advisory Council's regulations at 36 C.F.R. Part 800. Although the Advisory Council may, at its discretion, participate in the execution of this Programmatic Agreement, we conclude that the issues as they pertain to historic properties do not warrant the Advisory Council's participation. We request that the Advisory Council concur that their participation is not needed simply by not objecting to this procedure.

The purposes of this letter, therefore, are to: (1) convey the draft Programmatic Agreement for comment; (2) provide notice of our intention to execute the Programmatic Agreement without the Advisory Council's participation; and (3) invite the Advisory Council's participation in the event it wishes to participate.

¹ On February 20, 2015, the Director, Division of Hydropower Licensing approved SCE&G's request to use the Traditional Licensing Process.

² See *South Carolina Electric & Gas Company*, 52 F.P.C. ¶ 537 (1974).

Please review and comment on the draft Programmatic Agreement **within 30 days of the date of this letter**. When you provide us your comments, please reference “Project No. 1894-207” on the front page of your correspondence. Comments may be filed electronically via the Internet. See 18 C.F.R. section 385.2001(a)(1)(iii) and the instructions on the Commission’s website at <http://www.ferc.gov/docs-filing/efiling.asp>. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov; call toll-free at (866) 208-3676; or, for TTY, contact (202) 502-8659. Although the Commission strongly encourages electronic filing, comments may also be paper-filed. To paper-file, mail an original to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, D.C. 20426.

If you cannot comment by the requested deadline, please let us know the date on which you can provide us your comments. We will review your comments, revise the draft Programmatic Agreement accordingly, and reissue it for signature. If you have questions, please contact Dustin Wilson at (202) 502-6528, or at dustin.wilson@ferc.gov.

Sincerely,

Stephen Bowler, Chief
South Branch
Division of Hydropower Licensing

Enclosure: Draft Programmatic Agreement

Addresses:

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Advisory Council on Historic
Preservation
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William Green, M.A., RPA
Terracon Consultants, Inc.
521 Clemson Road
Columbia, SC 29229

cc: Public Files

**DRAFT PROGRAMMATIC AGREEMENT
BETWEEN
THE FEDERAL ENERGY REGULATORY COMMISSION AND
THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
FOR MANAGING HISTORIC PROPERTIES
THAT MAY BE AFFECTED BY ISSUING A NEW LICENSE TO
SOUTH CAROLINA ELECTRIC & GAS COMPANY
FOR THE CONTINUED OPERATION AND MAINTENANCE
OF THE PARR HYDROELECTRIC PROJECT
LOCATED IN FAIRFIELD AND NEWBERRY COUNTIES, SOUTH CAROLINA**

WHEREAS, the Federal Energy Regulatory Commission or its staff (hereinafter, “Commission”) is proposing to act on an application for a new license filed by South Carolina Electric & Gas Company (hereinafter, “Licensee”) for the continued operation and maintenance of the Parr Hydroelectric Project No. 1894 (hereinafter, “Project”) as authorized by Part I of the Federal Power Act, 16 U.S.C. sections 791(a) through 825(r), *as amended*; and

WHEREAS, the Commission has determined that issuing such a license may affect properties included in or eligible for inclusion in the National Register of Historic Places (hereinafter, “historic properties”); and

WHEREAS, the associated *Final Historic Properties Management Plan, Parr Hydroelectric Project, Fairfield and Newberry Counties, South Carolina, FERC No. 1894*, dated December 2016 (hereinafter, “HPMP”) and filed January 10, 2017, provides a description of the Project, the Project’s area of potential effects (hereinafter, “APE”), historic properties, and anticipated effects identified as of the date of this Programmatic Agreement; and

WHEREAS, the following documents support the findings in the HPMP: (1) *Initial Historic and Archaeological Resources (HAR) Study, Parr Hydroelectric Project, FERC Project No. 1894 Application for New License, Fairfield and Newberry Counties, South Carolina* (William Green and Jennifer Betsworth, S&ME, Inc., Columbia, South Carolina, May 2013); (2) *Phase I Cultural Resource Investigations for the Parr Hydroelectric Project (FERC Project No. 1894), Fairfield and Newberry Counties, South Carolina, Final Report* (Kimberly Nagle and Heather Carpini, S&ME, Inc., Columbia, South Carolina, August 2014); and (3) *Phase II Testing of Archaeological Sites 38NE8 and 38NE10 at the Parr Hydroelectric Project, Fairfield and Newberry Counties, South Carolina, Final Report* (C. Scott Smallwood, William Green, and Margaret Tillman, Terracon Consultants, Inc., Columbia, South Carolina, June 2016); and

WHEREAS, the APE for the Project includes those areas falling within the Project boundary of the Project’s two developments: the 511.2-megawatt (MW) Fairfield Pumped Storage Development, which impounds the 6,800-acre Monticello

Reservoir (upper reservoir); and the 14.88-MW Parr Shoals Development, which impounds the 4,400-acre Parr Reservoir (lower reservoir) on the Broad River and its tributaries between Henderson Island to the north and Hampton Island to the south; and, land around the powerhouses, dams, appurtenant facilities, and Project recreation sites, including a 300-acre recreation sub-impoundment (Recreation Lake) north of Monticello Reservoir. In total, approximately 15,637 acres are within the Project boundary; and

WHEREAS, the Commission has consulted with the South Carolina Department of Archives and History (hereinafter, “South Carolina SHPO”), pursuant to 36 C.F.R. section 800.14(b) of the Advisory Council on Historic Preservation’s (hereinafter, “Advisory Council”) regulations (36 C.F.R. Part 800) implementing section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) (hereinafter, “section 106”); and

WHEREAS, the Licensee has participated in the consultation and has been invited to concur in this Programmatic Agreement; and

WHEREAS, the U.S. Forest Service (hereinafter, “Forest Service”) manages lands within the Project boundary and has responsibilities for issuance of permits under the Archeological Resources Protection Act (16 U.S.C. 470aa to 470ll) (hereinafter, “ARPA”) to the Licensee for archaeological work on its lands; and

WHEREAS, the Forest Service has participated in the consultation and has been invited to concur in this Programmatic Agreement; and

WHEREAS, the Project may affect lands important to the Catawba Indian Nation and the United Keetoowah Band of Cherokee Indians in Oklahoma (hereinafter, “Tribes”) and the Tribes have participated in the consultation and have been invited to concur in this Programmatic Agreement; and

WHEREAS, the Commission will require the Licensee to implement the provisions of this Programmatic Agreement as a condition of issuing a new license for the Project; and

NOW THEREFORE, the Commission and the South Carolina SHPO agree that the Project will be administered in accordance with the following stipulations in order to satisfy the Commission’s section 106 responsibilities during the term of the Project’s license.

STIPULATIONS

The Commission will ensure that, upon issuing a license for this Project, the Licensee implements the following stipulations. All stipulations that apply to the Licensee will similarly apply to any and all of the Licensee's successors. Compliance with any of the following stipulations does not relieve the Licensee of any other obligations it has under the Federal Power Act, the Commission's regulations, or its license.

I. HISTORIC PROPERTIES MANAGEMENT PLAN

- A. Upon issuing a license for this Project, the Licensee will implement the HPMP.

II. DISPUTE RESOLUTION

- A. If at any time during implementation of this Programmatic Agreement and the resulting HPMP, the Licensee, the South Carolina SHPO, the Tribes, the Forest Service, or the Advisory Council objects to any action or any failure to act pursuant to this Programmatic Agreement or the HPMP, they may file written objections with the Commission. In the event a written objection is filed with the Commission, the Commission will follow the steps listed below.
 - 1. The Commission will consult with the objecting party, and with other parties as appropriate, to resolve the objection.
 - 2. The Commission may initiate, on its own, such consultation to remove any of its objections.
- B. If the Commission determines that the objection cannot be resolved, the Commission will forward all documentation relevant to the dispute to the Advisory Council and request that the Advisory Council comment. Within 30 days after receiving all pertinent documentation, the Advisory Council will either:
 - 1. provide the Commission with recommendations, which the Commission will take into account in reaching a final decision regarding the dispute; or
 - 2. notify the Commission that it will comment pursuant to 36 C.F.R. sections 800.7(c)(1) through (c)(3) of the National Historic Preservation Act, and proceed to comment.

- C. The Commission will take into account any Advisory Council comment provided in response to such a request, with reference to the subject of the dispute, and will issue a decision on the matter. The Commission's responsibility to carry out all actions under this Programmatic Agreement that are not the subject of dispute will remain unchanged.

III. AMENDMENT AND TERMINATION OF THIS PROGRAMMATIC AGREEMENT

- A. The Commission, the Licensee, the South Carolina SHPO, the Tribes, or the Forest Service may request that this Programmatic Agreement be amended, whereupon these parties will consult in accordance with 36 C.F.R. section 800.14(b) to consider such amendment.
- B. The Commission or the South Carolina SHPO may terminate this Programmatic Agreement by providing 30 days written notice to the other parties, provided that the Commission, the Licensee, the South Carolina SHPO, the Tribes, and the Forest Service consult during the 30-day notice period in order to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the Commission will comply with 36 C.F.R. sections 800.3 through 800.7(c)(3), with regard to individual actions covered by this Programmatic Agreement.

Execution of this Programmatic Agreement, and its subsequent implementation, is evidence that the Commission has satisfied its responsibilities pursuant to section 106 of the National Historic Preservation Act, *as amended*, for all individual actions carried out under the license. Provided, however, that unless and until the Commission issues a license for the Project and this Programmatic Agreement is incorporated by reference therein, this Programmatic Agreement has no independent legal effect for any specific license applicant or Project.

FEDERAL ENERGY REGULATORY COMMISSION

By: _____

Vince Yearick, Director
Division of Hydropower
Licensing

Date: _____

SOUTH CAROLINA DEPARTMENT OF ARCHIVES AND HISTORY

By: _____
Elizabeth M. Johnson
Deputy State Historic Preservation Officer

Date: _____

CONCUR: SOUTH CAROLINA ELECTRIC & GAS COMPANY

By: _____
James Landreth, Vice President
Fossil & Hydro Operations

Date: _____

CONCUR: U.S. FOREST SERVICE

By: _____
John Richard Lint, Forest Supervisor

Date: _____

CONCUR: CATAWBA INDIAN NATION

By: _____
Chief Bill Harris

Date: _____

By: _____
Dr. Wenonah G. Haire, THPO

Date: _____

**CONCUR: UNITED KEETOOWAH BAND OF CHEROKEE INDIANS IN
OKLAHOMA**

By: _____
Chief Joe Bunch

Date: _____

By: _____
Eric Oosahwee-Voss, THPO

Date: _____



February 21, 2017

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N. E.
Washington, D. C. 20426

Subject: South Carolina Electric & Gas Company
Parr Hydroelectric Project
FERC Project No. 1894 - 207
RE: Draft Programmatic Agreement for the Parr Hydroelectric Project

Dear Secretary Bose:

South Carolina Electric & Gas Company (SCE&G), Licensee of the Parr Hydroelectric Project (FERC Project No. 1894 - 207), hereby files an electronic copy of its comments on the Federal Energy Regulatory Commission's Draft Programmatic Agreement dated February 1, 2017.

SCE&G appreciates the opportunity to review and provide comments on the draft Programmatic Agreement dated February 1, 2017 which was prepared by the Federal Energy Regulatory Commission. SCE&G does not have any suggested changes or comments regarding this document.

If you have any questions about this filing, please call Amy Bresnahan at (803) 217-9965.

Yours very truly,

A handwritten signature in blue ink that reads "William Argentieri". The signature is written in a cursive style.

William R. Argentieri, Manager of Civil Engineering
Fossil Hydro Technical Services

Kimberly D. Bose
Parr Hydroelectric Project, Project No. 1894 - 207
RE: Draft Programmatic Agreement for the Parr Hydroelectric Project
Page 2

AIB/ab

c: W. R. Argentieri/J. Landreth/J.H. Hamilton/File
E. M. Johnson – SC SHPO
J. F. Bates/R. Morgan – USFS
J. Eddins – Advisory Council on Historic Preservation
Chief J. Bunch – United Keetoowah Band of Cherokee Indians in Oklahoma
E. Oosahwee-Voss, THPO - United Keetoowah Band of Cherokee Indians in
Oklahoma
Chief B. Harris – Catawba Indian Nation
Dr. W. G. Haire, THPO – Catawba Indian Nation
B. Green – Terracon Consultants, Inc.

Dustin Wilson

From: Johnson, Elizabeth <EJohnson@scdah.sc.gov>
Sent: Monday, March 06, 2017 11:00 AM
To: Dustin Wilson
Subject: Project 1894-207 SC Parr Hydroelectric Project

Follow Up Flag: Follow up
Flag Status: Completed

FILED
SECRETARY OF THE
2017 MAR -7 A 9:22
RECEIVED BY

Mr. Wilson:

We have received the draft programmatic agreement for the Parr Hydroelectric Project No. 1894-207.

We have reviewed the draft agreement and do not have any comments or requested changes.

Thanks for the opportunity to review the draft. Please let me know if you have any questions.

Elizabeth M. Johnson
State Historic Preservation Office
SC Department of Archives and History
8301 Parklane Road
Columbia, SC 29223
ph: 803-896-6168 fax: 803-896-6167 <http://shpo.sc.gov>

Please note NEW email address: ejohnson@scdah.sc.gov

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
March 8, 2017

OFFICE OF ENERGY PROJECTS

Project No. 1894-207 – South Carolina
Parr Hydroelectric Project
South Carolina Electric & Gas Company

William Hendrix, Jr.
18662 Newberry Road
Blair, South Carolina 29015

Reference: Request for Dispute Resolution

Dear Mr. Hendrix:

In a letter filed on December 13, 2016, you requested that, pursuant to 18 C.F.R. section 4.38(b)(6), the Director, Office of Energy Projects resolve your dispute with South Carolina Electric & Gas (SCE&G) on a study you requested for the Parr Hydroelectric Project No. 1894-207 (project). SCE&G is developing an application to re-license the project using the Traditional Licensing Process. A license application is currently scheduled to be filed by May 31, 2018.

In your letter, you state that on June 9, 2015 you filed a Request for Study and Information regarding the establishment of the project boundary and that SCE&G has informed you that it does not intend to conduct the requested study. You allege that SCE&G acquired more land than was necessary to comply with the current license and that SCE&G carried the alleged error over to the Pre-Application Document (PAD) filed on January 5, 2015, by including land in its proposed project boundary that is not needed for the project. Therefore, you request that SCE&G conduct a study to determine the appropriate project boundary for the project.

As an initial matter, section 4.38(b)(6) provides an opportunity, before an application is filed, for resource agencies or Indian Tribes to request resolution of disputes regarding studies or information needs. There is no provision for a non-agency/tribe to make such a request.

As to your allegation that SCE&G purchased more land than was necessary to comply with the current license, the Commission has no authority to prohibit a licensee from obtaining the rights to land located outside of the licensed project

boundary. Instead, disputes between licensees and landowners concerning the acquisition of rights to land are state law matters for resolution in the appropriate forum.

Regarding project boundaries, the Commission's regulations at section 4.41(h)(2) stipulate the requirements for project boundary maps to be included in license applications. When the final license application is filed with the Commission for this project, staff will review the application, including the project boundary map(s) for adequacy and to assure that there is adequate information to evaluate what lands are necessary to be included within the project boundary for project purposes. This staff review will be based on the specific characteristics of the project, as described in the final license application, including its proposed operation, project facilities, and any proposed protection, mitigation, or enhancement measures.

If you have any questions, please contact Monte TerHaar at (202) 502-6035 or monte.terhaar@ferc.gov.

Sincerely,

Terry L. Turpin
Director
Office of Energy Projects

cc: Mailing List
Public Files



March 9, 2017

Mr. Curtis Joyner, Manager, Coastal Zone Consistency Certification Section
South Carolina Department of Health and Environmental Control
Office of Ocean and Coastal Resource Management
1362 McMillan Ave., Suite 400
Charleston, SC 29405

Subject: South Carolina Electric & Gas Company
Parr Hydroelectric Project (FERC No. 1894)
Request for Determination of Consistency or Non-Applicability with South
Carolina Coastal Zone Consistency Division, Pursuant to Coastal Zone
Management Act

Dear Mr. Joyner:

South Carolina Electric & Gas Company (SCE&G) is the holder of the current license for the 526.08 MW Parr Hydroelectric Project (FERC No. 1894) (Project). The Project, which consists of the Parr Shoals Development and the Fairfield Pumped Storage Development, is located in Fairfield and Newberry counties, South Carolina, on the Broad River. SCE&G is currently relicensing the Project in accordance with the Federal Energy Regulatory Commission's (FERC) regulations under 18 CFR Part 5.0. The existing license for the Project is due to expire on June 30, 2020.

As you are aware, Section 307(c) (3) of the Coastal Zone Management Act (CZMA) requires that all federally licensed and permitted activities be consistent with approved state Coastal Zone Management Programs. The Office of Ocean and Coastal Resource Management (OCRM) has direct permitting authority over the "critical areas" of the coast, defined as coastal waters, tidelands, and beach/dune system. The OCRM also has indirect management authority of coastal resources throughout the eight coastal counties, defined as the "coastal zone." It is our understanding that South Carolina's coastal zone consists of coastal waters and submerged bottom seaward to the State's jurisdictional limits, as well as the lands and waters of the eight coastal counties, including Horry, Georgetown, Berkeley, Charleston, Dorchester, Colleton, Beaufort, and Jasper (Policies and Procedures of the South Carolina Coastal Management Program, updated July 1995).

Given this description, it appears that the Project is well outside of the South Carolina coastal zone, and that continued Project operations would subsequently not affect South Carolina's coastal zone. As such, SCE&G is herein requesting the Department's concurrence on this matter.

Curtis Joyner

Request for Determination of Consistency or Non-Applicability with South Carolina Coastal
Zone Consistency Division, Pursuant to Coastal Zone Management Act

Page 2

We would appreciate your review and written determination on the Project at your earliest convenience via hardcopy mail and/or electronic mail. For all correspondence, please contact:

William R. Argentieri
South Carolina Electric & Gas Company
220 Operation Way, MC A221
Cayce, SC 29033 – 3701
(803)217-9162
bargentieri@scana.com

To assist you with this determination I have included a map of the Project location in relation to the State CZMA. Should you have any questions concerning this request, please call me at your convenience at (803)217-9162.

Yours very truly,

A handwritten signature in blue ink that reads "William Argentieri". The signature is fluid and cursive, with the first name "William" and last name "Argentieri" clearly legible.

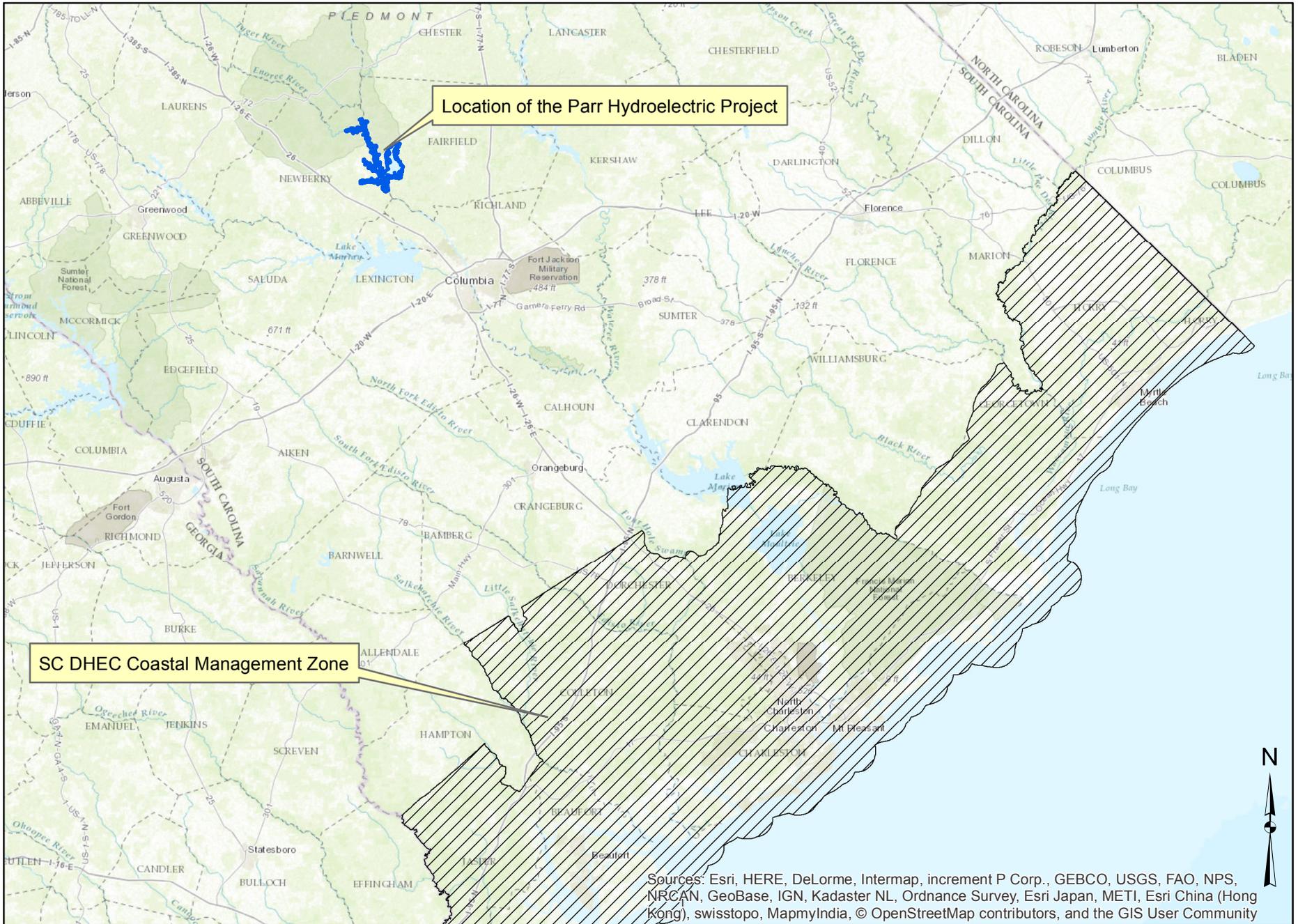
William R. Argentieri, Manager of Civil Engineering
Fossil Hydro Technical Services

AIB/ab

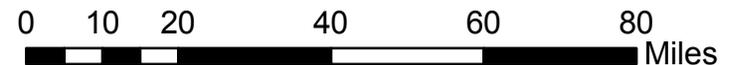
Enclosure

c: H. E. Delk/W. R. Argentieri/PH File

Parr Hydroelectric Project, FERC Project No. 1894



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





March 16, 2017

Mr. William R. Argentieri
South Carolina Electric & Gas Company
220 Operation Way, MC A22 1
Cayce, SC 29033 - 3701

Re: South Carolina Electric & Gas Company, Parr Hydroelectric Project (FERC No. 1894), Request for Determination of Consistency or Non-Applicability with South, Carolina Coastal Zone Consistency Division, Pursuant to Coastal Zone Management Act

Dear Mr. Argentieri:

This is in response to your letter dated March 9, 2017, in which notification was provided to the South Carolina Department of Health and Environmental Control, Office of Ocean and Coastal Resource Management (SCDHEC OCRM) that South Carolina Electric & Gas Company (SCE&G) as the holder of the current license for the 526.08 MW Parr Hydroelectric Project (FERC No. 1894) (Project) and is seeking consistency with the S. C. Coastal Zone Management Act. The Project, which consists of the relicensing of the Parr Shoals and the Fairfield Pumped Storage Developments, are located along the Broad River in Fairfield and Newberry Counties, South Carolina. The existing license for the Project is due to expire on June 30, 2020.

This is to inform you that Coastal Zone Consistency staff has determined the required FERC relicensing will not cause spillover effects to coastal resources given the sites are located well outside of South Carolina's Coastal Zone (consisting of the eight coastal counties). In addition, the review of the enforceable policies contained within the SC Coastal Zone Management Program also furthers the determination of non-applicability in that there will be no spillover effects to coastal resources.

This letter will serve as the Agency's consistency determination and does not alleviate the SCE&G from the responsibility of obtaining other required local, state or federal approvals for the relicensing. Please do not hesitate to contact me should you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Joyner", is written over a horizontal line.

Curtis M. Joyner
Manager, Coastal Zone Consistency Section, SCDHEC OCRM
1362 McMillan Avenue, Suite 400
Charleston, SC 29405
843-953-0205
joynercm@dhec.sc.gov

cc: Rheta DiNovo, SCDHEC OCRM

APPENDIX A

**STAKEHOLDER CONSULTATION AND CORRESPONDENCE
PART 4**

MEETING NOTES

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Water Quality TWC Conference Call

March 18, 2015

Final KDM 5-1-15

ATTENDEES:

Bill Marshall (SCDNR)
Brandon Stutts (SCANA)
Steve Summer (SCANA)
Henry Mealing (Kleinschmidt)
Kelly Miller (Kleinschmidt)
Ron Ahle (SCDNR)
Bret Hoffman (Kleinschmidt)

Bill Argentieri (SCE&G)
Randy Mahan (SCANA)
Shane Boring (Kleinschmidt)
Byron Hamstead (USFWS)
Bill Stangler (Congaree Riverkeeper)
Gerrit Jobsis (American Rivers)
Amy Bresnahan (SCE&G)

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 by giving a recap of the data collection that occurred in the tailrace and forebay at Parr Shoals Dam during the summer and fall of 2014. Details of the data collection are included in the attached memo, which was distributed to the group prior to the conference call.

Byron asked for clarification regarding the data collection site listed as “NPDES 001 sign” on the data collection sheets. Kelly explained that the NPDES sign was the point of reference used by her and Milton Quattlebaum during data collection, and is located next to the window at the seventh bay in the powerhouse.

Bret then gave the group an overview of the turbine venting/aeration investigation performed at Parr. Details of this investigation are also included in the attached memo. Henry explained that SCE&G and Kleinschmidt met with SCDHEC to discuss the data collected in 2014 and ask if they would require any additional information in support of the 401 water quality certification. SCDHEC reviewed the information and concluded that no additional data needed to be collected, however they would like for SCE&G to develop a plan to implement turbine venting during times of low dissolved oxygen (DO).

Byron said he would like to see the study be repeated in the summer of 2015, with the addition of DO and temperature collection below Hampton Island and Alston. Henry said that the aeration that would occur from the turbine venting wouldn't be significant enough to make a difference on DO that far downstream. Byron asked that future venting demonstrations include a scenario where all turbines are vented. Bill A. said that all six turbines should be operational later this year, so this shouldn't be a problem. When periods of low DO are observed via the USGS gage, operators will vent the turbines and DO will be collected in the tailrace to determine if the venting causes a significant impact.

Bill M. said that he is in support of the turbine venting plan and would like to be kept informed about future venting investigations. Henry said that the WQTC will be updated on the plan for this work. Bret said he will check with operators to confirm that various combinations of turbine venting are possible.

Action items from this meeting are listed below.

ACTION ITEMS:

- SCE&G and Kleinschmidt will conduct additional turbine venting investigations and develop a turbine venting plan for future use during periods of low DO.
- Bret will check with operators to confirm that various combinations of turbine venting are possible.

Parr Hydroelectric Project – FERC No. 1894
Water Quality Baseline – Memorandum

TO: Parr/Fairfield Relicensing Water Quality Technical Working Committee (TWC)
FROM: Kelly Miller and Henry Mealing – Kleinschmidt Associates
DATE: March 2, 2015
RE: Water Quality Report – Supplemental Dissolved Oxygen Data

The Parr Hydroelectric Project Baseline Water Quality Report includes analysis of both upstream and downstream water quality associated with the Parr Shoals Development and concluded that project operations could affect water quality downstream of Parr Shoals Dam. At the Water Quality TWC meeting on February 4, 2014, the TWC noted that the Baseline Water Quality Report identified periodic excursions of dissolved oxygen (DO) levels below 4.0 mg/l in the Parr Shoals Dam tailrace, as reported by the USGS station 02160991. In an effort to understand these excursions better, SCE&G contacted USGS and asked if they had any further information on this station. In June of 2011, the USGS installed a new sensor at the station 02160991. From January 2011 through December 2014, there have been approximately 13 hourly excursions in DO below the 4.0 mg/l SCDHEC standard which is approximately 0.04 percent of that period of time. At the request of the Water Quality TWC, SCE&G collected additional water quality data in the tailrace and forebay of Parr Shoals Dam to attempt to determine whether project operations are causing these excursions, and if so, how SCE&G might prevent them from occurring.

Tailrace Data – July – September 2014

Methods

From July through September of 2014, SCE&G collected temperature and DO data at seven sites along the downstream face of the Parr Shoals Dam, adjacent to the USGS station 02160991, and at a location approximately 400 feet downstream of Parr Shoals Dam. Data was collected on a weekly basis, three times per day including one hour before sunrise, at sunrise, and one hour after sunrise. To see if unit location had an effect on DO, the turbine(s) running during collections and the number of any lowered flashboard was also recorded.

Results

SCE&G collected data in the tailrace for two main reasons: (1) to verify the accuracy of the USGS gage station 02160991 and (2) to determine if DO could be correlated to an early morning DO sag or related to which turbine units were running at the time of data collection. During the sampling period, DO levels consistently stayed above 4.0 mg/l. No excursions were recorded by SCE&G or on the USGS gage (Table 1). Data collected by SCE&G at the site of the USGS station 02160991 was consistent with the USGS gage.

TABLE 1 DISSOLVED OXYGEN DATA AT USGS STATION 02160991 AND PARR SHOALS TAILRACE JULY – SEPTEMBER 2014.

Date	USGS Data		SCE&G Data	
	Time	DO mg/l	Time	DO mg/l
7/2/14	5:00 AM	6.2	5:35 AM	6.12
	6:00 AM	6.0	6:37 AM	5.95
	7:00 AM	6.0	7:42 AM	5.86
	8:00 AM	6.0		
7/10/14	5:00 AM	6.0	5:32 AM	6.24
	6:00 AM	5.9	6:27 AM	6.16
	7:00 AM	5.7	7:33 AM	6.08
	8:00 AM	5.5		
7/15/14	5:00 AM	5.5	5:34 AM	5.62
	6:00 AM	5.4	6:32 AM	5.32
	7:00 AM	4.9	7:42 AM	4.91
	8:00 AM	5.0		
7/24/14	5:00 AM	5.2	5:41 AM	5.15
	6:00 AM	5.2	6:51 AM	5.03
	7:00 AM	5.1	7:50 AM	5.49
	8:00 AM	5.3		
7/31/14	5:00 AM	5.8	5:43 AM	5.66
	6:00 AM	5.7	6:42 AM	5.55
	7:00 AM	5.7	7:54 AM	5.53
	8:00 AM	5.7		
8/7/14	5:00 AM	6.0	5:39 AM	5.90
	6:00 AM	6.0	6:48 AM	5.84
	7:00 AM	5.9	7:49 AM	5.74
	8:00 AM	5.9		
8/13/14	5:00 AM	5.9	5:30 AM	5.83
	6:00 AM	5.9	6:33 AM	5.86
	7:00 AM	5.9	7:33 AM	5.83
	8:00 AM	5.9		
8/20/14	5:00 AM	5.8	5:48 AM	5.90
	6:00 AM	5.8	6:46 AM	5.97
	7:00 AM	5.7	7:56 AM	5.86
	8:00 AM	5.7		
8/26/14	5:00 AM	6.3	5:41 AM	6.26
	6:00 AM	6.4	6:51 AM	6.51
	7:00 AM	6.4	7:48 AM	6.35
	8:00 AM	6.3		
9/3/14	5:00 AM	5.7	5:29 AM	6.02
	6:00 AM	5.8	6:40 AM	5.73
	7:00 AM	5.4	7:53 AM	5.46
	8:00 AM	5.4		
9/10/14	6:00 AM	5.6	6:30 AM	5.62
	7:00 AM	5.7	7:46 AM	5.78
	8:00 AM	5.7	8:46 AM	5.71
	9:00 AM	5.7		
9/16/14	6:00 AM	5.0	6:22 AM	4.94

	7:00 AM	5.0	7:24 AM	4.98
	8:00 AM	5.0	8:24 AM	4.92
	9:00 AM	5.0		
9/25/14	6:00 AM	7.3	6:33 AM	7.10
	7:00 AM	7.3	7:34 AM	7.65
	8:00 AM	7.3	8:29 AM	7.62
	9:00 AM	7.3		

Results did not detect a clear correlation between DO readings and the units running at the time of data collection. See Appendix A for a complete list of the data collected during this effort.

Forebay Data – October & November 2014

Methods

Water quality data, including DO and temperature, were collected in the forebay of the Parr Shoals Dam to determine if low DO water is being released through the turbines, causing the DO in the tailrace to drop. The data was collected using two HOB0 data loggers, with one logger located approximately one foot above the bottom of the reservoir and the other located approximately one foot below the surface of the reservoir. Data was logged on an hourly basis from October 16, 2014 through December 3, 2014. We had planned to begin collections earlier but did not receive the data loggers until mid-September.

Results

Results showed the expected correlations between DO and temperature and natural diel fluctuations (Figure 1 through Figure 4). DO levels at the bottom of the forebay are consistently slightly lower than those at the top of the forebay, and there was no evidence of stratification in the forebay area of the reservoir. There were no low DO events observed in the tailrace during the monitoring effort.

FIGURE 1 DO AND TEMPERATURE AT BOTTOM OF PARR SHOALS DAM FOREBAY

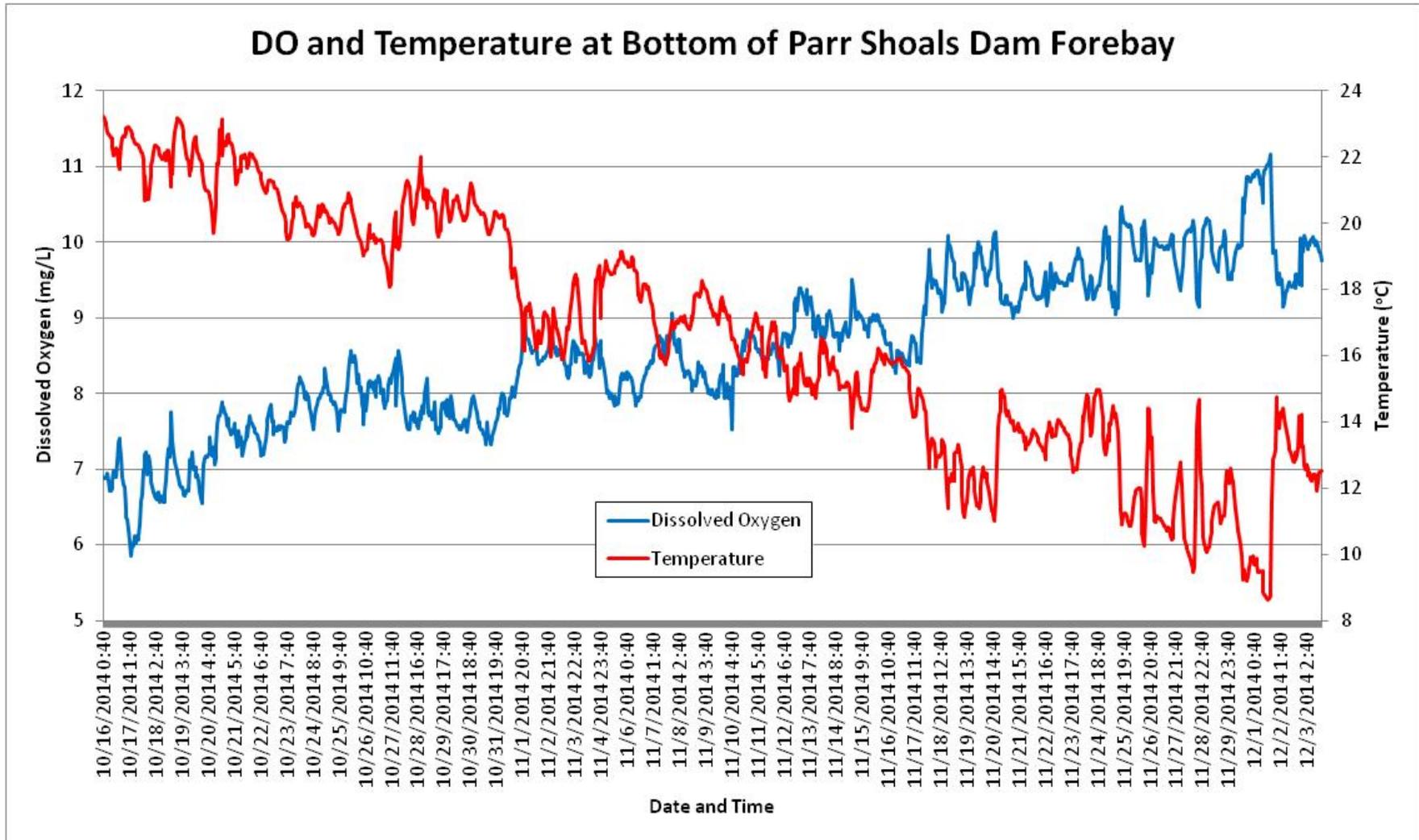


FIGURE 2 DO AND TEMPERATURE AT THE TOP OF PARR SHOALS DAM FOREBAY

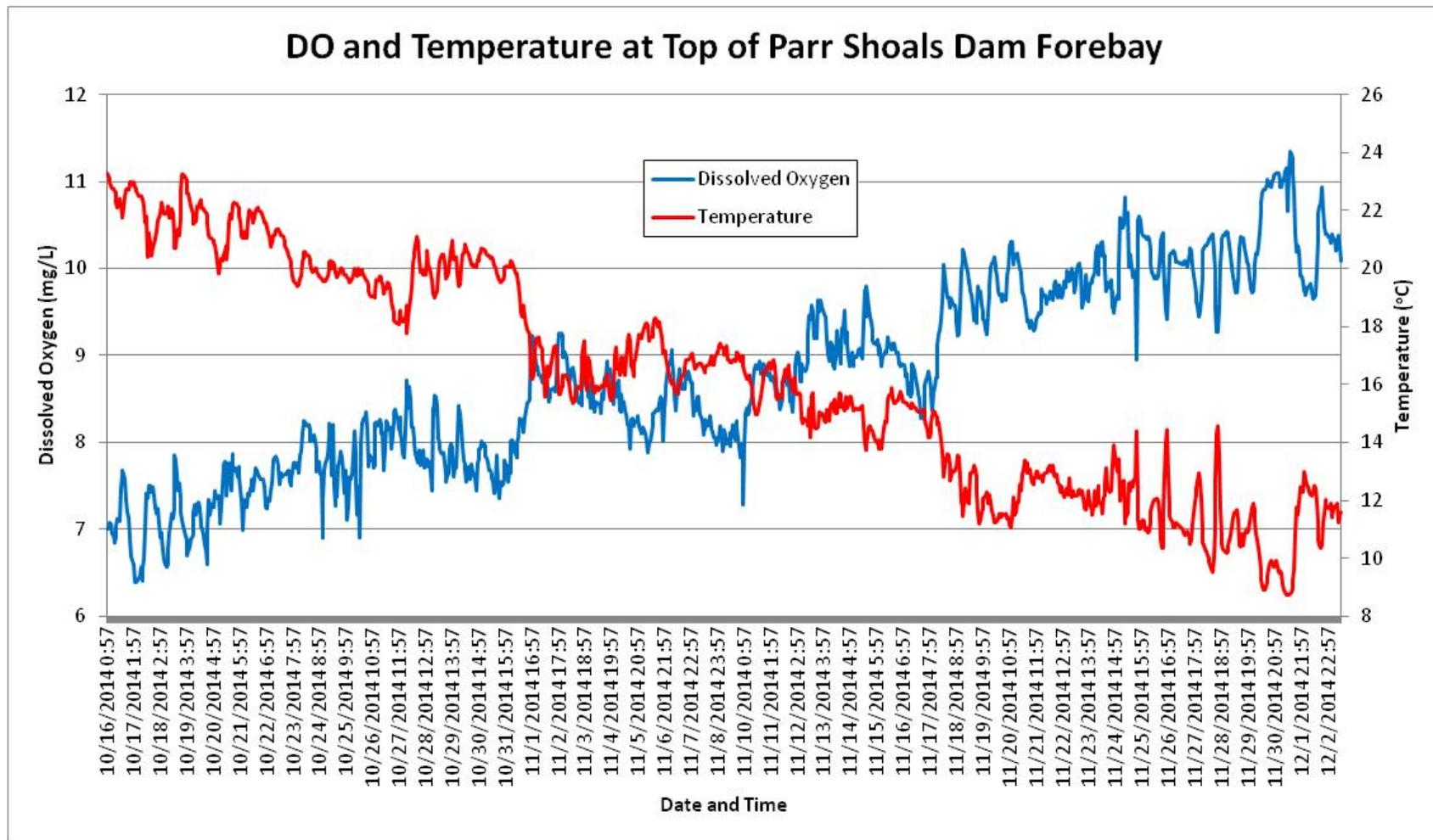


FIGURE 3 PARR SHOALS DAM FOREBAY DISSOLVED OXYGEN

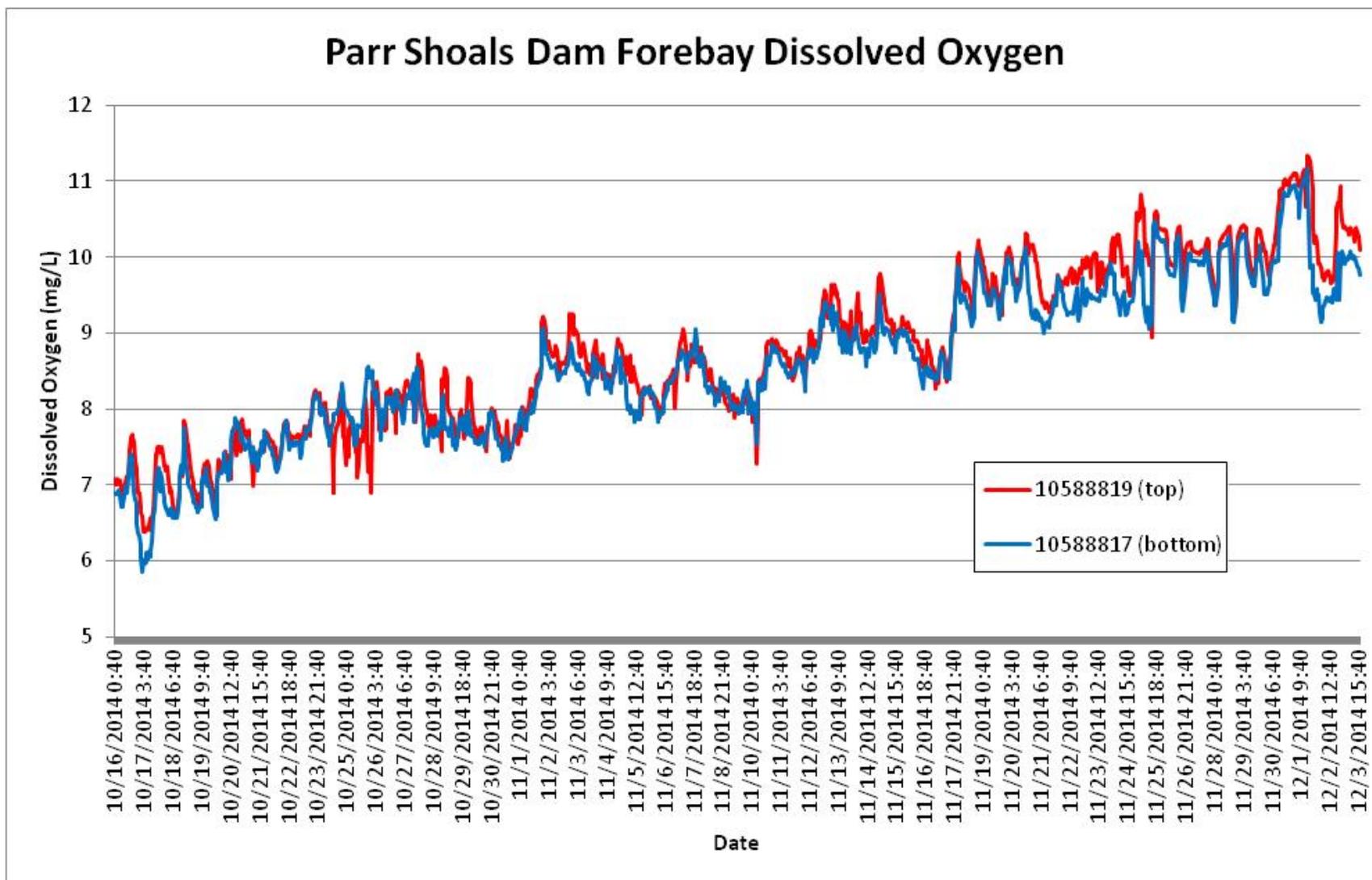
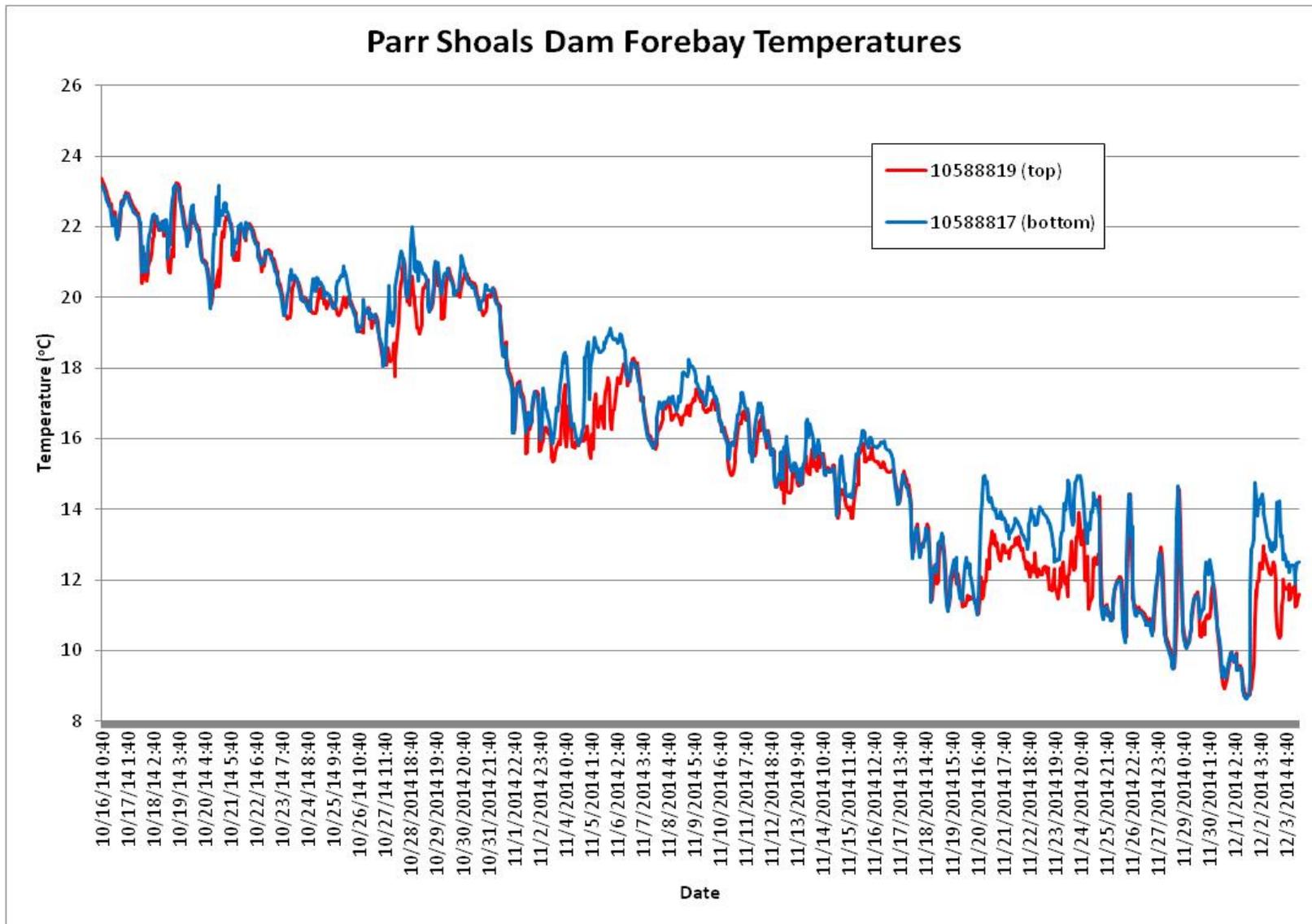


FIGURE 4 PARR SHOALS DAM FOREBAY TEMPERATURES



Parr Aeration Investigation – August 2014

Because of the success with turbine self-venting (or self-aerating) at the Saluda Hydro Project, SCE&G performed some initial investigations to determine if turbine aerating at the Parr Shoals Development was feasible for periodically increasing the tailrace DO levels. Bret Hoffman (Kleinschmidt), Amy Bresnahan (SC&EG), Milton Quattlebaum (SCE&G), and Mike Hall (USGS) performed some initial onsite turbine venting tests at the Parr Shoals Development on the morning of August 20, 2014. The results of their investigation are included below.

During each test run, water quality measurements (DO, temperature, and % DO saturation) were recorded with handheld meters (independent of the permanently installed USGS gage station equipment) in the tailrace at the bay 7 location (which is between the six turbine bays and the shore) and along the shoreline adjacent to the USGS gage. These measurements provided a cursory examination of the ability of the Units to aerate by opening the existing vacuum breaker valves located on the turbine head cover. Only Units 1, 3, and 4 were available for operation testing as the other units were out of service for repair, and Unit 4 could not be shut down because of equipment issues. During testing all river flow was passed through the turbine units and the spillway gates were in the closed (raised) position. Test runs for the water quality measurements were conducted in combinations of turbine operations as described below and were partially dictated by the requirement that Unit 4 could not be shut down. The headpond and tailwater elevations were also recorded, as were individual generator kW and kVar outputs.

Unit 4 - Test

Initially, tailrace readings were collected with only Unit 4 operating, and the vacuum breaker valve closed. Then, the vacuum breaker valve was fully opened to allow aeration, and audibly drew in air. The effects of the introduced air were clearly visible in the tailrace. The initial tailrace reading collected with the valve closed was 5.66 mg/l, the reading at bay 7 with the valve open was 5.82 mg/l. Upon closing the valve, the DO at bay 7 dropped to 5.78 mg/l, although the aerated water may not have had time to flush out from the tailrace area. The USGS measurements on the shore were 5.58 mg/l prior to opening any turbine vents, and 5.75mg/l with the vent open for 25 minutes. The USGS reading did not drop after the valve was closed, and matched the bay 7 reading of 5.78 mg/l, supporting the theory that residual aerated water remained in the immediate tailrace area. Initial saturation was 71% (valve closed), and with the valve open the saturation increased to 74.9%. Saturation levels reported near the USGS gage were within a tenth of a percent of those recorded at bay 7.

Units 1 and 4

Unit 1 was started (valve closed) and allowed to stabilize for 15 minutes. DO readings were collected with Unit 1 valve closed and Unit 4 valve open. The USGS reading increased to 5.84 mg/l, while the bay 7 reading increased from 5.82 mg/l to 5.86 mg/l. The Unit 1 valve was opened and readings were collected after 15 minutes of stabilization. The measurement near the USGS gage was 5.80 mg/l, while the bay 7 reading was 5.88 mg/l. Saturation with Unit 1 (valve

closed) and Unit 4 (valve open) was 73%, which increased to 75.4% with both units' valves open.

Units 1, 3, and 4

Unit 3 was started and operated for 15 minutes with no valve open, while the valves for Units 1 and 4 were left open. The measurements from the USGS site and at bay 7 were both 5.80 mg/l, and the saturation at bay 7 was 74.8%. When the valve was opened on Unit 3, the bay 7 reading was 5.76 mg/l and the USGS reading was 5.75 mg/l with a saturation level of 74.3% - with all three units aerating. USGS took an additional measurement at bay 2 (between units 1 and 3) with all units aerating, which ranged from 6.08 mg/l to 6.15 mg/l; at 6.08 mg/l, saturation was 79%.

One final measurement was taken with all units 1, 3 and 4 operating but all three valves closed. The reading near the USGS gage was 5.71 mg/l while the bay 7 reading was 5.73 mg/l, indicating very minimal reduction from aerating. It is likely that the aerated water in the tailrace area did not flush out and resulted in higher readings. The USGS handheld meter was used to re-sample water quality at bay 2 and the DO dropped to 5.89 mg/l and 75% saturation.

Discussion

The three units tested will aerate with their current valve configurations. The inability to shut down unit 4 likely prevented the aerated flows from units 1 and 3 from reaching the shore, as they are located further toward the middle of the river. While the DO readings with various combinations of valves open for all three units was fairly stable, the initial increase from Unit 4 indicates there is an ability to increase dissolved oxygen by aerating. Saturation was between 71% initial reading (prior to any aeration), and 75% after the valve was opened, indicating an increase in saturation. Saturation levels were near 75% for all readings following the initial valve opening.

Saturation was calculated for all the DO excursions (below 4.0 mg/L) during the past three years as recorded by the USGS gage. While the saturation levels during the aeration testing ranged from 71% (without aerating) up to 76%, the levels calculated for the excursions varied between 44.8% and 51.18%. Water temperatures during the testing ranged between 27.5 and 28.1 °C, while temperature during the excursions was measured at 29.3 to 30.1 °C.

The initial increase in DO measured during testing was approximately 0.17 mg/l. This indicates the turbines have some ability to increase DO by aerating, although the saturation percentage and water temperatures were significantly different during the historic DO excursions. A better determination of effectiveness could be made under lower DO and saturation conditions during the summer. Also, testing during a period when all of the turbine units can be manipulated (turned on/off and aerating on/off) would give more precise information on the performance of each unit.

APPENDIX A
TAILRACE DATA

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 7/2/14

Samplers: Milton Quattlebaum and Kelly Miller

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:11 AM	Unit 1	5.79	27.30	on
5:16 AM	Unit 2	5.92	27.45	off
5:20 AM	Unit 3	5.90	27.44	on
5:23 AM	Unit 4	6.01	27.69	on
5:26 AM	Unit 5	6.18	27.94	off
5:29 AM	Unit 6	6.14	27.94	off
5:35 AM	At USGS gage	6.12	27.92	
5:41 AM	DWNSTRM Plant	6.09	27.89	
6:16 AM	Unit 1	5.97	27.30	on
6:19 AM	Unit 2	5.89	27.40	off
6:21 AM	Unit 3	5.90	27.48	on
6:23 AM	Unit 4	6.06	27.74	on
6:26 AM	Unit 5	5.99	27.76	off
6:28 AM	Unit 6	5.98	27.79	off
6:33 AM	NPDES 001 sign	6.00	27.62	
6:37 AM	At USGS gage	5.95	27.74	
6:42 AM	DWNSTRM Plant	5.94	27.71	
7:17 AM	Unit 1	5.74	27.25	on
7:22 AM	Unit 2	5.82	27.36	off
7:25 AM	Unit 3	5.84	27.40	on
7:27 AM	Unit 4	6.03	27.64	on
7:30 AM	Unit 5	5.93	27.61	off
7:33 AM	Unit 6	5.89	27.63	off
7:36 AM	NPDES 001 sign	5.93	27.62	
7:42 AM	At USGS gage	5.86	27.56	
7:49 AM	DWNSTRM Plant	5.89	27.57	

Time	Jenksville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenksville	USGS Temp data at Jenksville
5:00 AM	221.37	261.52	258.50	6.2	27.8
6:00 AM	221.35	260.89	262.50	6.0	27.6
7:00 AM	221.65	260.44	258.50	6.0	27.5
8:00 AM				6.0	27.4

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 7/10/14

Samplers: Milton Quattlebaum and Kelly Miller

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:04 AM	Unit 1	5.73	27.40	on
5:08 AM	Unit 2	5.75	27.45	off
5:11 AM	Unit 3	5.86	27.48	on
5:15 AM	Unit 4	6.09	27.53	on
5:18 AM	Unit 5	6.28	27.69	off
5:21 AM	Unit 6	6.24	27.66	off
5:24 AM	NPDES 001 sign	6.26	27.67	
5:32 AM	At USGS gage	6.24	27.61	
5:35 AM	DWNSTRM Plant	6.24	27.65	
6:07 AM	Unit 1	5.75	27.44	on
6:10 AM	Unit 2	5.82	27.47	off
6:13 AM	Unit 3	5.89	27.51	on
6:15 AM	Unit 4	6.27	27.64	on
6:18 AM	Unit 5	6.24	27.65	off
6:20 AM	Unit 6	6.20	27.64	off
6:22 AM	NPDES 001 sign	6.19	27.65	
6:27 AM	At USGS gage	6.16	27.63	
6:32 AM	DWNSTRM Plant	6.16	27.59	
7:14 AM	Unit 1	5.87	27.50	on
7:16 AM	Unit 2	5.84	27.51	off
7:19 AM	Unit 3	5.91	27.51	on
7:21 AM	Unit 4	6.19	27.59	on
7:23 AM	Unit 5	6.15	27.60	off
7:25 AM	Unit 6	6.16	27.62	off
7:27 AM	NPDES 001 sign	6.13	27.61	
7:33 AM	At USGS gage	6.08	27.61	
7:40 AM	DWNSTRM Plant	6.15	27.50	

*lowered crest gates 5 and 6 at 7:20 am

Time	Jenkinsville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenkinsville	USGS Temp data at Jenkinsville
5:00 AM	221.36	260.89	266.00	6.0	27.6
6:00 AM	221.35	260.57	266.00	5.9	27.5
7:00 AM	221.93	260.59	258.00	5.7	27.5
8:00 AM				5.5	27.4

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 7/15/14

Samplers: Milton Quattlebaum and Kelly Miller

Time	Location	DO		Temp (°C)	Units Running
		(mg/L)			
5:10 AM	Unit 1	5.30		28.19	on
5:14 AM	Unit 2	5.29		28.25	off
5:17 AM	Unit 3	5.30		28.29	on
5:19 AM	Unit 4	5.70		28.42	on
5:22 AM	Unit 5	5.63		28.45	off
5:25 AM	Unit 6	5.54		28.48	off
5:28 AM	NPDES 001 sign	5.64		28.41	
5:34 AM	At USGS gage	5.62		28.34	
5:39 AM	DWNSTRM Plant	5.57		28.41	
6:13 AM	Unit 1	4.77		28.18	on
6:15 AM	Unit 2	4.81		28.21	off
6:18 AM	Unit 3	4.92		28.22	on
6:20 AM	Unit 4	5.19		28.25	on
6:22 AM	Unit 5	5.40		28.16	off
6:25 AM	Unit 6	5.35		28.24	off
6:27 AM	NPDES 001 sign	5.31		28.34	
6:32 AM	At USGS gage	5.32		28.30	
6:36 AM	DWNSTRM Plant	5.33		28.29	
7:22 AM	Unit 1	4.98		28.18	on
7:25 AM	Unit 2	4.94		28.15	off
7:27 AM	Unit 3	4.94		28.11	on
7:30 AM	Unit 4	5.00		28.12	on
7:32 AM	Unit 5	5.18		28.18	off
7:35 AM	Unit 6	5.02		28.19	off
7:37 AM	NPDES 001 sign	5.03		28.16	
7:42 AM	At USGS gage	4.91		28.08	
7:47 AM	DWNSTRM Plant	5.00		28.18	
7:55 AM	Unit 1	4.86		28.12	on
*not spilling while monitoring					
		Parr Res.			
	Jenksville	Level			
	02160991	0216099	Parr Crest Gate	USGS DO data	USGS Temp
Time		0		at Jenksville	data at
5:00 AM	221.34	258.63	266, except 5&6 at 264	5.5	Jenksville
6:00 AM	221.31	258.40	266, except 5&6 at 264	5.4	
7:00 AM	221.34	258.68	266, except 5&6 at 264	4.9	
8:00 AM				5.0	

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 7/24/14

Samplers: Milton Quattlebaum and Kelly Miller

Time	Location	DO		Units Running
		(mg/L)	Temp (°C)	
5:10 AM	Unit 1	5.23	27.34	off
5:15 AM	Unit 2	5.26	27.32	off
5:17 AM	Unit 3	5.21	27.30	off
5:21 AM	Unit 4	5.43	27.35	on
5:24 AM	Unit 5	5.15	27.32	off
5:29 AM	Unit 6	4.81	27.21	off
5:35 AM	NPDES 001 sign	5.11	27.29	
5:41 AM	At USGS gage	5.15	27.28	
5:46 AM	DWNSTRM Plant	4.70	27.19	
6:27 AM	Unit 1	5.27	27.29	off
6:33 AM	Unit 2	5.26	27.23	off
6:35 AM	Unit 3	5.28	27.28	off
6:38 AM	Unit 4	5.19	27.30	on
6:41 AM	Unit 5	5.09	27.29	off
6:43 AM	Unit 6	4.97	27.27	off
6:46 AM	NPDES 001 sign	5.05	27.21	
6:51 AM	At USGS gage	5.03	27.27	
6:56 AM	DWNSTRM Plant	4.72	27.09	
7:22 AM	Unit 1	5.18	27.24	off
7:32 AM	Unit 2	5.68	27.24	off
7:33 AM	Unit 3	5.68	27.27	off
7:37 AM	Unit 4	5.83	27.26	on
7:40 AM	Unit 5	5.49	27.25	off
7:42 AM	Unit 6	5.43	27.11	off
7:45 AM	NPDES 001 sign	5.50	27.21	
7:50 AM	At USGS gage	5.49	26.68	
7:55 AM	DWNSTRM Plant	5.47	27.06	
8:00 AM	Unit 1	5.63	27.25	off

Time	Parr Res.		Parr Crest Gate	USGS DO data at Jenkinsville	USGS Temp data at Jenkinsville
	Jenkinsville 02160991	Level 02160990			
5:00 AM	220.47	260.11	Gates 1, 2, 3, 4: 264	5.2	27.2
6:00 AM	220.47	259.41	Gates 5, 6, 7, 8: 266	5.2	27.2
7:00 AM	220.46	258.97		5.1	27.1
8:00 AM				5.3	27.1

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 7/31/14

Samplers: Milton Quattlebaum

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:18 AM	Unit 1	5.72		27.49 on
5:21 AM	Unit 2	5.73		27.52 off
5:24 AM	Unit 3	5.73		27.50 off
5:27 AM	Unit 4	5.78		27.51 on
5:30 AM	Unit 5	5.65		27.49 off
5:33 AM	Unit 6	5.60		27.48 off
5:37 AM	NPDES 001 sign	5.67		27.46
5:43 AM	At USGS gage	5.66		27.32
5:50 AM	DWNSTRM Plant	5.54		27.39
6:22 AM	Unit 1	5.71		27.42 on
6:25 AM	Unit 2	5.71		27.47 off
6:28 AM	Unit 3	5.73		27.48 off
6:31 AM	Unit 4	5.81		27.46 on
6:33 AM	Unit 5	5.61		27.42 off
6:36 AM	Unit 6	5.59		27.41 off
6:38 AM	NPDES 001 sign	5.64		27.43
6:42 AM	At USGS gage	5.55		27.32
6:47 AM	DWNSTRM Plant	5.61		27.22
7:32 AM	Unit 1	5.64		27.41 on
7:36 AM	Unit 2	5.69		27.37 off
7:39 AM	Unit 3	5.69		27.42 off
7:41 AM	Unit 4	5.73		27.41 on
7:44 AM	Unit 5	5.63		27.39 off
7:46 AM	Unit 6	5.66		27.38 off
7:49 AM	NPDES 001 sign	5.68		27.38
7:54 AM	At USGS gage	5.53		27.36
7:59 AM	DWNSTRM Plant	5.61		27.32
8:07 AM	Unit 1	5.60		27.49 on
				*no gates spilling

Time	Jenkinsville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenkinsville	USGS Temp data at Jenkinsville
5:00 AM	220.97	260.44	Gates 1, 2, 5, 6, 9, 10: 266	5.8	27.4
6:00 AM	220.99	259.66	Gates 3, 4:264	5.7	27.3
7:00 AM	220.95	259.00	Gates 7, 8: 263	5.7	27.3
8:00 AM				5.7	27.3

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 8/7/14

Samplers: Milton Quattlebaum

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:14 AM	Unit 1	5.90		27.37 off
5:14 AM	Unit 2	5.92		27.30 off
5:20 AM	Unit 3	6.02		27.32 on
5:23 AM	Unit 4	5.99		27.29 on
5:26 AM	Unit 5	5.92		27.34 off
5:29 AM	Unit 6	5.92		27.33 off
5:33 AM	NPDES 001 sign	5.88		27.30
5:39 AM	At USGS gage	5.90		27.30
5:48 AM	DWNSTRM Plant	5.80		27.18
6:25 AM	Unit 1	5.94		27.33 off
6:29 AM	Unit 2	5.94		27.33 off
6:31 AM	Unit 3	6.02		27.34 on
6:34 AM	Unit 4	5.95		27.32 on
6:36 AM	Unit 5	5.90		27.32 off
6:39 AM	Unit 6	5.86		27.28 off
6:42 AM	NPDES 001 sign	5.90		27.30
6:48 AM	At USGS gage	5.84		27.27
6:58 AM	DWNSTRM Plant	5.68		27.13
7:27 AM	Unit 1	5.82		27.34 off
7:30 AM	Unit 2	5.92		27.29 off
7:33 AM	Unit 3	5.97		27.36 on
7:36 AM	Unit 4	5.95		27.32 on
7:39 AM	Unit 5	5.90		27.27 off
7:42 AM	Unit 6	5.85		27.26 off
7:45 AM	NPDES 001 sign	5.90		27.28
7:49 AM	At USGS gage	5.74		27.21
7:56 AM	DWNSTRM Plant	5.73		27.15
8:03 AM	Unit 1	5.83		27.27 off

*no gates spilling

Time	Jenkinsville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenkinsville	USGS Temp data at Jenkinsville
5:00 AM	220.76	258.89	Gates 1, 2, 9, 10:266	6.0	27.2
6:00 AM	220.75	258.17	Gates 3, 4, 5, 6, 7, 8: 264	6.0	27.2
7:00 AM	220.72	258.02		5.9	27.2
8:00 AM				5.9	27.2

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 8/13/14

Samplers: Milton Quattlebaum and Kelly Miller

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:09 AM	Unit 1	5.87		26.18 on
5:13 AM	Unit 2	5.85		26.24 off
5:15 AM	Unit 3	5.89		26.26 on
5:18 AM	Unit 4	5.93		26.26 on
5:20 AM	Unit 5	5.80		26.28 off
5:23 AM	Unit 6	5.81		26.27 off
5:25 AM	NPDES 001 sign	5.82		26.27
5:30 AM	At USGS gage	5.83		26.24
5:35 AM	DWNSTRM Plant	5.85		26.23
6:13 AM	Unit 1	5.85		26.20 on
6:16 AM	Unit 2	5.87		26.19 off
6:18 AM	Unit 3	5.85		26.21 on
6:20 AM	Unit 4	5.93		26.19 on
6:23 AM	Unit 5	5.83		26.18 off
6:25 AM	Unit 6	5.81		26.18 off
6:28 AM	NPDES 001 sign	5.83		26.18
6:33 AM	At USGS gage	5.86		26.15
6:38 AM	DWNSTRM Plant	5.87		26.14
7:17 AM	Unit 1	5.86		26.14 on
7:19 AM	Unit 2	5.86		26.15 off
7:21 AM	Unit 3	5.88		26.15 on
7:23 AM	Unit 4	5.94		26.12 on
7:25 AM	Unit 5	5.86		26.10 off
7:27 AM	Unit 6	5.88		26.09 off
7:29 AM	NPDES 001 sign	5.89		26.08
7:33 AM	At USGS gage	5.83		26.07
7:37 AM	DWNSTRM Plant	5.90		26.06
7:41 AM	Unit 1	5.90		26.12 on

*no gates spilling

Time	Jenkinsville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenkinsville	USGS Temp data at Jenkinsville
5:00 AM	221.33	259.89	1, 2, 9, 10: 266	5.9	26.1
6:00 AM	221.33	259.5	3, 4, 5, 6, 7, 8: 261	5.9	26.0
7:00 AM	221.07	259.57		5.9	26.0
8:00 AM				5.9	26.0

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 8/20/14

Samplers: Milton Quattlebaum

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:24 AM	Unit 1	5.53		27.54 on
5:27 AM	Unit 2	5.88		27.68 off
5:30 AM	Unit 3	5.91		27.65 off
5:33 AM	Unit 4	5.99		27.67 on
5:36 AM	Unit 5	5.92		27.68 off
5:39 AM	Unit 6	5.91		27.64 off
5:42 AM	NPDES 001 sign	5.91		27.64
5:48 AM	At USGS gage	5.90		27.47
5:53 AM	DWNSTRM Plant	5.90		27.55
6:26 AM	Unit 1	5.63		27.70 on
6:29 AM	Unit 2	5.87		27.68 off
6:31 AM	Unit 3	5.86		27.67 off
6:33 AM	Unit 4	5.91		27.66 on
6:35 AM	Unit 5	5.87		27.63 off
6:38 AM	Unit 6	5.86		27.60 off
6:41 AM	NPDES 001 sign	5.93		27.65
6:46 AM	At USGS gage	5.97		27.21
6:50 AM	DWNSTRM Plant	5.86		27.48
7:32 AM	Unit 1	5.67		27.64 on
7:34 AM	Unit 2	5.96		27.57 off
7:38 AM	Unit 3	5.92		27.66 off
7:41 AM	Unit 4	6.02		27.65 on
7:43 AM	Unit 5	5.97		27.64 off
7:45 AM	Unit 6	5.87		27.53 off
7:48 AM	NPDES 001 sign	5.93		27.61
7:56 AM	At USGS gage	5.86		27.47
8:00 AM	DWNSTRM Plant	5.83		27.50
8:09 AM	Unit 1	5.73		27.61 on

*no gates spilling

Time	Jenkinsville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenkinsville	USGS Temp data at Jenkinsville
5:00 AM	220.97	258.50	1, 2, 9, 10: 265	5.8	27.6
6:00 AM	220.96	258.37	3, 4, 5, 6, 7, 8: 266	5.8	27.6
7:00 AM	220.94	258.42		5.7	27.5
8:00 AM				5.7	27.5

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 8/26/14

Samplers: Milton Quattlebaum

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:17 AM	Unit 1	7.05	28.08	off
5:20 AM	Unit 2	7.02	28.08	off
5:23 AM	Unit 3	7.09	28.07	on
5:26 AM	Unit 4	6.41	28.08	on
5:28 AM	Unit 5	6.29	28.06	off
5:31 AM	Unit 6	6.25	28.03	off
5:34 AM	NPDES 001 sign	6.30	28.04	
5:41 AM	At USGS gage	6.29	27.90	
5:46 AM	DWNSTRM Plant	6.20	27.95	
6:26 AM	Unit 1	7.00	28.02	off
6:29 AM	Unit 2	7.06	28.00	off
6:32 AM	Unit 3	7.03	27.98	on
6:35 AM	Unit 4	6.64	27.90	on
6:38 AM	Unit 5	6.43	27.86	off
6:41 AM	Unit 6	6.41	27.82	off
6:45 AM	NPDES 001 sign	6.50	27.87	
6:51 AM	At USGS gage	6.51	27.82	
6:56 AM	DWNSTRM Plant	6.36	27.61	
7:30 AM	Unit 1	6.74	27.81	off
7:32 AM	Unit 2	6.81	27.79	off
7:34 AM	Unit 3	6.80	27.84	on
7:36 AM	Unit 4	6.68	27.71	on
7:38 AM	Unit 5	6.45	27.74	off
7:42 AM	Unit 6	6.47	27.66	off
7:44 AM	NPDES 001 sign	6.50	27.74	
7:48 AM	At USGS gage	6.35	27.71	
7:53 AM	DWNSTRM Plant	6.29	27.60	
8:01 AM	Unit 1	6.67	27.79	off

*no gates spilling

Time	Jenkinsville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenkinsville	USGS Temp data at Jenkinsville
5:00 AM	221.10	261.50	1, 2, 9, 10: 266	6.3	27.9
6:00 AM	221.10	261.33	3, 4, 5, 6, 7, 8: 265	6.4	27.8
7:00 AM	221.08	261.01		6.4	27.6
8:00 AM				6.3	27.5

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 9/03/14

Samplers: Milton Quattlebaum and Kelly Miller

Time	Location	DO (mg/L)	Temp (°C)	Units Running
5:01 AM	Unit 1	5.88	28.45	on
5:04 AM	Unit 2	5.74	28.41	off
5:10 AM	Unit 3	5.61	28.40	on
5:14 AM	Unit 4	5.75	28.42	on
5:17 AM	Unit 5	5.67	28.49	off
5:19 AM	Unit 6	5.63	28.48	off
5:24 AM	NPDES 001 sign	5.82	28.35	
5:29 AM	At USGS gage	6.02	28.86	
5:35 AM	DWNSTRM Plant	6.11	28.43	
6:19 AM	Unit 1	5.56	28.41	on
6:21 AM	Unit 2	5.58	28.41	off
6:25 AM	Unit 3	5.53	28.42	on
6:27 AM	Unit 4	5.62	28.44	on
6:30 AM	Unit 5	5.73	28.46	off
6:33 AM	Unit 6	5.69	28.47	off
6:35 AM	NPDES 001 sign	5.71	28.46	
6:40 AM	At USGS gage	5.73	28.46	
6:45 AM	DWNSTRM Plant	5.69	28.13	
7:31 AM	Unit 1	5.57	28.61	on
7:36 AM	Unit 2	5.62	28.60	off
7:39 AM	Unit 3	5.63	28.59	on
7:41 AM	Unit 4	5.61	28.57	on
7:44 AM	Unit 5	5.63	28.54	off
7:47 AM	Unit 6	5.56	28.54	off
7:49 AM	NPDES 001 sign	5.53	28.55	
7:53 AM	At USGS gage	5.46	28.51	
7:59 AM	DWNSTRM Plant	5.56	28.30	
8:05 AM	Unit 1	5.55	28.51	on

*no gates spilling

Time	Jenksville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenksville	USGS Temp data at Jenksville
5:00 AM	221.43	259.43	all @ 266	5.7	28.4
6:00 AM	221.38	259.1		5.8	28.4
7:00 AM	221.38	258.74		5.4	28.4
8:00 AM				5.4	28.4

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 9/10/14

Samplers: Milton Quattlebaum

Time	Location	DO (mg/L)	Temp (°C)	Units Running	
6:02 AM	Unit 1	5.90		27.12 on	
6:04 AM	Unit 2	5.82		27.11 off	
6:07 AM	Unit 3	5.71		27.09 off	
6:10 AM	Unit 4	5.77		27.09 on	
6:13 AM	Unit 5	5.62		27.08 off	
6:17 AM	Unit 6	5.61		27.04 off	
6:20 AM	NPDES 001 sign	5.65		27.01	
6:30 AM	At USGS gage	5.62		27.04	
6:35 AM	DWNSTRM Plant	5.64		26.98	
7:22 AM	Unit 1	5.82		26.95 on	
7:26 AM	Unit 2	5.76		26.94 off	
7:29 AM	Unit 3	5.83		26.92 off	
7:32 AM	Unit 4	5.81		26.92 on	
7:35 AM	Unit 5	5.66		26.93 off	
7:38 AM	Unit 6	5.74		26.67 off	
7:41 AM	NPDES 001 sign	5.69		26.90	
7:46 AM	At USGS gage	5.78		26.64	
7:50 AM	DWNSTRM Plant	5.72		26.72	
8:27 AM	Unit 1	5.78		26.81 on	
8:30 AM	Unit 2	5.80		26.87 off	
8:33 AM	Unit 3	5.79		26.85 off	
8:36 AM	Unit 4	5.85		26.85 on	
8:38 AM	Unit 5	5.80		26.86 off	
8:40 AM	Unit 6	5.76		26.83 off	
8:42 AM	NPDES 001 sign	5.78		26.84	
8:46 AM	At USGS gage	5.71		26.75	
8:50 AM	DWNSTRM Plant	5.80		26.80	
9:00 AM	Unit 1	5.65		26.82 on	
				*no gates spilling	
Time	Jenksville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenksville	USGS Temp data at Jenksville
6:00 AM	221.07	259.38	all @ 266	5.6	26.9
7:00 AM	221.05	259.44		5.7	26.8
8:00 AM	221.06	259.43		5.7	26.8
9:00 AM				5.7	26.8

APPENDIX B

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 9/16/14

Samplers: Milton Quattlebaum

Time	Location	DO (mg/L)	Temp (°C)	Units Running
6:01 AM	Unit 1	5.13	26.99	off
6:04 AM	Unit 2	5.37	26.73	off
6:07 AM	Unit 3	5.36	27.06	off
6:09 AM	Unit 4	5.25	27.06	on
6:12 AM	Unit 5	4.95	27.01	off
6:15 AM	Unit 6	4.97	26.96	off
6:18 AM	NPDES 001 sign	4.95	26.84	
6:22 AM	At USGS gage	4.94	26.81	
6:26 AM	DWNSTRM Plant	4.87	26.77	
7:03 AM	Unit 1	5.16	26.99	off
7:05 AM	Unit 2	5.20	26.96	off
7:08 AM	Unit 3	5.34	26.98	off
7:11 AM	Unit 4	5.10	26.99	on
7:13 AM	Unit 5	5.00	26.92	off
7:16 AM	Unit 6	4.97	26.93	off
7:19 AM	NPDES 001 sign	4.81	26.85	
7:24 AM	At USGS gage	4.98	26.80	
7:30 AM	DWNSTRM Plant	4.95	26.83	
8:02 AM	Unit 1	5.18	26.91	off
8:05 AM	Unit 2	5.15	26.92	off
8:08 AM	Unit 3	5.30	26.88	off
8:11 AM	Unit 4	5.24	26.93	on
8:13 AM	Unit 5	4.99	26.93	off
8:15 AM	Unit 6	4.96	26.91	off
8:18 AM	NPDES 001 sign	5.04	26.80	
8:24 AM	At USGS gage	4.92	26.87	
8:28 AM	DWNSTRM Plant	5.12	26.67	
8:39 AM	Unit 1	5.26	26.89	

Time	Jenksville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenksville	USGS Temp data at Jenksville
6:00 AM	220.54	259.57	1, 2, 9, 10 @266	5.0	26.9
7:00 AM	220.54	259.73	3, 4, 5, 6, 7, 8@262	5.0	26.8
8:00 AM	221.44	259.81		5.0	26.9
9:00 AM				5.0	26.8

Parr/Fairfield Relicensing Dissolved Oxygen Study 2014

Date: 9/25/14

Samplers: Milton Quattlebaum

Time	Location	DO (mg/L)	Temp (°C)	Units Running
6:09	Unit 1	7.80	21.40	off
6:11	Unit 2	7.76	21.42	off
6:15	Unit 3	7.81	21.44	on
6:17	Unit 4	7.85	20.90	on
6:21	Unit 5	7.70	21.39	off
6:24	Unit 6	7.65	21.42	off
6:27	NPDES 001 sign	7.66	21.43	
6:33	At USGS gage	7.10	21.40	
6:40	DWNSTRM Plant	7.61	21.36	
7:17	Unit 1	7.69	21.68	off
7:19	Unit 2	7.71	21.67	off
7:21	Unit 3	7.80	21.67	on
7:23	Unit 4	7.70	21.61	on
7:25	Unit 5	7.58	21.57	off
7:27	Unit 6	7.62	21.62	off
7:29	NPDES 001 sign	7.60	21.62	
7:34	At USGS gage	7.65	21.61	
7:39	DWNSTRM Plant	7.31	21.59	
8:13	Unit 1	7.67	21.75	off
8:15	Unit 2	7.65	21.72	off
8:17	Unit 3	7.71	21.75	on
8:19	Unit 4	7.66	21.62	on
8:21	Unit 5	7.65	21.51	off
8:23	Unit 6	7.58	21.59	off
8:25	NPDES 001 sign	7.63	21.60	
8:29	At USGS gage	7.62	21.42	
8:34	DWNSTRM Plant	7.59	21.47	
8:39	Unit 1	7.68	21.65	off

*no gates spilling

Time	Jenksville 02160991	Parr Res. Level 02160990	Parr Crest Gate	USGS DO data at Jenksville	USGS Temp data at Jenksville
6:00 AM	221.06	259.18	all @ 266	7.3	21.5
7:00 AM	221.05	259.2		7.3	21.5
8:00 AM	221.05	259.24		7.3	21.5
9:00 AM				7.3	21.5

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY **Lake and Land Management TWC Meeting**

April 22, 2015

Final KDM 06-08-15

ATTENDEES:

Bill Marshall (SCDNR)
Byron Hamstead (USFWS)
Dick Christie (SCDNR)
Randy Mahan (SCE&G)
Beth Trump (SCE&G)
Steve Summer (SCANA)
Greg Mixon (SCDNR)
Lorianne Riggan (SCDNR)

Bill Argentieri (SCE&G)
Scott Collins (SCE&G)
Tommy Boozer (SCE&G)
Henry Mealing (Kleinschmidt)
Alison Jakupca (Kleinschmidt)
Kelly Miller (Kleinschmidt)
Malcolm Leaphart (Congaree Riverkeeper)

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.

Alison opened the meeting with a review of the land use classifications and prescriptions that were determined at previous meetings. A summary of these classifications and prescriptions for Parr and Monticello are attached to the end of these notes.

Dick asked if the lands around Monticello Reservoir are open to the public for passive recreation, just like those lands located around the Recreation Lake. Tommy said that it isn't advertised, but yes, the shoreline of Monticello Reservoir is open to the public for passive recreation. Alison added that Project lands are available for passive recreation, except those classified as Project Operations or Nuclear Exclusion and are restricted for public safety and security purposes. She will clarify this in the Shoreline Management Plans (SMPs).

The group then examined the color-coded, land classification GIS map of Monticello Reservoir. Byron said since forestry use is included in recreation areas, he wants more information on the forestry management practices in those areas. Dick said that the definition for the recreation classification does not include mention of forestry management. Alison said that he was correct, that forestry is not included in the recreation section yet, and this information will be added. She also said that there is a separate section on forestry management already included in the SMP.

Randy said that SCE&G uses accepted forestry practices. Byron said he doesn't want to see clear cutting, since it can exacerbate erosion. He said that the Recreation Lake is especially important because it includes a large area where the forest is managed. Malcolm asked if prescribed burns are used as a part of forestry management. Scott said that understory prescribed burns have been done in some areas around the Recreation Lake, approximately every 5 to 10 years, and on the islands more frequently. He added that an area near Monticello Reservoir was clear cut several years back

due to an outbreak of the Southern Pine beetle. Byron asked how SCE&G manages the land around the lake, while maintaining the integrity of the strip of land directly adjacent to the shoreline and preventing an outbreak of beetles. Scott said that if there is an outbreak, they would probably need to thin the area adjacent to the shoreline. Outside of the shoreline buffer area, SCE&G thins to keep the pine forest healthy, but they generally don't clear cut. Dick said that the methods and goals of the management practices should be identified.

Byron asked if there is a written prescription for Project lands. SCE&G follows the State of South Carolina Forestry Best Management Practices. Any stricter forestry management practices are on a case-by-case basis at the discretion of SCE&G.

The group continued to look at land use classifications around Monticello Reservoir, clarifying areas and classifications as necessary. One area on the east side of the Reservoir in particular is classified as future recreation; however the current map identifies a portion of future recreation outside the PBL. This will be clarified on future maps and discussions on the need to develop this property will continue through the relicensing.

A tract of land located close to the Fairfield Development, which was originally identified for future recreation, is proposed to be reclassified as Project Operations. This was changed because there is no or limited access, and the parcel is located close to the Fairfield dams and tailrace channel. Scott said that this land has also been set aside for safety reasons due to the nuclear plant expansion.

The group reviewed that back property owners must own 200 ft along the PBL to qualify for a dock, and the back property must be close enough to the shoreline as to allow for a meandering path not longer than 200 ft. Byron said he wants the guidelines to say that all docks will be ground truthed by SCE&G staff. The color-coded GIS map should not be interpreted as permission to have a dock, since there are some areas that may not be distinguished accurately as a dock exclusion zone.

The group then focused on the shoreline around Parr Reservoir. The waters of Monticello Reservoir and portions of Parr Reservoir are within the SCDNR Wildlife Management Area classification for duck hunting and are therefore open to the public for hunting with a WMA permit. WMA guidelines are further discussed in the SMP and Permitting Handbook. As on Monticello, passive recreation is allowed on the lands around Parr Reservoir that are classified as "Non-development". WMA lands are included in the recreation numbers in the SMP classification table.

Steve said that an area on the shoreline of Parr Reservoir is going to be the site for the discharge of the new nuclear units. He asked if this area needs to be reclassified as Project operations, instead of a non-development, dock exclusion area. The group agrees to keep the classification as non-development, since the shoreline will return to normal once construction is finished, the discharge will be located underwater and this activity is not related to Parr Hydro operations.

Docks are not a permitted structure along the Parr Reservoir shoreline, however there may be meandering paths and water withdrawals permitted.

Dick asked if more of the shoreline around Monticello could be classified as dock exclusion areas, to protect the shoreline from more development. He said he knows that it would be difficult to change many of the areas, but that it is worth a look. Tommy said that many people have purchased

property with the intent to install a dock or an access path to the lake, based on the existing SMP. It would be hard to take this away.

Byron said he wants to see more specific language around natural areas, including how SCE&G plans to protect the natural areas, to keep the integrity and value of certain ecological features and cove habitats for the next 40 or 50 years.

Bill M said that when he worked on the Keowee-Toxaway Project for Duke Energy, they developed a habitat inventory, which included a classification system for various levels of habitat. This provided a tool to use for future evaluation of shoreline habitat, by giving you something to reevaluate. It helped to set goals or create incentives for maintaining habitat. Bill M said he would send this information out to the TWC. Tommy said they have something like this in place at Lake Murray, but nothing has been developed for Monticello Reservoir yet.

After this discussion, the meeting closed. Listed below are action items stemming from this meeting.

ACTION ITEMS:

- Alison and Byron will talk separately to discuss “natural areas” language.
- Alison will continue to work with Corbin and the SCE&G forestry management group to include information in the SMP about the forestry management practices at Monticello and Parr reservoirs.
- Scott will clean up the GIS map.
- Alison will include language in the introduction of the SMP to discuss how all Project-owned property except that designated as Nuclear Exclusion Zone and Project Operations is open to the public for passive recreation activities.
- Bill M will distribute Keowee-Toxaway habitat inventory.
- Alison will include forestry management in the definition of “Recreation” for both the Parr and Monticello SMPs.

Parr Hydroelectric Project (FERC No. 1894)
Proposed Land Use Classifications and Prescriptions

Monticello Reservoir

PROJECT OPERATIONS

Classification: This classification includes SCE&G-owned and managed lands required for operation of the Fairfield Development.

Prescription: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

NUCLEAR EXCLUSION ZONE

Classification: The Nuclear Exclusion Zone consists of the area surrounding the V.C. Summer Nuclear Station between the Project boundary line and shoreline and a specified area within Monticello Reservoir where SCE&G as the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property. This area is designated by warning signs on the landward side and by buoys on the lakeward side.

Prescription: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

SHORELINE PERMITTING (PREVIOUSLY DOCK APPROVAL PROPERTY)

Classification: Areas within the Shoreline Permitting Classification may be eligible for certain private residential uses upon approval by SCE&G. These uses include a single, meandering path and a dock, shoreline stabilization, and water withdrawal for residential irrigation purposes. This classification does not allow for commercial activities.

Prescription: Residential landowners whose property adjoins lands within the Shoreline Permitting classification may be eligible for certain permitted structures only upon written consent from SCE&G's Lake Management Department. SCE&G strictly regulates the placement

and construction of permitted structures. Specific information relating to permitted structures is included within this Permitting Handbook.

PUBLIC RECREATION

Classification: Lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Project lands devoted to public recreation include developed park sites, public boat launches, the Recreation Lake, properties set aside for future recreational development, and islands on Monticello Reservoir owned by SCE&G.

Prescription: With the exception of the islands, which are maintained in their natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including swimming, fishing, picnicking, and boat launching.

Islands

SCE&G owns all of the islands on Monticello Reservoir and they are available for passive public recreational use, as described within the prescription below.

Prescription: The islands on Monticello Reservoir are available for passive public recreational use, such as fishing, walking and bird watching. Hunting is prohibited on the islands.

Recreation Lake

The Recreation Lake is located at the north end of Monticello Reservoir and is approximately 300 acres and 10 miles of shoreline. The Recreation Lake was constructed to provide stable water fisheries and recreation opportunities.

Prescription: The park area at the Recreation Lake offers fishing, swimming and picnic facilities. Regulations for its use are posted at the park site. The swimming/beach area is closed October through March. The boat launch area is open every day, all year long. No private docks or boat ramps will be permitted on the shoreline of the Recreation Lake. Meandering paths and water withdrawals for residential irrigation only may be considered on a case-by-case basis.

NON-DEVELOPMENT AREAS (PREVIOUSLY UNDEV AREAS/DOCK EXCLUSION)

Classification: Lands under this classification warrant special protection because they may provide important habitat, aesthetic values, or other significant Project characteristics.

Prescription: SCE&G will not permit private shoreline development for Project lands under this classification.

Parr Reservoir

PROJECT OPERATIONS

Classification: This classification includes SCE&G-owned and managed lands required for operation of the Parr Shoals Development.

Prescription: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

PUBLIC RECREATION

Classification: Lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Project lands devoted to public recreation include developed park sites, public boat launches, hunting areas, properties set aside for future recreational development, Pearson's Island, and shoals on Parr Reservoir owned by SCE&G.

Prescription: With the exception of Pearson's Island, which is maintained in its natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including hunting, swimming, fishing, picnicking, primitive camping and boat launching. Private permitted activities are excluded.

Pearson's Island and Shoals

Prescription: Pearson's Island is located on Parr Reservoir and is open for passive public recreational use, such as fishing, walking, and bird watching. Hunting is prohibited on SCE&G owned islands. Due to the fluctuation of Parr Reservoir resulting from the Fairfield Development's pumped storage operations, shoals (areas of exposed or nearly exposed, shallow lake bottom) in Parr Reservoir may be dewatered and are open for passive recreational activities.

Wildlife Management Areas

Portions of Project lands are included in the South Carolina Department of Natural Resources ("SCDNR") statewide Wildlife Management Areas (WMA) Program. These areas are open to the public for hunting and other recreational activities (visit <http://dnr.sc.gov/wma/index.html> for

additional information). The Broad River and Enoree River WMA's are open to public hunting only on specified days. Hunting is not allowed on SCE&G property unless designated under SCDNR's Wildlife Management Areas (WMA) Program. For additional information on these areas, please visit the SCDNR website at <http://dnr.sc.gov/wma/index.html>.

Prescription: Hunting is not allowed on SCE&G property unless designated under SCDNR's WMA Program. WMA Program areas may be available for hunting of waterfowl, small game and/or deer. Other recreational activities are allowed as well. See SCDNR website for regulations and WMA maps. Portions of Parr Reservoir are designated as a waterfowl management area under the WMA program.

NON-DEVELOPMENT AREAS (PREVIOUSLY UNDEV AREAS/DOCK EXCLUSION)

Classification: Project lands under this classification are protected from private development. This is done for the protection of the environmental and aesthetic integrity of the shoreline.

Prescription: SCE&G will generally not permit private shoreline development for Project lands under this classification. An exception to this may be made for meandering paths and water withdrawals on a case-by-case basis upon written approval of SCE&G.

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Operations RCG Meeting**

May 5, 2015

Final KDM 06-29-15

ATTENDEES:

Dick Christie (SCDNR)	Bill Argentieri (SCE&G)
Scott Harder (SCDNR)	Ray Ammarell (SCE&G)
Kelly Miller (Kleinschmidt)	Bill Marshall (SCDNR)
Henry Mealing (Kleinschmidt)	Greg Mixon (SCDNR)
Bret Hoffman (Kleinschmidt)	Bruce Halverson (Kleinschmidt)
Randy Mahan (SCANA)	Lorianne Riggins (SCDNR)
Gerrit Jobsis (American Rivers)	

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.

After Henry opened the meeting with introductions, Bret gave the group a recap of the Operations Model development process. The PowerPoint presentation that Bret prepared is attached to the end of these notes.

Dick asked about power releases, and how this is translated in the model. Bret said that if, for example, 10,000 cfs is traveling through the system, 6,000 cfs would be routed through the powerhouse, and the remaining 4,000 cfs would go through the crest gates. Gerrit asked if power releases are considered the total amount of generation (cumulative), or any flows above the minimum flow. Bret said that everything up to 6,000 cfs is considered a power release.

Dick asked if operational rules can be tweaked in the model. Bruce said yes, the structure of the basic model is overridden with any scenario you enter. Bret mentioned that, since the last meeting, power demand was added to the model as a requirement.

Bruce ran the model using two scenarios; the hindcast, or historical, model scenario; and the future conditions model scenario. For the historical scenario, a two week period in 2005 was used to test the accuracy of the model. Bret showed the group graphs that contained observed and simulated results for this time period. Gerrit asked how the model is going to capture real-time conditions. Henry explained that project effects on downstream habitat are not determined by the model. The model is supposed to help us understand the mass balance of water going downstream; how much water the project can pass, and how that impacts the project's ability to stay within the constraints dictated by the license and study results.

The group expressed concerns over the historical model scenario results, specifically how the simulated results appeared to be boxed off, and didn't match the peaks of the observed flows.

Gerrit asked if we will actually be able to see what is happening at the project by looking at the model. Will the model under-predict a flow event? Bruce said that he can set up a scenario that shows the exact spikes, by dictating to the model a certain action, such as lowering a gate. He explained that water allocation is one thing, but there are many decisions an operator can make, to allow more water to pass in a short amount of time versus less water over a longer amount of time. You can program a model to mimic operations for a particular day and time, but you can't program the model to make the decisions the operators will make in every case.

Gerrit stated they are interested in understanding how the project is actually operated to manage flood events, and he wants to make sure the model will look at operational rules. Bill A. explained that once inflow exceeds 6,000 cfs, operators begin lowering gates. When inflow reaches and surpasses 40,000 cfs, all gates are down.

Bruce explained that it is important to understand that models cannot predict exactly how a project will be run, because operators make decisions that may not follow the model rules for a particular flow event. For example, the gates are not operated dynamically; actual gate operations result in downstream spikes in flow, as gates are lowered in steps. However, the model can show how the project might be operated differently than it was in a particular situation, and thus offer alternative operational rules for future similar situations.

The group discussed the spikes in flow that are shown on the graphical results of the future scenario model run. Bruce said that rules that are programmed into the model need to function for a 30 year period of record, and random infrequent anomalies do not have a significant effect on the big picture. If the objective is to eliminate every anomaly like these spikes in flow, other factors will suffer, such as a reduction in simulated generation accuracy.

Gerrit asked if there was a way to run a scenario to determine how many years out of 30 a certain flow may be maintained during a particular month. Bruce said yes, you would run a scenario over the entire period of record, then calculate a percentage for how often the scenario could actually happen. Frequency and magnitude of the violation (when the scenario wouldn't work) can also be determined.

The group discussed the various parameters that will be considered. These include:

- Downstream Flows
 - State Water Plan/Minimum Flows
 - Fish and Wildlife/IFIM (STB/AMS spawning flows)
 - Navigation
 - Water Quality (including dissolved oxygen)
 - Peaking/High flows
 - Instantaneous Minimum Flows/Daily Average
 - Recreation
- Parr Fluctuations
- Monticello Fluctuations
- Low Inflow Protocol (Drought Plan)

Gerrit asked if a scenario could be run without the Fairfield Pumped Storage being factored in, to show how that development affects the project. It is more difficult to meet minimum flows if water

is being pumped up to Monticello. Henry said that the Fairfield Pumped Storage Development is not going away, so all scenarios need to account for it. Ray said that Parr passes inflow; the extra water moving through the project is what is used by Fairfield. Parr may be passing 500 cfs while 29,000 acre feet are pumped up and down at Fairfield. Big fluctuations are captured when more than 6,000 cfs is passing through the project, a gate is lowered, and Fairfield is operating.

Dick said that Article 39 in the current license discusses flood flows. It ensures that the downstream flows won't exceed those that wouldn't have existed in the absence of the project. SCE&G identified this flow as 40,000 cfs. Ray said SCE&G never operates Fairfield as to exceed 40,000 cfs. However, SCE&G does add to the inflow downstream between flows of 6,000 cfs and 40,000 cfs, when Fairfield generates.

Stakeholders identified a desire to cap off and smooth out fluctuations downstream of Parr. Bill M. asked if the dual flow analysis portion of the IFIM study will account for the fluctuations between the identified ceiling and floor flows. Henry could not promise that it would, but a minimum flow range may be implemented for different periods of time throughout the year. This would cause the Project to be operated differently than it currently is. Dick said that suitability curves for certain species will need to be consulted first, to then determine if flows or operational protocols need to be adjusted.

Scott asked if there was a way to release more water as part of a baseline, in the hours before a large inflow is expected, as a way to minimize the large spikes in flow. This could be a way to still get the generation needed from the project without dumping large amounts of water downstream at one time. Bret said this depends on the flexibility that operators need to keep the project running within compliance of the license. Currently, operators aren't concerned with a few spikes in flow caused by incrementally dropping gates. They are concerned with keeping the flow between 800 and 1,000 cfs.

The group discussed the importance of fluctuation and attenuation from a fish spawning perspective. Dick said he would look into how this might affect striped bass spawning downstream.

With this the meeting was adjourned. Action items are listed below.

ACTION ITEMS:

- Ray will talk to operators and investigate times when gates are lowered during mid-range flows.
- Ray and Bret will develop a baseline load demand and send to Scott for review in the next 4 months. Bruce will use this information for model run comparisons when alternative recommendations are submitted by the various RCG's and TWC's.
- Bruce will expand on the "HEC-DSS cheat sheet" that is included in the Operations Model Report.
- Dick will investigate striped bass spawning flows.

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Lake and Land Management TWC Meeting**

August 20, 2015

Final KDM 10-06-15

ATTENDEES:

Bill Argentieri (SCE&G)	Bill Marshall (SCDNR)
Scott Collins (SCE&G)	Dick Christie (SCDNR)
Tommy Boozer (SCE&G)	Greg Mixon (SCDNR)
Randy Mahan (SCE&G)	Lorianne Riggin (SCDNR)
Ray Ammarell (SCE&G)	Byron Hamstead (USFWS)
Corbin Johnson (SCE&G)	John Fantry (Town of Winnsboro)
Beth Trump (SCE&G)	Billy Hendrix (Property Owner)
Steve Summer (SCANA)	Alison Jakupca (Kleinschmidt)
Brandon Stutts (SCANA)	Kelly Miller (Kleinschmidt)
Caleb Gaston (SCANA)	Henry Mealing (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.

Alison opened the meeting by giving a recap of the progress made on the Shoreline Management Plans (SMPs) and Shoreline Management Handbook and Permitting Guidelines (Permitting Handbook). The SMPs were reissued prior to the meeting and included the changes discussed at the April 22, 2015 meeting. The completed first draft of the Permitting Handbook was also distributed prior to the meeting. The purpose of this meeting was to discuss these documents and identify any edits that might be needed.

The group discussed the South Carolina's Best Management Practices for Forestry publication (BMPs) to which SCANA adheres. Copies of the BMPs were distributed to the group, and can also be found at: <http://www.state.sc.us/forest/bmpmanual.pdf>. Corbin stated that SCANA follows these BMPs at a minimum, and may be even more conservative at times depending on the area. Scott said that these regulations have been in place for 20-25 years, and the state does random inspections to make sure these regulations are followed. The inspection reports are periodically published by the State Forestry Division.

The group began reviewing the Permitting Handbook. A few minor edits were made to the document for clarification.

Prior to the meeting, Alison prepared some language for addition to all three documents regarding "natural areas", per Byron's request. Generally everyone agreed to the addition, with a few minor revisions. The draft wording, which was discussed again later in the meeting, is attached to the end of these notes.

Byron asked why the beach area at the Recreation Lake is closed during the winter months. Tommy stated that the boat ramp remains open year-round, but the beach closes because they don't want to encourage swimming during the winter months. He also said they were experiencing a lot of vandalism at the beach area during the winter, when it was open.

Byron said that he doesn't want restrictions put on landowners who want to remove invasive terrestrial plant species from their permitted paths. Clarification was added to the handbook to specify that maintenance of permitted paths was allowed using mechanical methods, but the use of herbicides is prohibited.

Lorianne said that SCDNR is currently working towards securing an Army Corps of Engineers Programmatic General Permit (PGP) for fish habitat enhancement measures in reservoirs throughout the state, which includes Monticello Reservoir. She asked if the handbook and Monticello SMP should state that SCDNR will consult with SCE&G prior to implementing any of these measures. Everyone agreed that this should be added. Lorianne will provide draft wording for inclusion in these documents.

Billy Hendrix brought up the topic of deeded access to Parr Reservoir and asked SCE&G to consider paths across property deeper than 200 feet. SCE&G noted that they would research deed restrictions and develop an appropriate position for this request.

After lunch, the group discussed the draft "natural areas" wording again. SCDNR asked that the wording also state that in the event an RTE species is identified in the project boundary, SCE&G will consult with the agencies. Byron also asked that language be included on how water withdrawals may have environmental impacts. Alison will make the requested changes, and send it back out to stakeholders for final review.

The SMPs and Permitting Handbook are attached to the end of these notes, with edits displayed in track changes. SMP edits will be accepted and finalized, pending agreement of the "natural areas" wording and the SCDNR fish habitat wording from Lorianne. The Permitting Handbook will be revised and sent out to stakeholders for final review. Action items from the meeting are listed below.

Following the meeting, Jeff Carter and Billy Hendrix requested clarification regarding hunting with the PBL. Email correspondence addressing this matter is attached.

ACTION ITEMS:

- Lorianne will provide draft language to be included in the Monticello SMP and Permitting Handbook regarding SCDNR's PGP for fish habitat enhancement measures.
- Scott will make edits to the legends on the Shoreline Classification maps for Parr and Monticello.
- SCE&G will send USFWS a list of residences that have water withdrawal permits on Monticello Reservoir.
- SCE&G will review deeds and develop a policy for allowing access across the PBL on Parr Reservoir.

- Alison will make edits to “natural areas” wording and redistribute to the group for comment.
- Alison will make edits to SMPs and Permitting Handbook and redistribute to the group for comment.

Monticello

Section 11.0 – Shoreline Management Practices

11.1 – SCE&G Shoreline Management Practices

11.1.4 (or 2.2.5 for Monticello under PH) – Protection of Lands Known to Provide Important Habitat Values

Commented [AWR1]: Work with Byron on title of this section

Reservoirs are dynamic environments and the important natural and cultural values that Monticello Reservoir presents may evolve over time. During the upcoming license term, areas along the shoreline may be found to warrant protection against materially negative impacts from development upon one or more of a variety of ecologically important characteristics. Such characteristics may include, but not be limited to the following: areas known to be occupied by rare, threatened or endangered species; rare or exemplary natural communities; [species in the State Wildlife Action Plan](#), significant land forms and geologic features; wetlands and shallow coves; and other areas, such as spawning and nesting habitat, determined to be critical to the continued existence of native species. [In the event that one of the aforementioned species is determined to be present in the PBL, SCE&G will consult with SCDNR to determine appropriate management policies.](#) SCE&G already seeks to protect areas as these through the following policies and practices: 1.) A total of 8.6 miles of shoreline along Monticello Reservoir (150 acres) are included under the Non-Development Area classification. These areas include coves – defined to be areas where the distance across the water from one shoreline to the other at the 425-foot contour (normal high water level) is less than 200 feet. 2.) Docks are not permitted within Non-Development Areas. 3.) Docks are not to be permitted on shoreline under any classification where that shoreline is materially affected by significant erosion or steep slopes unless the applicant agrees to provide approved shoreline erosion control devices that can be accomplished without the clearing of vegetation or disturbance of shallow water habitat. 4.) Only relatively narrow and meandering paths and water withdrawals may be considered for permitting under the Non-Development classification, and even then only on a case-by-case basis by SCE&G, with an emphasis given to protecting any unique habitats and aesthetic values of the shoreline in question. 5.) SCE&G may dictate the permitted location of docks, meandering paths or water withdrawal lines so that they avoid areas with important environmental and cultural values. 6.) SCE&G may reject permit requests completely where environmentally sound access points are not available.

[As noted above, vegetation on Project property is generally maintained as non-disturbance. However, there may be times during which active, sound forest management practices are warranted \(selective harvesting for optimal growth and/or health\) or even required for the protection of the integrity of the shoreline \(i.e. southern pine beetle infestations\). SCE&G actively manages timber on Project property surrounding Monticello Reservoir in accordance with South Carolina’s Best Management Practices for Forest Publication and uses sound judgement when considering any impacts to environmentally or culturally sensitive areas.](#)

Parr

Section 11.0 – Shoreline Management Practices

11.1 – SCE&G Shoreline Management Practices

11.1.2 (or 3.2.3 for Parr under PH) – Protection of Lands Known to Provide Important Habitat Values

Commented [AWR2]: Work with Byron on title of this section

Reservoirs are dynamic environments and the important natural and cultural values that ~~Monticello Parr~~ Reservoir presents, may evolve over time. During the upcoming license term, areas along the shoreline may be found to warrant protection against materially negative impacts from development upon one or more of a variety of ecologically important characteristics. Such characteristics may include, but not be limited to the following: areas known to be occupied by rare, threatened or endangered species; rare or exemplary natural communities; [species in the State Wildlife Action Plan](#), significant land forms and geologic features; wetlands and shallow coves; and other areas, such as spawning and nesting habitat, determined to be critical to the continued existence of native species. [In the event that one of the aforementioned species is determined to be present in the PBL, SCE&G will consult with SCDNR to determine appropriate management policies. SCE&G already seeks to protect areas as these through the following policies and practices: 1.\) A total of 79.91 miles of shoreline along Parr Reservoir \(2,188 acres\) are included under the Non-Development Area classification. As noted previously, private development and other land management activities are minimized under this classification and the vegetation within these areas is generally maintained as non-disturbance. 2.\) Only relatively narrow and meandering paths and water withdrawals may be considered for permitting under the Non-Development classification, and even then only on a case-by-case basis by SCE&G, with an emphasis given to protecting any unique habitats and aesthetic values of the shoreline in question. 3.\) SCE&G may dictate the permitted location of meandering paths or water withdrawal lines so that they avoid areas with important environmental and cultural values. 4.\) SCE&G may reject permit requests completely where environmentally sound access points are not available.](#)

[As noted above, vegetation on Project property is generally maintained as non-disturbance. However, there may be times during which active, sound forest management practices are warranted \(selective harvesting for optimal growth and/or health\) or even required for the protection of the integrity of the shoreline \(i.e. southern pine beetle infestations\). SCE&G actively manages timber within the Parr Project boundary line in accordance with South Carolina's Best Management Practices for Forest Publication and uses sound judgement when considering any impacts to environmentally or culturally sensitive areas.](#)

**SHORELINE MANAGEMENT
HANDBOOK AND PERMITTING
GUIDELINES**

**MONTICELLO AND PARR
RESERVOIRS**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

Prepared for:

**South Carolina Electric & Gas Company
Cayce, South Carolina**

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtGroup.com

July 2015

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**PARR HYDROELECTRIC PROJECT
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SOUTH CAROLINA ELECTRIC & GAS COMPANY

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	MONTICELLO RESERVOIR	3
2.1	LAND USE CLASSIFICATIONS AND PRESCRIPTIONS	3
2.1.1	PROJECT OPERATIONS	3
2.1.2	NUCLEAR EXCLUSION ZONE	3
2.1.3	SHORELINE PERMITTING	4
2.1.4	PUBLIC RECREATION	4
2.1.4.1	ISLANDS	4
2.1.4.2	RECREATION LAKE	5
2.1.5	NON-DEVELOPMENT AREAS	5
2.2	ENVIRONMENTAL POLICIES AND PRACTICES	6
2.2.1	NON-DISTURBANCE POLICY	6
2.2.2	AQUATIC PLANTS	6
2.2.3	WOODY DEBRIS & STUMP MANAGEMENT	7
2.2.4	FOREST MANAGEMENT PRACTICES	7
2.3	PUBLIC ACCESS AREAS	7
2.4	SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING	8
2.4.1	DOCKS	8
2.4.1.1	PRIVATE INDIVIDUAL DOCKS	9
2.4.1.2	PRIVATE COMMON DOCKS	10
2.4.1.3	DOCK MODIFICATIONS	10
2.4.2	SHORELINE VEGETATION MANAGEMENT	10
2.4.3	ACCESS PATH	11
2.4.3.1	MONTICELLO RESERVOIR	11
2.4.3.2	RECREATION LAKE	11
2.4.4	SHORELINE STABILIZATION	12
2.5	PROHIBITED STRUCTURES AND ACTIVITIES	13
3.0	PARR RESERVOIR	15
3.1	LAND USE CLASSIFICATIONS AND PRESCRIPTIONS	15
3.1.1	PROJECT OPERATIONS	15
3.1.2	PUBLIC RECREATION	15
3.1.2.1	PEARSON'S ISLAND AND SHOALS	15
3.1.2.2	WILDLIFE MANAGEMENT AREAS	16
3.1.3	NON-DEVELOPMENT AREAS	16
3.2	ENVIRONMENTAL POLICIES AND PRACTICES	17

TABLE OF CONTENTS (CONT'D)

3.2.1	NON-DISTURBANCE POLICY	17
3.2.2	FOREST MANAGEMENT PRACTICES.....	17
3.3	PUBLIC ACCESS AREAS.....	17
3.4	SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING	18
3.4.1	SHORELINE VEGETATION MANAGEMENT	18
3.4.2	ACCESS PATH	19
3.5	PROHIBITED STRUCTURES AND ACTIVITIES	19
4.0	PUBLIC FISHING, BOATING & HUNTING	22
5.0	WATER WITHDRAWAL	23
6.0	PERMITTING APPLICATION PROCEDURE	24
6.1	PERMITTING FEES	24
6.2	PERMITTING ENFORCEMENT AND VIOLATIONS	24
6.3	MISCELLANEOUS	25

LIST OF FIGURES

FIGURE 1:	PROJECT BOUNDARY
FIGURE 2:	SHORELINE CLASSIFICATIONS MAPS
FIGURE 3:	PUBLIC ACCESS AREAS
FIGURE 4:	PERMITTED BOAT DOCK DESIGNS
FIGURE 5:	NARROW COVE EXAMPLE
FIGURE 6:	LAND MANAGEMENT PRESCRIPTIONS FOR PRIVATE INDIVIDUAL DOCK - MONTICELLO RESERVOIR
FIGURE 7:	PRIVATE COMMON DOCK LAYOUT EXAMPLE
FIGURE 8:	MONTICELLO RESERVOIR PERMITTED ACCESS PATH EXAMPLE
FIGURE 9:	RECREATION LAKE PERMITTED ACCESS PATH EXAMPLE
FIGURE 10:	PARR RESERVOIR PERMITTED ACCESS PATH EXAMPLE

LIST OF APPENDICES

APPENDIX A:	PERMITTING FIGURES AND EXAMPLES
APPENDIX B:	SHORELINE PERMIT APPLICATION
APPENDIX C:	CONDITIONS OF PERMIT
APPENDIX D:	VEGETATION AGREEMENT
APPENDIX E:	SHORELINE MANAGEMENT AGREEMENT

**SHORELINE MANAGEMENT HANDBOOK AND PERMITTING GUIDELINES
MONTICELLO AND PARR RESERVOIRS**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

1.0 INTRODUCTION

South Carolina Electric & Gas Company ("SCE&G") is the Licensee of the Parr Hydroelectric Project (Federal Energy Regulatory Commission [FERC] No. 1894) ("Project"). The Project consists of the Parr Shoals Development ("Parr Development") and the Fairfield Pumped Storage Development ("Fairfield Development"). The developments are located along the Broad River in Fairfield and Newberry Counties, South Carolina.

The Project developments form two distinct Project reservoirs. Monticello Reservoir is located adjacent to the Broad River and functions as the upper reservoir for the Fairfield Development. Parr Reservoir is located along the Broad River, as impounded by Parr Shoals Dam, and functions as the lower reservoir for the Fairfield Development. Both Project reservoirs serve as popular recreation destinations and are used and enjoyed by local residents, as well as visitors to the state.

This Shoreline Management Handbook and Permitting Guidelines (Permitting Handbook) has been developed in consultation with governmental, non-governmental, and individual stakeholders to specifically address and guide activities along the Monticello and Parr shorelines that require consultation with and/or permits from SCE&G. These activities include construction, maintenance, and placement of docks, shoreline stabilization, lake access pathways and other shoreline activities.

Additionally, this Permitting Handbook has been designed to work in conjunction with the Shoreline Management Plans ("SMPs") for the Monticello and Parr reservoirs (included under separate covers). The SMPs are comprehensive, overarching documents that discuss the management of Project land and adjoining water resources and their uses, consistent with FERC License requirements and broad Project purposes. The SMPs are available from SCE&G's Lake Management Department (Lake Management).

Although this Permitting Handbook provides guidance for shoreline activities, it is important to contact Lake Management prior to conducting any activity along the shorelines of Monticello or Parr reservoirs, (803) 217-9221. Lake Management is responsible for enforcing FERC directives regarding authorized and unauthorized uses of Monticello and Parr waters and land within the FERC Project boundary. FERC directives require SCE&G to prevent or halt unauthorized actions by taking measures to stop such actions.

2.0 MONTICELLO RESERVOIR

2.1 LAND USE CLASSIFICATIONS AND PRESCRIPTIONS

The FERC establishes a boundary line encompassing the lands surrounding hydroelectric projects that are needed for project purposes. Licensees are required by FERC to own, or have easement rights to, those lands included in the Project Boundary¹. SCE&G manages company-owned lands within the Parr Hydroelectric Project Boundary (Figure 1) through land use classifications and prescriptions. Land use classifications distinguish distinct areas of land for specific purposes. Land use prescriptions define the activities that may take place on lands within those classifications.

Five distinct land use classifications have been developed for the shorelines surrounding Monticello Reservoir. These land use classifications are as follows: Project Operations; Nuclear Exclusion Zone; Shoreline Permitting; Public Recreation; and, Non-Development Areas (Figure 2). Land use classifications and their associated prescriptions for Monticello reservoir are discussed below.

2.1.1 PROJECT OPERATIONS

CLASSIFICATION: This classification includes SCE&G-owned and managed lands required for operation of the Fairfield Development.

PRESCRIPTION: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

2.1.2 NUCLEAR EXCLUSION ZONE

CLASSIFICATION: The Nuclear Exclusion Zone consists of the area surrounding the V.C. Summer Nuclear Station² between the Project Boundary Line and shoreline and a specified area within Monticello Reservoir where SCE&G as the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property. This area is designated by warning signs on the landward side and by buoys on the lakeward side.

¹ The Project Boundary Line also serves as the common property line between Project No. 1894 property and adjacent lands, whether owned by SCE&G or another back property owner.

² Monticello Reservoir provides cooling water for the V.C. Summer Nuclear Station located on its shore. However, the V.C. Summer Nuclear Station is a separate project from the Parr Hydroelectric Project and is licensed through the Nuclear Regulatory Commission.

PRESCRIPTION: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

2.1.3 SHORELINE PERMITTING

CLASSIFICATION: Areas within the Shoreline Permitting Classification may be eligible for certain private residential uses upon approval by SCE&G. These uses include a single, meandering path and a dock, shoreline stabilization, and water withdrawals. This classification does not allow for commercial activities (other than commercial water withdrawals).

PRESCRIPTION: Residential landowners whose property adjoins lands within the Shoreline Permitting classification may be eligible for certain permitted structures only upon written consent from Lake Management. SCE&G strictly regulates the placement and construction of permitted structures. Specific information relating to permitted structures is included within this Permitting Handbook.

2.1.4 PUBLIC RECREATION

CLASSIFICATION: Lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Project lands devoted to public recreation include developed park sites, public boat launches, the Recreation Lake, properties set aside for future recreational development, and islands on Monticello Reservoir owned by SCE&G.

PRESCRIPTION: With the exception of the islands, which are maintained in their natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including swimming, fishing, picnicking, and boat launching³. SCE&G developed and maintained access areas on Monticello Reservoir are depicted in Figure 3. Private permitted activities, other than those noted under the Recreation Lake (Section 2.1.4.2), are prohibited on lands classified as Recreation.

2.1.4.1 ISLANDS

SCE&G owns all of the islands on Monticello Reservoir and they are available for passive public recreational use, as described within the prescription below.

³ The waters of Monticello Reservoir, excluding the Recreation Lake, are available for public waterfowl hunting as discussed under Section 4.0.

PRESCRIPTION: The islands on Monticello Reservoir are available for passive⁴ public recreational use, such as bank fishing, walking and bird watching. Hunting is prohibited on the islands.

2.1.4.2 RECREATION LAKE

The Recreation Lake is located at the north end of Monticello Reservoir and is approximately 300 acres with 10 miles of shoreline. The Recreation Lake was constructed to provide stable water for fisheries and recreation opportunities.

PRESCRIPTION: The park area at the Recreation Lake offers fishing, swimming and picnic facilities. Regulations for its use are posted at the park site. The swimming/beach area is closed October through March. The boat launch area is open every day, all year long. No private docks will be permitted on the shoreline of the Recreation Lake. Meandering paths and water withdrawals may be considered on a case-by-case basis.

2.1.5 NON-DEVELOPMENT AREAS

CLASSIFICATION: Lands under this classification warrant special protection because they may provide important habitat, aesthetic values, or other significant Project characteristics.

PRESCRIPTION: SCE&G will not permit private shoreline development for Project lands under this classification.

⁴ Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilitatesfacilities, and/or have a minimal environmental impact.

2.2 ENVIRONMENTAL POLICIES AND PRACTICES

The purpose of the Shoreline Management Handbook and Permitting Guidelines is to maintain, balance and conserve the Project's natural and human-made resources, recreational opportunities, and energy production while complying with the terms of the Project's FERC license. SCE&G implements certain environmental policies and practices to achieve the purpose described above.

2.2.1 NON-DISTURBANCE POLICY

Trees, bushes, and other vegetation growing on Project property play an important role in protecting the environmental, scenic and recreational values of Monticello Reservoir. Protection of the shoreline and Project property is important to ensure and maintain a sound, healthy lake environment.

Clearing or removal of trees or vegetative cover by back-property owners and/or non-SCE&G personnel is strictly prohibited except within a permitted access path. Any unauthorized removal of shoreline vegetation will result in the immediate cancellation of dock and other permits issued by SCE&G. Violators will be required to replant and restore the disturbed area with such plantings and/or other measures as SCE&G determines is necessary to mitigate and correct the situation.

SCE&G may implement sound forest management practices on Project property as determined appropriate. SCE&G implements these practices in accordance with South Carolina State Best Management Practices as discussed in the Shoreline Management Plan (included under separate cover).

2.2.2 AQUATIC PLANTS

Lake Management, in cooperation with the South Carolina Aquatic Plant Management Council, manages the Aquatic Weed Program on Monticello Reservoir. Management includes periodic monitoring of Monticello Reservoir for hydrilla by SCE&G. Because some aquatic weed control techniques can harm fish and native plant species if improperly used, it is unlawful, per state and federal regulations, for individuals to spray or treat aquatic growth in the waters of Monticello Reservoir.

2.2.3 WOODY DEBRIS & STUMP MANAGEMENT

Woody debris consists of both large and small woody vegetation that is floating or submerged, stationary or transitory, exposed or transported by lake fluctuations and flows and is subject to decay. Monticello Reservoir does not have a significant source of woody debris; however, as a baseline, SCE&G maintains a policy of no disturbance for any and all woody debris and stumps on Project property unless its removal by SCE&G is necessary for reasons of health and human safety, or the debris is so minimal that it is insignificant in the provision of fish or wildlife habitat. [SCE&G may partner with SCDNR to enhance fisheries habitat. See additional wording to be provided by Lorianne Rigglin.](#)

2.2.4 FOREST MANAGEMENT PRACTICES

SCE&G will manage timber within the Monticello Project boundary line in accordance with South Carolina's Best Management Practices for Forestry publication.

2.3 PUBLIC ACCESS AREAS

SCE&G has developed and maintains four public parks and one informal fishing area on Monticello Reservoir. These include the following:

- Highway 99 Public Access Area
- Recreation Lake Access Area
- Highway 215 Boat Ramp
- Scenic Overlook
- Highway 99 Informal Fishing Area

Each park provides facilities for boat launching, courtesy dock(s), and/or picnic facilities for public use. The Recreation Lake also provides opportunities for swimming⁵. The Scenic Overlook is part of a multiple use recreation area that is maintained in conjunction with Fairfield County Recreation Commission. The scenic overlook area includes picnicking facilities and a fishing facility for those persons with disabilities (maintained exclusively by SCE&G). Additional amenities, maintained by others, include a baseball field, tennis courts, a basketball court, and trails.

⁵ Please note that no lifeguard is on duty. Swim at your own risk.

The Recreation Lake Beach Area is open from sunrise to sunset: April 1 through September 30. The Beach Area is closed October 1 through March 31. All other recreation facilities at Monticello Reservoir are open from sunrise to sunset, year-round.

Alcoholic beverages, hunting and pets are prohibited on SCE&G property. Primitive or overnight camping is only allowed at the Highway 99 Public Access Area, and is prohibited on all other Project property. Park rules and regulations are posted at each developed location. In addition, all islands on Monticello Reservoir and SCE&G Project property along the Monticello Reservoir shoreline (except those lands classified as Project Operations or Nuclear Exclusion) are available for passive public recreation activities. Please see Figure 3 for an identification of recreation areas on Monticello Reservoir.

2.4 SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING

It is the policy of Lake Management to authorize certain private uses of and/or acts upon Project lands by permit when such uses or acts are compatible with the public interest and comply with the requirements of the FERC license for the Project. SCE&G reserves the right to approve final design and placement of docks, access paths, and other permitted activities, as described below⁶. Any activity not in compliance with the shoreline parameters outlined below may constitute a trespass.

2.4.1 DOCKS

A permit must be obtained from Lake Management for the construction, installation, replacement of, or addition to any dock. Any adjacent landowner interested in construction, installation, replacement of, or addition to any dock *must* contact SCE&G *prior* to the start of the activity. The configuration and location of a dock will then be determined during a site visit by an SCE&G representative. Only then may the adjacent landowner proceed with construction activities in compliance with this Permitting Handbook.

General boat dock design may involve either fixed or a combination of fixed and floating structures (Figure 4). Additional dock construction requirements are as follows:

⁶ Permitted water withdrawals are discussed under Section 5.0.

- Dock construction material must consist of approved, treated lumber only. Steel and other building materials will be evaluated on an individual basis. All building materials must be approved for outdoor use.
- All dock floatation must consist of encased or encapsulated Styrofoam billets. No exposed foam billets or metal or plastic drums will be permitted. Floatation which sinks when punctured or becomes waterlogged is prohibited.
- Docks must have reflectors. Reflectors must be placed on each corner of the dock and be visible to boating traffic.
- All permanent, fixed docks must be built one foot above the maximum high water mark (425-foot contour).
- SCE&G prohibits the placement of sinks, toilets, showers, etc. or any type of equipment or construction on docks, or SCE&G property, which will create, cause, or allow any liquid or solid waste to be discharged into the waters of Monticello Reservoir.

Upon completion of dock construction, SCE&G will inspect each dock to ensure compliance and assign an inventory number to compliant docks. Only then will a dock be deemed permitted.

No dock will be permitted in narrow cove areas, which are defined to be areas where the distance across the water from one shoreline to the other at the 425-foot contour (normal high water level) is less than 200 feet (Figure 5). Additionally, docks will not be permitted on shoreline affected by significant erosion or steep slopes unless the applicant agrees to provide approved shoreline erosion control devices. This must be accomplished without the clearing of vegetation or disturbance of shallow water habitat. Use of common docks will be encouraged where practical.

2.4.1.1 PRIVATE INDIVIDUAL DOCKS

Please review the information included in Section 2.4.1, above, before proceeding. To be eligible for a private individual dock, a lot for a single family dwelling first must have a minimum of 200 feet along the Project Boundary Line (Figure 6). Additionally, the distance from the Project Boundary Line to the high water mark (425-foot contour) may not be greater than 200 feet in depth in the vicinity of the proposed dock. Only one dock will be permitted on a single-family lot⁷. One approximately 10-foot wide meandering path will be permitted from the adjacent property owner through Project property for dock access.

⁷ SCE&G does not guarantee usable water access to the waters of Monticello Reservoir at any time. Each lot along the shoreline will have different slopes and contours that will determine water depth in front of the lot. The Monticello Reservoir is a pumped storage project that can fluctuate vertically up to 4.5 feet over a 10 to 12 hour period during generation and pumping phases. The fluctuation of the reservoir will, at times, limit or restrict the use of most docks on the Monticello shoreline.

Docks may generally be up to 750 square feet in overall size (surface area) and 75 feet in length. Exact dock length may vary depending on curvature or slope of the shoreline. However, in no case may they interfere with navigation or adjoining property access. If an interference does exist, size and length may be restricted, or a permit may be denied.

2.4.1.2 PRIVATE COMMON DOCKS

Please review the information included in Section 2.4.1, above, before proceeding. Common docks provide lake access for two single-family adjacent property owners. The combined adjoining lots must have a minimum of 200 feet on the Project Boundary Line (Figure 7). Both property owners must have at least 100 feet on the Project Boundary Line in order to participate in a common dock permit. Additionally, the distance from the Project Boundary Line to the high water mark (425-foot contour) may not be greater than 200 feet in depth in the vicinity of the proposed dock. One approximately 10-foot wide dock access path will be permitted in the vicinity of the common property line between the two adjacent property owners. Property owners must share the one path.

Common docks are encouraged and may be mandated for all adjacent property owners as an alternative to individual docks and will be required on property with inadequate property line frontage or in such other circumstances that SCE&G deems appropriate.

2.4.1.3 DOCK MODIFICATIONS

Prior to initiating any project, property owners should contact Lake Management. Dock modifications that may temporarily or permanently affect the land or water of the shoreline require submittal of a permit application to SCE&G and approval of the application prior to the commencement of any such modifications. However, general maintenance and repairs of docks, such as replacing boards, may not require permitting. Dock owners must contact Lake Management for more information and guidance regarding the need for a permit to conduct dock work.

2.4.2 SHORELINE VEGETATION MANAGEMENT

No clearing or removal of trees or vegetative cover within the Project boundary will be permitted except directly within a permitted access path (see Section 2.4.3 for a discussion of access paths). Permission to remove vegetation within a permitted access path will only be granted by Lake

Management after a site visit with the applicant. Once clearing of the access path is completed according to the permit, the applicant may maintain the site-path in the permitted condition utilizing hand held tools and without the use of herbicides.

Any unauthorized removal of shoreline vegetation may result in the cancellation of dock and other permits issued by SCE&G, as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or other measures as SCE&G determines is necessary to mitigate and correct the situation.

2.4.3 ACCESS PATH

A single access path may be cleared with hand held tools and without the use of herbicides from the adjacent property owner's land upon approval of SCE&G. A SCE&G Lake Management representative will identify and designate the location of all access paths. Access path restrictions vary dependent upon whether the path will be permitted on Monticello Reservoir or the Recreation Lake. The adjacent property owner must have a minimum of 200 feet on the Project Boundary Line (Figure 6). Additionally, the distance from the Project Boundary Line to the high water mark (425-foot contour) may not be greater than 200 feet in depth in the area of the proposed access path. Examples of a permitted access path are included as Figures 8 for Monticello Reservoir and Figure 9 for the Recreation Lake.

2.4.3.1 MONTICELLO RESERVOIR

Please review the information included in Section 2.4.3, above, before proceeding. An approximately 10-foot wide access path may be permitted through SCE&G property to the shoreline of Monticello Reservoir. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path.

2.4.3.2 RECREATION LAKE

Please review the information included in Section 2.4.3, above, before proceeding. An approximately 5-foot wide access path may be permitted through SCE&G property to the shoreline of the Recreation Lake. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path.

2.4.4 SHORELINE STABILIZATION

SCE&G supports voluntary efforts to address shoreline erosion in the immediate area of docks or access paths for adjacent property owners. Additionally, SCE&G may require an adjacent property owner to provide approved shoreline erosion control devices if the adjacent property owner submits a permit application for a dock and/or access path on shoreline affected by significant erosion or steep slopes.

To ensure that appropriate, effective techniques and materials are used, SCE&G monitors and controls erosion control projects on or directly affecting Project Property. Erosion control measures on or affecting Project Property must use SCE&G shoreline stabilization practices appropriate for the specific situation. SCE&G prefers to see employment of vegetative shoreline stabilization techniques (bioengineering) to address soil erosion problems, whenever possible. However, bioengineering techniques are least effective at sites with significant and prolonged exposure to strong currents or wind-generated waves. Stabilization of areas experiencing strong erosion pressure may also require the use of structural erosion control methods such as rip-rap. Areas with high-gradient banks or those in advanced stages of erosion may also benefit from structural components. Bricks, blocks, telephone poles, tires, or materials other than rip-rap are prohibited as alternative shoreline stabilization material.

2.5 PROHIBITED STRUCTURES AND ACTIVITIES

The following structures and activities are prohibited on SCE&G Project property and on the waters of Monticello Reservoir and the Recreation Lake. These prohibitions will be enforced by SCE&G or an appropriate state or federal agency.

Prohibited Structures:

- Roofs or covers over docks;
- Boat lifts;
- Boat slips;
- Boathouses;
- Fueling facilities on a dock;
- Private boat ramps;
- Houseboats;
- Watercraft exceeding 30 feet in length;
- Watercraft with marine sanitation devices ("MSD");
- Commercial marinas;
- Marine rails;
- Sea walls;
- Fences;
- Electrical service;
- Permanent structures other than permitted docks;
- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, camper trailers, canoes or other watercraft, motor homes or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Water skiing;
- Jet Skiing;
- Parasailing;
- Paragliding;
- Mooring;

- Excavations/dredging;
- Effluent discharges;
- Planting of grass except as a permitted bioengineering erosion control measure;
- Storage or stockpiling of construction material;
- Livestock access to reservoir⁸
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Use of herbicides; and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

⁸ Unless grandfathered through deed reservations.

3.0 PARR RESERVOIR

3.1 LAND USE CLASSIFICATIONS AND PRESCRIPTIONS

Three distinct land management classifications have been developed for the shorelines surrounding Parr Reservoir. These land management classifications are as follows: Project Operations; Public Recreation; and, Non-Development Areas.

3.1.1 PROJECT OPERATIONS

CLASSIFICATION: This classification includes SCE&G-owned and managed lands required for operation of the Parr Shoals Development.

PRESCRIPTION: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

3.1.2 PUBLIC RECREATION

CLASSIFICATION: Lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Project lands devoted to public recreation include developed park sites, public boat launches, Wildlife Management Areas (WMA), properties set aside for future recreational development, Pearson's Island, and shoals on Parr Reservoir owned by SCE&G.

PRESCRIPTION: With the exception of Pearson's Island and shoals within Parr Reservoir, which are maintained in their natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including hunting⁹, fishing, picnicking, primitive and overnight camping (at Cannon's Creek, Heller's Creek and Hwy 34 Park Sites) and boat launching. SCE&G developed and maintained access areas on Parr Reservoir are depicted in Figure 3. Private permitted activities are excluded from areas under this classification.

3.1.2.1 PEARSON'S ISLAND AND SHOALS

PRESCRIPTION: Pearson's Island is located on Parr Reservoir and is open for passive public recreational use, such as fishing, walking, and bird watching. Hunting is prohibited on SCE&G property with the exception of those areas designated under South Carolina Department Natural

⁹ Certain portions of Parr Reservoir are available for public waterfowl hunting as discussed under Section 4.0.

Resource's (SCDNR) WMA Program. Due to the fluctuation of Parr Reservoir resulting from the Fairfield Development's pumped storage operations, shoals (areas of exposed or nearly exposed, shallow lake bottom) in Parr Reservoir may be dewatered and are open for passive recreational activities.

3.1.2.2 WILDLIFE MANAGEMENT AREAS

Portions of Project lands are included in the SCDNR statewide WMA Program. These areas are open to the public for hunting and other recreational activities (visit <http://dnr.sc.gov/wma/index.html> for additional information). The Broad River and Enoree River WMA's are open to public hunting only on specified days. Additionally, portions of Parr Reservoir are designated as a waterfowl management area under the WMA program. ~~Public Hunting-hunting~~ is not allowed on SCE&G property or Parr Reservoir unless designated under SCDNR's Wildlife Management Areas (WMA) Program. For additional information on these areas, please visit the SCDNR website at <http://dnr.sc.gov/wma/index.html>.

Commented [AWR1]: Change in SMP also.

PRESCRIPTION: ~~Public Hunting-hunting~~ is not allowed on SCE&G property unless designated under SCDNR's WMA Program. WMA Program areas may be available for hunting of waterfowl, small game and/or deer. Other recreational activities are allowed as well. See SCDNR website for regulations and WMA maps.

3.1.3 NON-DEVELOPMENT AREAS

CLASSIFICATION: Project lands under this classification are protected from private development. This is done for the protection of the environmental and aesthetic integrity of the shoreline.

PRESCRIPTION: SCE&G will generally not permit private shoreline development for Project lands under this classification. An exception to this may be made for meandering access paths and water withdrawals on a case-by-case basis upon written approval of SCE&G.

3.2 ENVIRONMENTAL POLICIES AND PRACTICES

As discussed in Section 2.2, SCE&G implements certain environmental policies and practices to maintain, balance and conserve the area's natural and human-made resources, recreational opportunities, and energy production while complying with the terms of the Project's FERC license.

3.2.1 NON-DISTURBANCE POLICY

As discussed regarding Monticello Reservoir, trees, bushes, and other vegetation growing on Project property along Parr Reservoir play an important role in protecting the environmental, scenic and recreational values.

Clearing or removal of trees or vegetative cover by back-property owners and/or non-SCE&G personnel is strictly prohibited except within a permitted access path. Any unauthorized removal of shoreline vegetation will result in the immediate cancellation of permits issued by SCE&G. Violators will be required to replant and restore the disturbed area with such plantings and/or measures as SCE&G determines is necessary to mitigate and correct the situation.

SCE&G may implement sound forest management practices on Project property as determined appropriate. SCE&G implements these practices in accordance with South Carolina State Best Management Practices as discussed in the Shoreline Management Plan (included under separate cover).

3.2.2 FOREST MANAGEMENT PRACTICES

SCE&G will manage timber within the Parr Project boundary line in accordance with South Carolina's Best Management Practices for Forestry publication.

3.3 PUBLIC ACCESS AREAS

SCE&G has developed and maintains two public parks and one primitive boat ramp on Parr Reservoir. These include the following:

- Cannon's Creek Public Access Area
- Heller's Creek Public Access Area
- Highway 34 Primitive Ramp

Each park provides facilities for boat launching, courtesy dock(s), and/or picnic facilities for public use. Additionally, Pearson's Island is located within Parr Reservoir, is owned by SCE&G and is available for passive public recreational use.

As discussed under Section 3.1, the Broad and Enoree Waterfowl Areas are included in the SCDNR statewide WMA Program. These areas are open to the public for hunting and other recreational activities (visit <http://dnr.sc.gov/wma/index.html> for additional information). The Broad River and Enoree River WMA's are open to public hunting only on specified days. For additional information on these areas, please visit the SCDNR website at <http://dnr.sc.gov/wma/index.html>.

Alcoholic beverages, [public](#) hunting (with the exception of the Broad River and Enoree Waterfowl Areas) and pets (except hunting dogs at the Broad River and Enoree Waterfowl Areas) are prohibited on Project property. Park rules and regulations are posted at each developed location. SCE&G Project property along the Parr Reservoir shoreline (except those lands classified as Project Operations) are available for passive public recreation activities. Please see Figure 3 for an identification of recreation areas on Parr Reservoir.

3.4 SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING

It is the policy of the SCE&G Lake Management Department to authorize certain private uses of and/or acts upon Project lands by permit when such uses or acts are compatible with the public interest and comply with the requirements of the license for the Project. SCE&G reserves the right to approve final design and placement of access paths, and other permitted activities, as described below¹⁰. Any activity not in compliance with the shoreline parameters outlined below may constitute a trespass.

3.4.1 SHORELINE VEGETATION MANAGEMENT

No clearing or removal of trees or vegetative cover within the Project boundary will be permitted except directly within a permitted access path (see Section 3.4.2 for a discussion of access paths). Permission to remove vegetation within a permitted access path will only be granted by Lake Management after a site visit with the applicant. Once clearing of the access path is completed

¹⁰ Permitted water withdrawals are discussed under Section 5.0.

according to the permit, the applicant may maintain the site-path in the permitted condition utilizing hand held tools and without the use of herbicides.

Any unauthorized removal of shoreline vegetation may result in the cancellation of permits issued by SCE&G, as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or measures as SCE&G determines is necessary to mitigate and correct the situation.

3.4.2 ACCESS PATH

A single access path approximately 5-foot wide may be cleared with hand held tools and without the use of herbicides from the adjacent property owner's land to the edge of Parr Reservoir upon approval of SCE&G ~~A single, approximately 5-foot wide access path may be permitted through SCE&G property to the shoreline of Parr Reservoir~~ (Figure 10). A Lake Management representative will identify and designate the location of all access paths. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path. The distance from the Project Boundary Line to the high water mark (266-foot contour) may not be greater than 200 feet in depth, with exceptions on a case by case basis, in the area of the proposed access path.

3.5 PROHIBITED STRUCTURES AND ACTIVITIES

The following structures and activities are prohibited on SCE&G Project property and on the waters of Parr Reservoir. These prohibitions will be enforced by SCE&G or an appropriate state or federal agency.

Prohibited Structures:

- Private boat docks;
- Private shoreline stabilization;
- Boathouses;
- Private boat ramps;
- Commercial marinas;
- Marine rails;
- Sea walls;

- Fences;
- Electrical service;
- Permanent structures;

- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, canoes or other watercraft or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Jet skiing;
- Water skiing;
- Parasailing;
- Paragliding;
- Mooring;
- Excavations/dredging (except commercial operations permitted by the state);
- Effluent discharges;
- Storage or stockpiling of construction material;
- Livestock access to reservoir¹¹
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Use of herbicides: and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

¹¹ Unless grandfathered through deed reservations.

4.0 PUBLIC FISHING, BOATING & HUNTING

Commented [AWR2]: Remove this section from the PH and make sure it is covered in the SMP.

The SCDNR maintains fishery management responsibility and state fishing regulations enforcement on Monticello and Parr reservoirs. Fishing regulations are available at SCDNR's website at: <http://www.dnr.sc.gov/fishregs/fishing.html>. SCE&G may partner with SCDNR to enhance fisheries habitat. See additional wording to be provided by Lorianne Riggin.

The boating laws of South Carolina are enforced by the SCDNR. Boaters and sportsmen should be aware of dangerous areas which are marked and for public safety should not be entered. Other warnings are posted around the reservoirs and should be observed. Due to operation of the pumped storage generating plant, the waters of Monticello and Parr reservoirs can fluctuate several feet in a matter of several hours. This fluctuation makes it especially important for boaters and other lake recreators to assume a high degree of personal responsibility for their own safety by being especially aware and cautious. Shoals and hazardous areas are marked by the SCDNR. However, it must not be assumed that every potentially dangerous shoal and hazardous area has been marked.

The waters of Monticello Reservoir, excluding the Recreation Lake, and certain portions of Parr Reservoir are designated as a waterfowl management area and are available for public waterfowl hunting. The designation for waterfowl management allows hunting on or in the water only and not on adjacent land. A South Carolina WMA permit is required to hunt in areas with this designation. Hunters must familiarize themselves with hunting rules and regulations. Regulations pertaining to Monticello and Parr reservoirs are available at SCDNR's website at:

<http://dnr.sc.gov/wma/index.html>, or by contacting SCDNR at:

Waterfowl and Hunting Regulations
S.C. Department of Natural Resources
Wildlife and Fresh ~~Water-water~~ Fisheries
1000 Assembly Street
Columbia, South Carolina 29201
Mailing Address:
P.O. Box 167
Columbia, South Carolina 29202
Telephone: 803-734-3886

5.0 WATER WITHDRAWAL

Piping and other transportation/delivery equipment to be placed on Project property necessary for water withdrawals require a permit from SCE&G. Water withdrawals may be permitted on Monticello Reservoir, the Recreation Lake and Parr Reservoir as deemed appropriate by Lake Management. Water withdrawal for residential property must be for irrigation purposes only. Requests for withdrawal of up to one million gallons per day (MGD) may also require state and federal agency consultation prior to approval by SCE&G. SCE&G may impose additional limits in granting permits for state and/or federally approved applications. Associated pumps and electrical service must be located outside SCE&G property. SCE&G reserves the right to prohibit withdrawal during times of drought or low water conditions.

Water withdrawal applications for commercial use may be treated differently than those for residential irrigation purposes. Water withdrawal applications for greater than one MGD must be forwarded to the FERC for approval. The applicant for a water withdrawal of greater than one MGD may be required to bear the expenses of filing the application and will be required to compensate SCE&G for water withdrawn. An application to withdraw water from Monticello or Parr reservoirs for commercial purposes must include the following information:

- a complete description of the purpose for the removal;
- removal processes to be used;
- volumes to be withdrawn;
- design plans;
- copies of all required local, state, and federal permits and reports;
- the required fee; and
- any additional information as required by SCE&G.

Applications for a permit to remove water must be submitted to SCE&G for review. Applicants should contact Lake Management for permit applications and additional information.

6.0 PERMITTING APPLICATION PROCEDURE

Requests for permits for docks, access paths, water withdrawals, and shoreline stabilization must be submitted to SCE&G's Lake Management Department in writing and on forms provided by SCE&G. Information will be furnished to the applicant concerning the requirement for formal approval of shoreline requests. For permitting information call or write:

SCE&G Lake Management Department
6248 Bush River Road
Columbia, SC 29212
803-217-9221

6.1 PERMITTING FEES

SCE&G charges individual processing fees for its efforts in managing various permitting activities around the reservoirs. Permit fees are listed below and are due at the time of application submission to SCE&G. If an application is denied the permit fee will be returned.

- Docks \$100
- Access Paths \$100
- Water Withdrawals for Residential Irrigation¹² \$100
- Shoreline Stabilization \$100

An annual Administrative Fee may be implemented, as FERC allows SCE&G the right to charge a reasonable fee to cover the costs of administering its Shoreline Permitting Program, which adds significant management responsibilities and costs to SCE&G's operation. SCE&G will give adequate public notice through appropriate communication avenues before changing the fee structure. Failure to comply with this policy may result in the revocation of existing permits, fines, or legal action, as well as loss of consideration for future permits.

6.2 PERMITTING ENFORCEMENT AND VIOLATIONS

SCE&G will conduct periodic shoreline inspections to ensure compliance with the SMP and Permitting Handbook. Dock applicants are responsible for maintaining their structures in good repair and safe condition. If at any time a dock is determined by a SCE&G Lake Management representative to be in disrepair or a hazardous condition, it must be repaired or removed from

¹² Fees for water withdrawals for commercial applications will be determined in consultation with SCE&G Lake Management.

Commented [AWR3]: Add website link to permitting application. <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs>

Monticello Reservoir waters immediately. SCE&G reserves the right to remove any dock on its property as conditions warrant.

SCE&G also makes note of unauthorized structures during its surveys, and urges residents and other lake visitors to report what they believe may be unauthorized activity on Monticello and Parr reservoirs, the Recreation Lake and other Project property. SCE&G Lake Management representatives will issue Stop Work Directives for any violations that are detected on SCE&G property. Any unauthorized clearing of the trees or underbrush will result in the immediate cancellation of permits, as well as action to require re-vegetation of the affected area. Removal of merchantable timber will require reimbursement to SCE&G subject to valuation of the SCE&G Forestry Operations Department. Additional, consequences for violations may include loss of consideration for future permits, fines, and/or legal action.

6.3 MISCELLANEOUS

- Deeds, permits, or other instruments affecting Project lands and waters will contain all standard covenants customarily imposed upon Project property and such other covenants as in the sole discretion of SCE&G may be desirable or appropriate. The instrument may contain indemnity clauses and insurance provisions.
- Permitting fees do not constitute a charge for admission to Project lands.
- SCE&G retains the right to vary the amount of application fees.
- No vested right or rights enforceable by third parties are created by SCE&G's Policies or Procedures.

APPENDIX A
PERMITTING FIGURES AND EXAMPLES

APPENDIX B
SHORELINE PERMIT APPLICATION

APPENDIX C
CONDITIONS OF PERMIT

APPENDIX D
VEGETATION AGREEMENT

APPENDIX E
SHORELINE MANAGEMENT AGREEMENT



**South Carolina Electric & Gas Company
Lake Management Department
6248 Bush River Road
Columbia, South Carolina 29212**

(803) 217-9221

Published

SHORELINE MANAGEMENT PLAN MONTICELLO RESERVOIR

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

Prepared for:

**South Carolina Electric & Gas Company
Cayce, South Carolina**

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtGroup.com

July 2015

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SOUTH CAROLINA ELECTRIC & GAS COMPANY

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ESi
1.0 INTRODUCTION	1
2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN	5
3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN	6
3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS	7
3.2 PROJECT BOUNDARY	8
4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES	9
4.1 CONSULTATION	10
4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE CONSERVATION GROUP	11
4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE	11
4.1.3 MEETING SCHEDULES	12
5.0 LAND USE CLASSIFICATIONS	13
5.1 PROJECT OPERATIONS	15
5.2 NUCLEAR EXCLUSION ZONE	15
5.3 SHORELINE PERMITTING	15
5.4 PUBLIC RECREATION	15
5.4.1 RECREATION LAKE	16
5.4.2 PUBLIC ACCESS AREAS	16
5.4.3 ISLANDS	16
5.4.4 FUTURE RECREATION AREAS	16
5.5 NON-DEVELOPMENT AREAS	16
6.0 LAND USE PRESCRIPTIONS	17
6.1 PROJECT OPERATIONS	17
6.2 NUCLEAR EXCLUSION ZONE	17
6.3 SHORELINE PERMITTING	17
6.4 PUBLIC RECREATION	18
6.4.1 RECREATION LAKE	18
6.4.2 ISLANDS	18
6.5 NON-DEVELOPMENT AREAS	18
7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL	19

TABLE OF CONTENTS (CONT'D)

7.1	AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE PERMITTING HANDBOOK	19
7.2	PROHIBITED STRUCTURES AND ACTIVITIES	19
8.0	PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES	21
8.1	SHORELINE PERMITTING PROCEDURES	21
8.1.1	DOCKS	22
8.1.2	SHORELINE VEGETATION MANAGEMENT	23
8.1.3	ACCESS PATH	24
8.1.4	SHORELINE STABILIZATION	24
8.1.5	WATER WITHDRAWAL.....	29
9.0	SCE&G PERMITTING FEE POLICIES	30
10.0	ENFORCEMENT OF SHORELINE MANAGEMENT PLAN	31
10.1	VIOLATIONS OF SHORELINE MANAGEMENT PLAN	31
11.0	SHORELINE MANAGEMENT PRACTICES	32
11.1	SCE&G SHORELINE MANAGEMENT PRACTICES.....	32
11.1.1	FOREST MANAGEMENT SHORELINE MANAGEMENT PRACTICES	32
11.1.2	AQUATIC PLANT MANAGEMENT ACTIVITIES	32
11.1.3	WOODY DEBRIS & STUMP MANAGEMENT.....	33
11.2	LANDOWNER RECOMMENDED BMPs	33
11.2.1	MINIMIZING NON-POINT SOURCE POLLUTION	33
12.0	PUBLIC EDUCATION AND OUTREACH.....	35
12.1	SHORELINE MANAGEMENT PLAN EDUCATION.....	35
12.2	PUBLIC ACCESS AREA MAPS	36
12.3	WILDLIFE MANAGEMENT AREAS/WATERFOWL ONLY	36
12.4	WATER SAFETY	36
13.0	MONITORING AND REVIEW PROCESS	39
13.1	OVERALL LAND USE MONITORING.....	39
13.2	REVIEW PROCESS.....	39
14.0	REFERENCES	40

LIST OF TABLES

TABLE 4-1	PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING	10
TABLE 4-2	ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC	12
TABLE 5-1	SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION	13

TABLE OF CONTENTS (CONT'D)

LIST OF FIGURES

FIGURE 1-1 PROJECT LOCATION AND BOUNDARY MAP 4
FIGURE 5-1 SHORELINE CLASSIFICATIONS MAP FOR MONTICELLO RESERVOIR 14
FIGURE 8-1 PERMITTED ACCESS PATH 25
FIGURE 8-2 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING
BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (A) 27
FIGURE 8-3 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING
BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (B) 27
FIGURE 8-4 EXAMPLE OF SHORELINE RIP-RAP DETAIL 28
FIGURE 12-1 MONTICELLO RESERVOIR PUBLIC ACCESS AREA MAP 38

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**SHORELINE MANAGEMENT PLAN
MONTICELLO RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

EXECUTIVE SUMMARY

South Carolina Electric & Gas Company ("SCE&G") is the Licensee of the Parr Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 1894) ("Project"). The Project consists of the Parr Shoals Development and the Fairfield Pumped Storage Development. The developments are located along the Broad River in Fairfield and Newberry Counties, South Carolina.

The Project developments form two distinct Project reservoirs. Parr Reservoir is located along the Broad River, as impounded by Parr Shoals Dam, and functions as the lower reservoir for the Fairfield Development. Monticello Reservoir is located adjacent to the Broad River and functions as the upper reservoir for the Fairfield Development. Both Project reservoirs serve as popular recreation destinations and are used and enjoyed by local residents as well as visitors to the state.

In conjunction with its relicensing activities, SCE&G has assembled a diverse and inclusive group of stakeholders to advise and assist in the development of two Shoreline Management Plans ("SMPs"), each tailored to a specific reservoir. SMPs are comprehensive plans for the management of Project land and adjoining water resources and their uses, consistent with License requirements and broad Project purposes, and appropriately accessible and beneficial to adjacent shoreline residents and the recreating public. A SMP serves to identify existing and appropriate future uses and to provide plans and programs for responsible future use and management of project lands and waters as well as the flora and fauna encompassed within them. This SMP exists specifically to address shoreline uses surrounding Monticello Reservoir. A SMP to address Parr Reservoir is included under separate cover and available from the SCE&G Lake Management Department (Lake Management).

In addition to a SMP for each Project reservoir, a Shoreline Management Handbook and Permitting Guidelines (Permitting Handbook) was developed for both developments in consultation with governmental, non-governmental, and individual stakeholders to address activities that will require consultation with and/or permits from SCE&G. These activities include construction, maintenance, and placement of docks, shoreline stabilization, lake access pathways and other shoreline activities.

The classification of Project lands surrounding Monticello Reservoir is described in Section 5.0 and includes five management classifications. These classifications are as follows: Project Operations; Nuclear Exclusion Zone; Shoreline Permitting; Public Recreation; and Non-Development Areas. Public Recreation land includes land within public parks, SCE&G developed recreation areas, and islands.¹ Non-Development Areas are areas protected from development to preserve environmental resources and aesthetic values. Conversely, lands included within the Shoreline Permitting classification are not automatically excluded from development related shoreline use, and hence may be available for permitted shoreline development such as access paths and docks. Lands reserved for Project operations are those lands that are specifically required for operation of the Project. They include areas such as plant facility locations, dams, electrical substations, etc. The Nuclear Exclusion Zone (NEZ) is a defined area surrounding the V.C. Summer Nuclear Station. Within the NEZ, SCE&G, as the licensed nuclear plant operator, has responsibility and the authority to control all activities and has the absolute right to exclude or remove persons and property.

Commented [AWR1]: Make list of classifications same order as descriptions of classifications.

Land use prescriptions associated with these land management classifications are discussed in Section 6.0. Prescriptions are administered through the Permitting Handbook.

SCE&G maintains a strong commitment to the management of the waters and shoreline of Monticello Reservoir, focusing on the social, ecological, and economic impacts of activities on and near the shoreline and water, taking into consideration in particular, the environmental, aesthetic, and recreational character of the shoreline and lake. Section 7.0 details the activities and structures on and adjacent to Monticello Reservoir that require SCE&G consultation and/or approval. The permitting procedures for shoreline activities or structures are set out in more detail in Section 8.0 and in the Permitting Handbook.

¹ SCE&G owns all land within the Monticello Development, including all islands within Lake Monticello

Section 9.0 details SCE&G's fee structure for the shoreline management program.

Periodic surveys of the Monticello Reservoir shoreline are conducted by SCE&G and include, among other things, inventories and inspections of all docks, including those built and permitted throughout the current year. SCE&G also looks for unauthorized structures within the Project property at that time. These represent violations of the SMP. SMP violations will be dealt with as deemed by SCE&G, in its sole discretion, to be appropriate. Consequences of violations may range from dock permit cancellations to fines and/or legal action, and are discussed more fully in Section 10.0.

SCE&G Shoreline Management Practices include actions taken to lessen or mitigate for potential impacts to a particular resource resulting from direct or indirect use. These include but may not be limited to shoreline stabilization and vegetation management, as well as aquatic plant management. Shoreline Management Practices are further described in Section 11.0 of this document.

Public education and outreach on the protection of valuable shoreline resources is integral to the effectiveness of the SMPs. Section 12.0 of this document details specific measures to be undertaken to help educate both adjacent shoreline residents and other Project resource users. Among included objectives will be SMP education and Best Management Practices ("BMP") education.

In its Application for New License, SCE&G is proposing 10 year review periods for the SMP. The 10 year SMP review periods provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook with interested stakeholders periodically to evaluate and improve its effectiveness. SCE&G reserves the right, however to make changes to the permitting process as it deems necessary and appropriate. This is discussed in Section 10.0.

1.0 INTRODUCTION

The Parr Hydroelectric Project ("Project") is located on the Broad River in Fairfield and Newberry Counties, South Carolina (Figure 1-1). The Project is located approximately 31 river miles downstream of the Neal Shoals Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 2315) and 24 river miles upstream of the Columbia Diversion Dam. The Project consists of two developments: the Parr Shoals Development ("Parr Development") and the Fairfield Pumped Storage Development ("Fairfield Development"). Subsequently, two primary reservoirs are included as part of the Project, Monticello Reservoir² and Parr Reservoir. The normal maximum water level in Monticello Reservoir is El. 425.0 feet National Geodetic Vertical Datum ("NGVD"), which corresponds to a surface area of 6,800 acres, and a gross storage of 400,000 acre-feet. Monticello Reservoir has approximately 57 miles of shoreline within the Project boundary. Parr Reservoir's normal maximum water level is at El. 266.0 feet NGVD, with a corresponding surface area of 4,400 acres. The gross storage is estimated to be 32,000 acre-feet. Parr Reservoir has approximately 88 miles of shoreline within the Project boundary.

An active storage of up to 29,000 acre-feet is transferred between the two reservoirs by the pumped storage operations of the Fairfield Development. Fairfield Development's alternate cycles of generation and pumping results in daily fluctuations in the water levels of both Monticello and Parr Reservoirs. Monticello, when beginning at normal maximum pool elevation, drops 4.5 to 5 feet over a 10 to 12 hour period during the generating phase of operation. At the same time, the water from Monticello and from the Broad River is flowing into Parr Reservoir, causing it to rise as much as 10 feet. During the pumping cycle, the reverse occurs – the water level rises in Monticello Reservoir and drops in Parr Reservoir.

The Project boundary³ encompasses land around each reservoir, extending between 50 and 200 horizontal feet from the high water mark. A 300-acre Recreation Sub-impoundment ("Recreation Lake") is situated adjacent to Monticello Reservoir and is included within the FERC Project

² The State of South Carolina considers Monticello Reservoir waters of the State and refers to it as "Lake Monticello".

³ Standard License Article 5 requires licensees to acquire and retain sufficient property and rights to construct, maintain, and operate their projects, as identified in their specific license, including any property or rights needed to accomplish all designated project purposes. As such, Project lands are those lands within the FERC project boundary owned by SCE&G in fee title and those lands for which SCE&G has acquired or retained an easement.

boundary. This lake was constructed by South Carolina Electric & Gas Company ("SCE&G") solely for recreational use. The Recreation Lake is unaffected by operational reservoir fluctuations on Monticello Reservoir.

SCE&G manages SCE&G-owned lands within the Project boundary ("Project property") to comply with the FERC license for the Project (the "License"). The goal of project land management is to serve the public interest by providing recreational access and opportunities, protecting wildlife habitat and water quality, producing electricity, and protecting and preserving cultural and aesthetic resources. The Shoreline Management Plan ("SMP") provides a set of administrative policies, procedures, and practices by which SCE&G seeks to manage the Project shoreline to achieve these goals. Future proposals for specific shoreline related developments or activities will be reviewed for consistency with the SMP.

A draft of the initial Project SMP was filed with the FERC in 1991. After several years of discussion and revisions, the initial SMP was approved by the FERC on June 4, 2001. The history of the Project's SMP is described in more detail in Section 3.0 (History of the Shoreline Management Plan). The current relicensing⁴ of the Project provides a near term impetus and opportunity for SCE&G to review the existing SMP in cooperation with relicensing stakeholders, including federal and state regulatory agencies, interested non-governmental organizations ("NGO"s), and individuals. Through discussions with these parties, it was decided that the existing FERC approved SMP, which encompasses both Monticello and Parr Reservoirs, should be divided into two distinct SMP's, one for each reservoir. Hence, this SMP has been prepared for Monticello Reservoir and is being submitted to FERC as part of SCE&G's Parr Hydroelectric Project comprehensive relicensing package. A SMP for Parr Reservoir is included under separate cover.

The management guidelines set forth in this SMP are applicable to all lands within the Project boundary surrounding Monticello Reservoir. Among other things, the current document includes the following components:

⁴ The current operating license for the Project is due to expire on June 30, 2020. As such, SCE&G will file for a new license with FERC on or before June 30, 2018.

- Detailed descriptions, management prescriptions and mapping of land classifications;
- Summary information on the Permitting Handbook and fee policies;
- Best management practices ("BMP"s);
- Public education and outreach;
- Reservoir monitoring; and,
- A proposed review process.

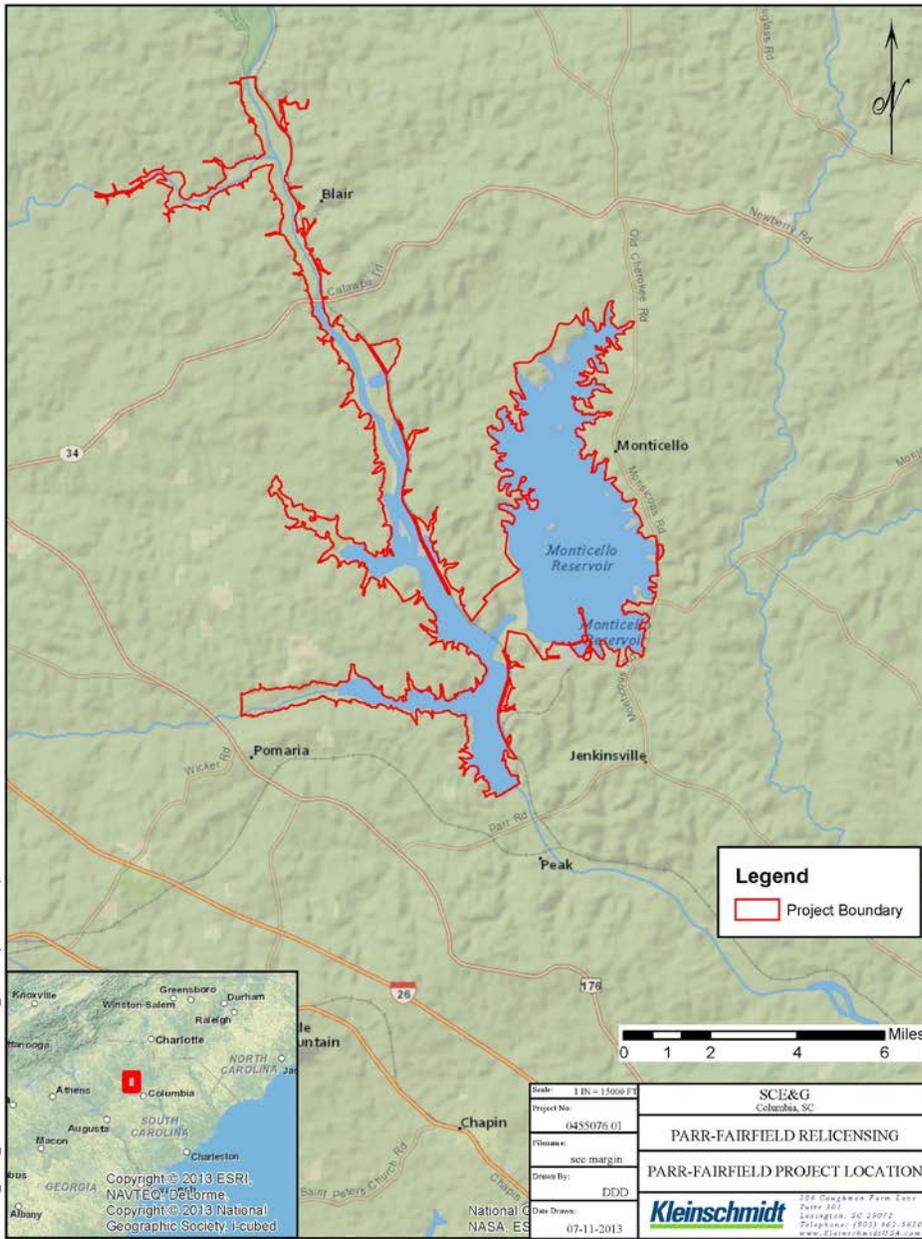


FIGURE 1-1 PROJECT LOCATION AND BOUNDARY MAP

2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN

The Project has served as a major source of power generation for SCE&G's customers and recreation for local residents and visitors to South Carolina for several decades. Consistent with FERC's Standard Land Use Article, a licensee may authorize specific non-project uses and occupancies of a project's shoreline. Examples of non-project uses at Monticello Reservoir include residential boat docks, access paths across Project property, and erosion control structures. SCE&G has a responsibility to ensure that non-Project uses remain consistent with Project purposes, including protection and enhancement of the Project's scenic, recreational, and environmental values.

As development increases in areas surrounding the Project, so too does stress placed upon Project reservoirs and the surrounding watershed. Thus, a comprehensive SMP for each reservoir that recognizes and addresses sources of potential environmental impact is essential to managing each reservoir for the benefit of all interests and to ensure that non-Project uses remain consistent with the License.

The implementation of the SMP by SCE&G will help to maintain and conserve the area's natural and man-made resources. The SMP will comply with the terms of the License, as well as the regulations and orders of FERC, and is intended to assist in providing a balance between recreational use and development, environmental protection, and energy production.

3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN

On August 28, 1974, the Federal Power Commission (FPC), predecessor to the FERC, issued SCE&G a new License for the Parr Hydroelectric Project. In addition to relicensing the existing 14.88 megawatt (MW) Parr Shoals Development, the new License authorized the construction of the 511.2 MW Fairfield Pumped Storage Development. This resulted in the creation of the Fairfield Development's upper pool, Monticello Reservoir. The new License also authorized the enlargement of the existing Parr Reservoir to serve as the lower pool to the Fairfield Development. This involved raising the height of Parr Dam approximately 9 feet, thereby nearly doubling Parr Reservoir's surface area. The construction of newly licensed facilities was completed in 1978, with the facilities beginning commercial operation that same year (F.P.C., 1974).

Article 48 of the Project License issued in 1974 required that SCE&G purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to: the islands in the Parr and Monticello Reservoirs formed by the 266-foot and 425-foot contour intervals, respectively; shoreline lands up to the 270-foot contour, or 50 feet (measured horizontally) from the Parr Reservoir's 266-foot contour, whichever is greater; and, shoreline lands up to the 430-foot contour interval, or 50 feet (measured horizontally) from Monticello Reservoir's 425-foot contour, whichever is greater. Provided that the Project boundary, except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontally measured, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given. The FPC determined that acquiring these lands would provide SCE&G with adequate shoreline control around the reservoirs, in addition to serving the purposes of Project operation and recreation (F.P.C., 1974).

Furthermore, Article 20 of the Project License orders that SCE&G allow public access, to a reasonable extent to Project waters and adjacent Project lands (with the exception of lands necessary for the protection of life, health, and property) for navigation and outdoor recreational purposes. This Article also allows SCE&G to grant permits for public access to the reservoirs subject to FERC approval (F.P.C., 1974).

In 1991, SCE&G recognized that appropriate policies and procedures should be in place to govern shoreline activities at the Project. Utilizing experience gained at their Saluda Hydroelectric Project (FERC No. 516), SCE&G filed a proposed SMP with the FERC to regulate the use of Project shorelines. After extensive stakeholder consultation, an amended SMP was filed with the FERC. It was approved on June 4, 2001. The SMP was included as part of the Project's Exhibit R (FERC, 2001).

The SMP approved in 2001 primarily covered activities associated with Monticello Reservoir. It dealt with the following matters: water quality management; forest management; waterfowl management; nuclear exclusion zone restrictions for the operation of SCE&G's V.C. Summer Nuclear Station; fishing, boating, and hunting; public access and recreation; private boat docks and access; vegetation removal; water withdrawal; erosion control; and prohibited activities.

In 2006, SCE&G amended the SMP's policy regarding common docks. The original policy allowed for two to five adjacent property owners to share a single common dock if the shoreline frontage requirement of 200 feet was met. The policy was amended to allow no more than two individual, adjacent single family residential lots to share a common dock. The shoreline frontage requirement of 200 feet was retained.

3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS

The SMP serves as a reference document for SCE&G in implementing the Standard Land Use Article, which authorizes SCE&G to permit certain non-project uses of project lands and waters. FERC did not begin including the Standard Land Use Article in new licenses until the early 1980's; thus it was not included in the Project License issued in 1974 (FERC, 2012). However, FERC granted SCE&G the specific authority to permit certain non-Project uses through the approval of the 2001 SMP, and added the Standard Land Use Article to the License (Article 62) in 2011, as revised in 2013 (Article 63). This present document, submitted in conjunction with SCE&G's License application, presents a management plan, covering only Monticello Reservoir (a SMP for Parr Reservoir is included under separate cover), while adhering to the historical management goals agreed to and developed with agencies and stakeholders.

In addition to an updated SMP for each Project reservoir, a Permitting Handbook was developed in consultation with stakeholders and agencies to address activities requiring consultation with

and/or permits from SCE&G. These activities include, but are not limited to the following: construction, maintenance, and placement of docks; shoreline stabilization; construction and maintenance of lake access pathways; limited brushing; and other shoreline activities. SCE&G will review the Permitting Handbook with interested stakeholders periodically to evaluate its effectiveness; however, SCE&G may make changes to the permitting process at any time as it determines in its sole judgment to be necessary and appropriate.

3.2 PROJECT BOUNDARY

SCE&G owns in fee or obtained flowage rights for all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control, [as described above in Section 3.0](#). A Project boundary map is included as Figure 1-1.

4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES

The overall goal of this SMP is to define, document, and present the processes and criteria that SCE&G will employ to manage and balance private and public access to and uses of Project lands, specifically including Monticello Reservoir's shoreline, consistent with public safety, energy production operations, environmental protection for Project land as well as Project waters, and reasonable recreational opportunities. This SMP will help to ensure the protection and enhancement of the Project's scenic, environmental, recreational, natural and cultural resources over the term of the License.

This SMP represents a consensus-based, updated management plan intended for submittal with the Project No. 1894 License Application. Specific goals relative to the SCE&G relicensing process that are discussed under this SMP include the following:

1. Provide for reasonable current and future public access;
2. Provide for current and future recreational needs within the Project;
3. Protect fish and wildlife habitat;
4. Protect cultural resources;
5. Protect the ability to meet operational needs;
6. Facilitate compliance with License articles;
7. Minimize adverse impacts to water quality;
8. Monitor and address erosion;
9. Protect scenic values;
10. Monitor and permit shoreline activities;
11. Provide a summary catalogue of the types and locations of existing recreational opportunities;
12. Establish Land Management Classifications and Land Use Prescriptions to help in the management of non-Project uses of the Monticello Reservoir shoreline lands within the Project boundary;
13. Describe the SMP amendment and monitoring process; and
14. Educate and encourage property owners who own property adjacent to or adjoining Project Property (herein referred to as "adjacent property owners") on the use of voluntary BMPs.

4.1 CONSULTATION

The Project relicensing provides an opportunity for SCE&G to seek input on Project-related shoreline management issues from interested stakeholders. SCE&G recognizes that successfully completing the relicensing process requires identifying and resolving Project issues in consultation with federal and state resource agencies, local and national NGOs, homeowner associations, and individuals who have an interest in the Parr Hydroelectric Project (Table 4-1). SCE&G began public outreach efforts in January 2013 by holding a series of public workshops in Winnsboro, Newberry, Columbia, and Jenkinsville, SC. Since that time, SCE&G has sought active public involvement in the process and fostered commitment to issue resolution among SCE&G and stakeholders.

TABLE 4-1 PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING

STAKEHOLDER GROUPS
American Rivers
American Whitewater
Catawba Indian Nation
City of Columbia
Chestnut Hill Plantation HOA
Coastal Conservation League
Congaree Riverkeeper
Environmentalists Inc.
Fairfield County
Gills Creek Watershed
National Marine Fisheries Service
National Park Service
Newberry County
South Carolina Department of Health and Environmental Control
South Carolina Department of Natural Resources
South Carolina Department of Parks, Recreation and Tourism
South Carolina Electric & Gas Company
South Carolina Historic Preservation Office
Town of Winnsboro, SC

STAKEHOLDER GROUPS

Tyger-Enoree River Alliance

United States Fish and Wildlife Service

United States Forest Service

University of South Carolina

4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE CONSERVATION GROUP

In support of the relicensing effort, SCE&G formed three Resource Conservation Groups ("RCG"s) to identify, address and resolve Project-related issues by resource area. The RCGs are as follows: the Fish, Wildlife and Water Quality RCG; the Project Operations RCG; and the Lake & Land Management and Recreation RCG. Consideration of potential issues by resource area allows for more focused topic discussion and targeted issue resolution. Some RCGs have established sub-groups, or Technical Working Committees ("TWC"s), for issues requiring special knowledge, education, or experience. Consequently, the Lake & Land Management and Recreation RCG has a Lake and Land Management TWC as well as a Recreation TWC. The Lake and Land Management TWC is discussed further below.

4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE

The primary mission of the Lake and Land Management TWC is to revise the existing Parr Hydroelectric Project SMP to provide a management framework within which Project resources can be effectively protected while assuring appropriate public and private access to the Project resources and the recreational opportunities they present. Another important focus of the TWC is to allow interested parties an effective opportunity to provide input on resource issues and the overall future management of shoreline resources. The resulting collaboration has resulted in the contribution of valuable information by entities and individuals familiar with the Project. The forum was instrumental in addressing important issues relevant to the operation and management of the Project over the term of the new License. In working collaboratively, the members of the TWC (Table 4-2) aimed to blend the objectives of the state and federal resource agencies with other stakeholder interests.

TABLE 4-2 ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC

STAKEHOLDER GROUPS
American Rivers
American Whitewater
Coastal Conservation League
Congaree Riverkeeper
Fairfield County
Gills Creek Watershed
Adjacent Property Owners
National Marine Fisheries Service
National Park Service
South Carolina Department of Health and Environmental Control
South Carolina Department of Natural Resources
South Carolina Department of Parks, Recreation and Tourism
South Carolina Electric & Gas Company
Tyger-Enoree River Alliance
United States Fish and Wildlife Service
United States Forest Service

4.1.3 MEETING SCHEDULES

Between October of 2013 and January of 2018, SCE&G has held numerous meetings of the Lake and Land Management and Recreation RCG and Lake and Land Management TWC to discuss the details of the Project SMPs. The efforts of the TWC are reflected herein.

5.0 LAND USE CLASSIFICATIONS

Five distinct land management classifications have been developed for the shorelines surrounding Monticello Reservoir. These land management classifications are as follows: Project Operations; Nuclear Exclusion Zone; Shoreline Permitting; Public Recreation; and, Non-Development Areas. The Public Recreation Classification includes designated public recreation areas, the Recreation Lake, and all islands on Monticello Reservoir. Although SCE&G intends to manage its lands according to this classification system, the public generally will not be precluded from access to SCE&G-owned lands regardless of classification, with the exception of lands reserved and used for Project operations, lands/areas within the Nuclear Exclusion Zone, or other areas specifically protected from public access and posted as such. The sections below explain/define the land management classifications. The acreages and parcels for each of the classifications are provided in Table 5-1. Figure 5-1 depicts their distribution around Monticello Reservoir.

TABLE 5-1 SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION

CLASSIFICATION	SHORELINE MILES	ACRES
Project Operations*	4.14	501
Nuclear Exclusion Zone Project *	5.43	184
Shoreline Permitting	20.70	225
Public Recreation*	18.73**	892**
Non-Development	8.60	150
TOTAL	57.60	1,952

*No docks allowed

** Includes the shoreline surrounding the Recreation Lake and all islands

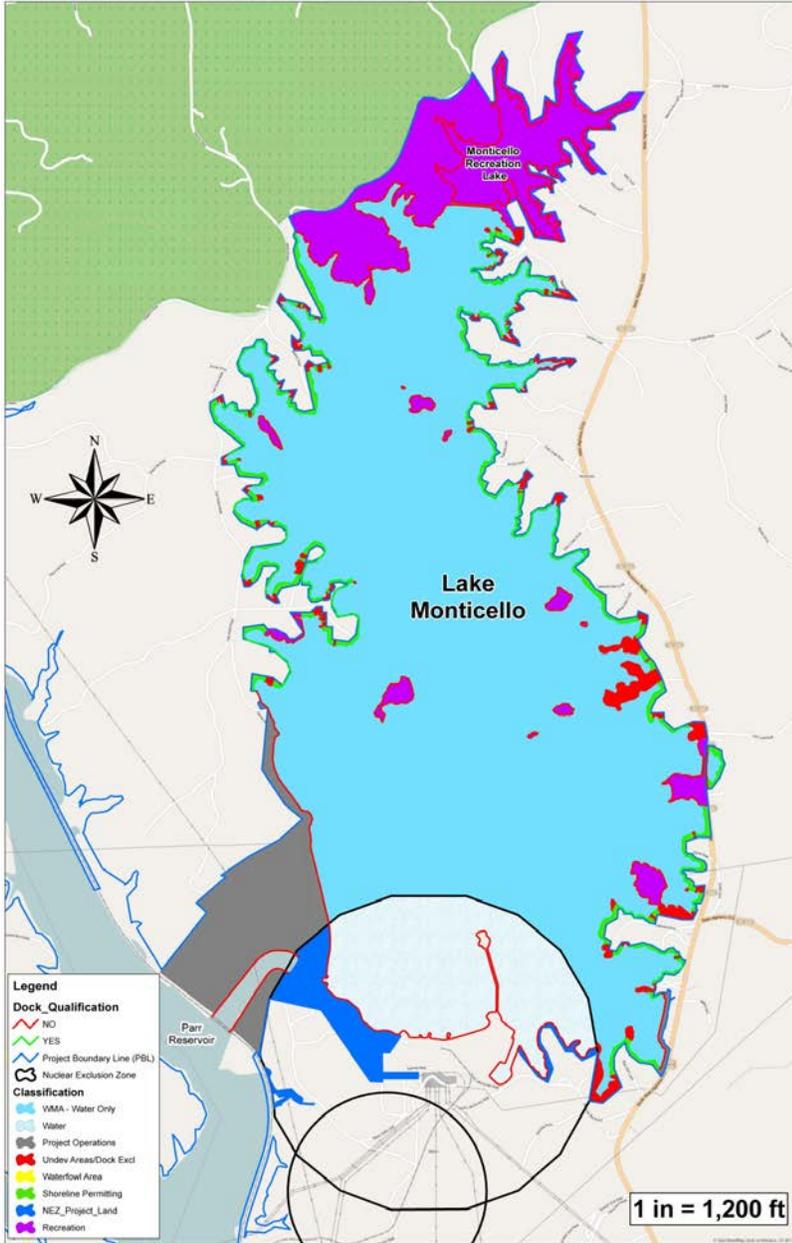


FIGURE 5-1 SHORELINE CLASSIFICATIONS MAP FOR MONTICELLO RESERVOIR

5.1 PROJECT OPERATIONS

Areas under this classification include SCE&G-owned and managed lands required for operation of the Fairfield Development. Public access to these lands is restricted to ensure public safety or to assure the security of the infrastructure system.

5.2 NUCLEAR EXCLUSION ZONE

In addition to its use as part of the Fairfield Development, Monticello Reservoir provides cooling water for the V.C. Summer Nuclear Station located on its shore (authorized under 52 F.P.C. 537 [1974]). The Nuclear Exclusion Zone consists of the area surrounding the V.C. Summer Nuclear Station between the Project boundary line and shoreline and a specified area within Monticello Reservoir where SCE&G as the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property. This area is designated by warning signs on the landward side and by buoys on the lakeward side. Admittance to this area is restricted in order to comply with licensing requirements administered by the Nuclear Regulatory Commission.

5.3 SHORELINE PERMITTING

It is the policy of SCE&G to authorize certain private uses of and/or acts on Project property by permit when such uses or acts are consistent with the public interest and comply with the requirements of the Project License. Areas within the Shoreline Permitting Classification may be eligible for certain private residential uses upon approval by SCE&G. This does not include commercial activities (other than commercial water withdrawals).

5.4 PUBLIC RECREATION

Project lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage.

Public recreation lands include the following:

- Recreation Lake
- Public boat launches, and other areas currently being managed as public access;
- Islands on Monticello Reservoir;
- Properties owned by SCE&G that are set aside for future recreational development.

5.4.1 RECREATION LAKE

The Recreation Lake is located at the north end of Monticello Reservoir and is approximately 300 acres and 10 miles of shoreline. The Recreation Lake was constructed to provide stable water for fisheries and recreation opportunities.

5.4.2 PUBLIC ACCESS AREAS

There are four public parks and one informal fishing area on Monticello Reservoir. All recreation facilities at Monticello Reservoir are open year-round from sunrise to sunset, except the Recreation Lake Beach Area, which is closed October 1 through March 31. For a list of authorized activities, please see the Permitting Handbook.

5.4.3 ISLANDS

There are 8 islands within Monticello Reservoir, all of which are available for public recreational use in accordance with authorized activities (see Permitting Handbook for authorized activities).

5.4.4 FUTURE RECREATION AREAS

Future Recreation Areas include lands SCE&G has set aside for future recreational development, if and when it is determined additional recreation access is needed.

5.5 NON-DEVELOPMENT AREAS

Lands under this classification warrant special protection because they may provide important habitat, aesthetic values, or other significant Project characteristics.

6.0 LAND USE PRESCRIPTIONS

Land use prescriptions are based upon and reflect the guiding principles regarding the management of the SCE&G-owned lands within each classification. SCE&G publishes a detailed Permitting Handbook (included under separate cover) that contains descriptions of the permitting processes and specifications for various shoreline developments. Activities that require consultation with and/or permits from SCE&G include the following: construction, maintenance and placement of docks, shoreline stabilization; construction and maintenance of shoreline pathways, and other shoreline activities. Persons interested in shoreline development must contact SCE&G's Lake Management Department (803) 217-9221, or at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs> to obtain permitting guidance and a copy of the Permitting Handbook. Section 8.0 of this document discusses the Permitting Handbook in greater depth. General information regarding permitting requirements is included where applicable within the scope of each management prescription below.

6.1 PROJECT OPERATIONS

Properties classified as Project Operation contain project works critical to the operation of the Fairfield Development. Public access and recreation activities on these lands are restricted for reasons of safety and security.

6.2 NUCLEAR EXCLUSION ZONE

Properties and waters classified as Nuclear Exclusion Zone contain project works/areas critical to the operation of the V.C. Summer Nuclear Station. Public access and recreation activities on these lands are restricted for reasons of safety and security.

6.3 SHORELINE PERMITTING

Residential landowners whose property adjoins lands within the Shoreline Permitting classification may be eligible for certain permitted structures only upon written consent from Lake Management. SCE&G strictly regulates the placement and construction of permitted structures. To address aspects of shoreline structures, SCE&G has developed permitting application procedures and associated dock specification guidelines. These guidelines are detailed in SCE&G's Permitting Handbook.

6.4 PUBLIC RECREATION

Project lands devoted to public recreation include developed park sites, properties set aside for future recreational development, and islands on Monticello Reservoir owned by SCE&G⁵. With the exception of the islands, which are maintained in their natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including swimming, fishing, picnicking, and boat launching⁶. SCE&G developed and maintained access areas on Monticello Reservoir are depicted in Figure 12-1. Private permitted activities, other than those noted under the Recreation Lake Section (Section 6.4.2) are excluded.

6.4.1 RECREATION LAKE

The park area at the Recreation Lake offers fishing, swimming and picnic facilities. Regulations for its use are posted at the park site. The swimming/beach area is closed October through March. The boat launch area is open every day, all year long. No private docks or boat ramps will be permitted on the shoreline of the Recreation Lake. Meandering paths and water withdrawals for residential irrigation only may be considered on a case-by-case basis.

6.4.2 ISLANDS

SCE&G owns all of the islands on Monticello Reservoir and they are available for passive⁷ public recreational use, such as fishing, walking and bird watching. Hunting is prohibited on the islands.

6.5 NON-DEVELOPMENT AREAS

Lands under this classification warrant special protection because they may provide important habitat or aesthetic values. SCE&G will not permit private shoreline development for Project lands under this classification.

⁵ SCE&G also manages some of the lands classified as public recreation for timber. Information on SCE&G's forest management practices is included in Section 11.1.1.1.

⁶ The waters of Monticello Reservoir, excluding the Recreation Lake, are available for public waterfowl hunting as discussed under Section 12.3.

⁷ Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilities, and/or have a minimal environmental impact.

7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL

SCE&G maintains a strong commitment to managing the shoreline of Monticello Reservoir for multiple resources by considering the impact of various activities on the environmental, aesthetic, and recreational character of the lands. SCE&G owns and manages the Project lands around the entire periphery of Monticello Reservoir and the Recreation Lake. Thus, any activity occurring on the "shoreline" is occurring on SCE&G property. Any activity not in compliance with the shoreline activity parameters outlined in this SMP and in the Permitting Handbook constitutes a trespass which SCE&G may elect to prosecute.

7.1 AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE PERMITTING HANDBOOK

Only the following activities and structures may be permitted on Monticello Reservoir:

- Construction or modification to private docks;
- Construction of a meandering access path and associated vegetation removal;
- Shoreline stabilization methods (including rip-rap and bio-engineering);
- Water withdrawal.

7.2 PROHIBITED STRUCTURES AND ACTIVITIES

Activities and structures that SCE&G does not allow include, but are not limited to, the following:

Prohibited Structures:

- Roofs or covers over docks;
- Boat lifts;
- Boat slips;
- Boathouses;
- Fueling facilities on a dock;
- Private boat ramps;
- Houseboats;
- Watercraft exceeding 30 feet in length;
- Watercraft with marine sanitation devices ("MSD");
- Commercial marinas;

- Marine rails;
- Sea walls;
- Fences;
- Electrical service;
- Permanent structures other than permitted docks;
- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, camper trailers, canoes or other watercraft, motor homes or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Water skiing;
- Jet Skiing
- Parasailing
- Paragliding
- Mooring;
- Excavations/dredging;
- Effluent discharges;
- Planting of grass except as a permitted bioengineering erosion control measure;
- Storage or stockpiling of construction material;
- Livestock access to reservoir⁸
- Primitive or overnight camping on all Project property, except at Highway 99 Public Access Area;
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Use of herbicides; and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

⁸ Unless grandfathered through deed reservations.

8.0 PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES

8.1 SHORELINE PERMITTING PROCEDURES

Applicants must obtain the proper permit(s), per the SCE&G's Permitting Handbook, prior to the initiation of any construction or activity on Project property. As noted above, some activities may also require local, state, and/or federal permits

Whether a non-Project use is approved under the Standard Land Use article or through Project-specific FERC approval, SCE&G is responsible for ensuring that the use is consistent with the purposes of protecting or enhancing the scenic, recreational, and other environmental values of the Project. To assist applicants in the permitting process, the staff at the SCE&G Lake Management Department is available to answer questions regarding documentation, permits, and specification requirements for their particular project. Permits from SCE&G are required for the following activities:

- Construction of a meandering access path;
- Water withdrawal;
- Installation/application of shoreline stabilization; and,
- Installation of private docks.

It is highly advisable to begin the consultation process with SCE&G Lake Management staff at the planning stage of a project. SCE&G staff will be available to discuss specific permitting requirements with the property owner. Depending on the proposed new facility or activity, local, state and federal resource agencies may impose requirements on construction start/stop dates, the placement of erosion control devices, treatment plans, remedial measures, submittal of start construction notifications, and/or BMPs. Any permit applicant should be aware of such conditions, as violations may nullify a permit.

An overview of permitted activities is included below. Detailed information on SCE&G's permitting process, guidelines, and specifications, is provided in SCE&G's Permitting Handbook available at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs>, under Lake Monticello Dock Permits Application, or by calling (803) 217-9221, or by writing:

SCE&G Lake Management Department
6248 Bush River Road
Columbia, SC 29212

8.1.1 DOCKS

A permit must be obtained from SCE&G Lake Management Department for the construction, installation, replacement of, or addition to any dock prior to the start of the activity. The configuration and location of a dock will be determined during a site visit by an SCE&G representative. At a minimum, dock construction and location must not create a nuisance, or otherwise be incompatible with overall Project recreation use. Impact on navigation or an adjoining property owner will be a strong determining factor. Size, length, or orientation may be restricted, or a permit may be denied if the dock would interfere with navigation or unreasonably impact an adjoining property owner. Dock length may vary depending on curvature or slope of the shoreline or lot line configuration. Any variance (i.e. increase in size or length) from guidelines included in the Permitting Handbook will be evaluated as to the effects on navigation, aesthetic value, or impact on adjacent properties and may be denied if in SCE&G's sole judgment the effects and impacts warrant denial. No dock will be permitted in narrow cove areas, which are defined to be areas where the distance across the water from one shoreline to the other at the 425-foot contour (normal high water level) is less than 200 feet. Only one dock will be permitted on a single-family lot⁹. Please see the Permitting Handbook for additional requirements.

General boat dock design may involve either fixed or a combination of fixed and floating structures. Common docks are encouraged and may be mandated for all adjacent property owners as an alternative to individual docks and will be required on property with inadequate property line frontage (property line frontage requirements included in Permitting Handbook), or in such other circumstances that SCE&G deems appropriate. Dock layout specifications are included in the Permitting Handbook.

Docks generally will not be permitted on shoreline affected by significant erosion or steep slopes. Applicants may submit a request for approval accompanied by a plan to address shoreline

⁹ SCE&G does not guarantee usable water access to the waters of Monticello Reservoir at any time. Each lot along the shoreline will have different slopes and contours that will determine water depth in front of the lot. The Monticello Reservoir is a pumped storage project that can fluctuate vertically up to 4.5 feet over a 10 to 12 hour period during generation and pumping phases. The fluctuation of the reservoir will, at times, limit or restrict the use of most docks on the Monticello shoreline.

erosion that can be accomplished without the clearing of vegetation or disturbance of shallow water habitat. However, SCE&G reserves the right, in its sole discretion, to deny a permit.

The types of docks permitted include private individual and private common docks. See Permitting Handbook for more details describing dock permitting policies.

8.1.2 SHORELINE VEGETATION MANAGEMENT

In general, SCE&G maintains a policy of non-disturbance of any vegetation within the Project boundary without approval from SCE&G. Permission to remove vegetation within a permitted access path will only be granted by SCE&G Lake Management after a site visit with the applicant. Once clearing of the access path is completed according to the permit, the applicant may maintain the site in the permitted condition. Any unauthorized removal of shoreline vegetation may result in the cancellation of the dock and other permits issued by SCE&G as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or shoreline manipulation as SCE&G determines is necessary to mitigate and correct the situation.

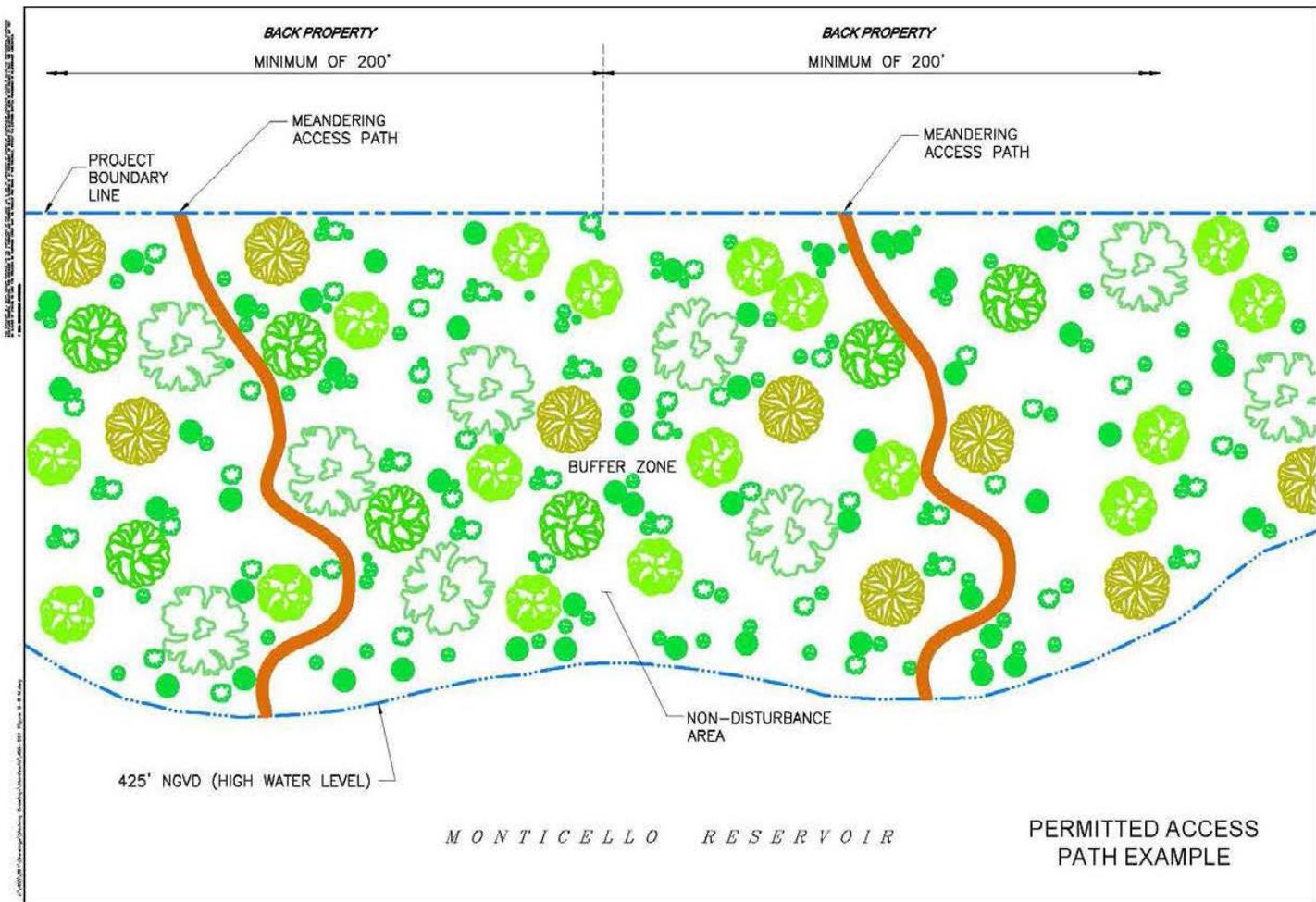
8.1.3 ACCESS PATH

A single access path may be cleared from the adjacent property owner's land upon approval of SCE&G. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path. A SCE&G Lake Management representative will identify and designate the location of all access paths. Access path restrictions are included in the Permitting Handbook. An example of a permitted access path is included as Figure 8-1.

8.1.4 SHORELINE STABILIZATION

Shoreline erosion occurs in some areas where the reservoir shoreline is exposed to prolonged or recurrent wind and wave action. Such erosion, if significant enough, can lead to sedimentation in those areas of the reservoir, affecting aquatic habitats and drainage channels, stream channels, water intakes, and affecting the character of the reservoir in general. Provided it conforms to good engineering standards, as judged by SCE&G, SCE&G supports voluntary efforts to address shoreline erosion in the immediate area of docks or access path for adjacent property owners. To ensure that appropriate, effective techniques and materials are used, SCE&G monitors and controls erosion control projects on or directly affecting Project Property as detailed in the Permitting Handbook. Owners of property adjoining Project Property who wish to employ erosion control measures on or affecting Project Property must use SCE&G shoreline stabilization practices appropriate for the specific situation.

Because shoreline vegetation serves several important functions (i.e., soil integrity, wildlife habitat, water cleansing functions, and aesthetic value) SCE&G prefers to see employment of vegetative shoreline stabilization techniques to address soil erosion problems, whenever possible. These techniques may be referred to as bioengineering, and consist of installing living plant material as a main component in controlling problems of land instability. Plants used should consist of native species that, ideally, have been collected in the immediate vicinity of a project site to ensure that they are well-adapted to site conditions. The ultimate goal in using bioengineering techniques is to establish diverse plant communities to stabilize erosion prone areas through development of a vegetative cover and a reinforcing root matrix.



Commented [AWR2]: Update with 200 feet from lake to PBL and add 10' to meandering path.

FIGURE 8-1 PERMITTED ACCESS PATH

Bioengineering techniques are least effective at sites with significant and prolonged exposure to strong currents or wind-generated waves. Stabilization of areas experiencing strong erosion pressure may also require the use of structural erosion control methods such as rip-rap. Areas with high-gradient banks or those in advanced stages of erosion may also benefit from such structural components. The optimal solution at a given location often involves combinations of techniques providing both structural and environmental benefits to the shoreline. A variety of bioengineering methodologies and devices are available to address erosion. Illustrations of erosion control designs that utilize both vegetation and structural elements are provided in Figure 8-2 and Figure 8-3. As depicted in the figures, rip rap can provide immediate shoreline stability, thereby enabling plantings to become established to add root-based soil integrity. Optimal erosion control designs must account for site specific slope and erosion pressure as well as homeowner/landowner preferences. Figure 8-4 illustrates a site at which SCE&G's general guidance on using rip rap is followed. Bricks, blocks, tires, or materials other than rip-rap are prohibited as alternative shoreline stabilization material. SCE&G's Lake Management Department is available to provide the benefit of its knowledge and experience to help homeowners attempting to select the design right for them and the Reservoir environment.

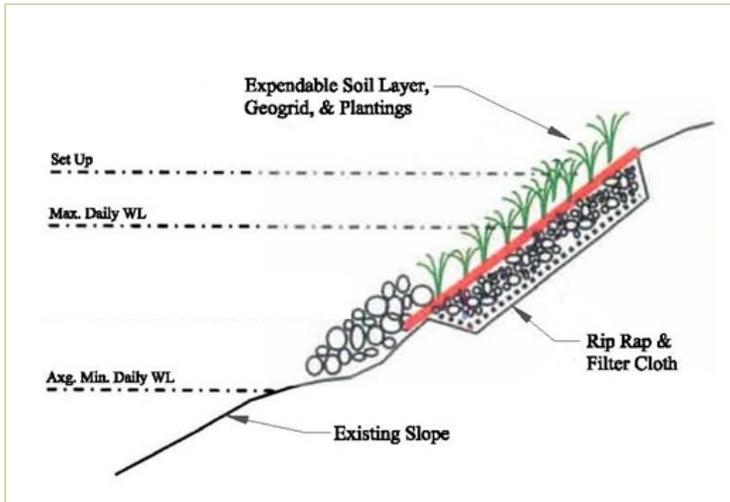


FIGURE 8-2 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (A)

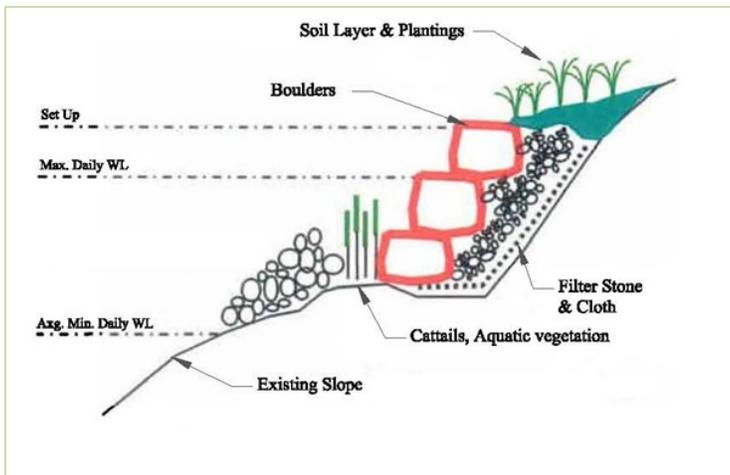


FIGURE 8-3 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (B)

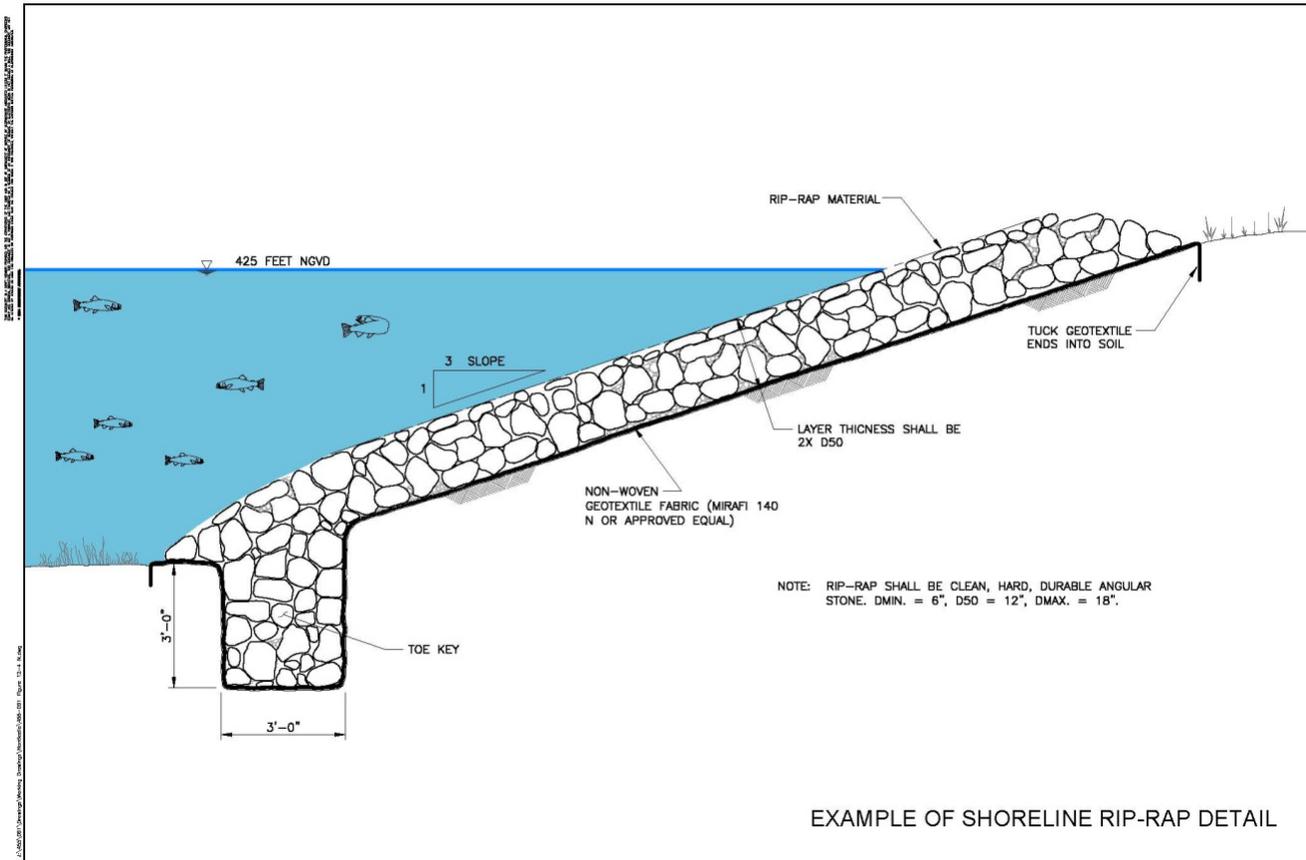


FIGURE 8-4 EXAMPLE OF SHORELINE RIP-RAP DETAIL

8.1.5 WATER WITHDRAWAL

Water withdrawals requiring piping and other transportation/delivery equipment to be placed along the shoreline or in the littoral zone, are managed according to the terms of this SMP. Water withdrawal for residential property must be for irrigation purposes only. Permits are required, and will not be issued for any other purpose. Associated pumps and electrical service must be located outside SCE&G property. SCE&G reserves the right to prohibit withdrawal during times of drought or water drawdown.

Applications for a permit to remove water must be submitted to SCE&G for review. Water withdrawal applications for greater than one million gallons per day (MGD) will be forwarded to the FERC for approval. Requests for withdrawal of one MGD or less may require agency consultation prior to approval. SCE&G may impose limits in granting permits for approved applications (see Permitting Handbook). The applicant may be required to bear the expenses of filing the application and will be required to compensate SCE&G for water withdrawn.

9.0 SCE&G PERMITTING FEE POLICIES

FERC allows licensees the right to charge reasonable fees to cover the costs of administering shoreline management programs, which add management responsibilities and associated costs to project operations. SCE&G administers its SMP in part through a permitting program, which does include a fee component. This ensures that activities occurring within the Project and in particular on Project land, are consistent with the overall goals for the Project, and that SCE&G's customers are not burdened with the full cost of administering programs that also have significant private, and often non-customer, benefit. Permit fees are due with applications and are required for docks, access paths, water withdrawal, and erosion control projects. Should an application be denied, associated permit fees will be returned. Periodic permit renewal fees may be required depending on the shoreline activity. Permit fees for Monticello Reservoir shoreline activities are detailed in the Permitting Handbook. Failure to comply with this policy may result in, among other things, revocation of existing permits, fines, or legal action, as well as loss of consideration for future permits.

SCE&G will give reasonable public notice through appropriate communication avenues before changing the fee structure.

10.0 ENFORCEMENT OF SHORELINE MANAGEMENT PLAN

10.1 VIOLATIONS OF SHORELINE MANAGEMENT PLAN

SCE&G conducts periodic surveys of the Monticello Reservoir shoreline to inventory and inspect docks, access paths, and shoreline erosion control structures/projects. Lake Management representatives make note of unauthorized structures that they see, as well as urging residents and Reservoir visitors to report anything they believe to be unauthorized activity within the Project boundary. Anyone believing that an activity violating the SMP is occurring is urged to contact SCE&G Lake Management at (803) 217-9221.

SCE&G Lake Management representatives will issue Stop Work Directives and/or Trespass Notices for any violations detected on SCE&G property. Any unauthorized clearing of trees or underbrush may result in the revocation of responsible parties' dock permits within 30 days if the violation(s) is (are) not corrected or a course of and schedule for corrective action has not been agreed to and approved by SCE&G. SCE&G may also commence legal action, if it deems it necessary, to require re-vegetation of the affected area. Removal of merchantable timber will require reimbursement to SCE&G subject to valuation of the Forestry Operations Department, including legally allowable "penalties." Consequences for violations may also include restrictions of access to SCE&G property, legal actions, fines, and loss of consideration for future permits.

11.0 SHORELINE MANAGEMENT PRACTICES

11.1 SCE&G SHORELINE MANAGEMENT PRACTICES

SCE&G has established a set of management practices that apply to all of the lands included in the Project boundary. These practices are reflective of each of their developments unique qualities. The management practices for the Fairfield Development (which includes Monticello Reservoir) described herein, may be reviewed and revised periodically during the period of the FERC license.

11.1.1 FOREST MANAGEMENT SHORELINE MANAGEMENT PRACTICES

SCE&G manages timber within the Monticello Project boundary line in accordance with South Carolina's Best Management Practices for Forestry publication. An online copy of this publication is available at <http://www.state.sc.us/forest/refbmp.htm>.

11.1.2 AQUATIC PLANT MANAGEMENT ACTIVITIES

Some species of aquatic plants can become significant nuisances to recreation and Project operations should their populations not be controlled. Some of the common problem species that may be found in Monticello Reservoir include hydrilla, water primrose, and several species of pondweed. When managing invasive and exotic aquatic plants it is important to also protect the aquatic ecosystems and fish habitat. This requires the integration and use of specific BMPs appropriate to the regional and local conditions.

SCE&G's Lake Management Department, in cooperation with the South Carolina Aquatic Plant Management Council, manages the Aquatic Weed Program on Monticello Reservoir. Because some aquatic weed control techniques can harm fish and native plant species if improperly used, it is unlawful, per state and federal regulations, for individuals to spray or treat aquatic growth in the waters of Monticello Reservoir. SCE&G joins with SCDNR to ask that any aquatic vegetation problems recognized by Reservoir visitors or adjacent property owners be reported to SCE&G's Lake Management Department and the SCDNR. In addition, to help curb the spread of invasive aquatic species, SCE&G joins with SCDNR to ask that Reservoir visitors examine their boats and trailers and remove all vegetation and visible mud from boats and trailers before placing them into the waters of Monticello Reservoir and after removing them from Monticello Reservoir. This plea and advice also applies to every body of water in the State. Additional

information on aquatic plant management throughout the state, including Monticello Reservoir, is available at SCDNR's website, <http://www.dnr.sc.gov/invasiveweeds/plan.html>.

11.1.3 WOODY DEBRIS & STUMP MANAGEMENT

Commented [AWR3]: Include wording from Lorianne Riggins

Monticello Reservoir does not have a significant source of woody debris. Woody debris and stump management are discussed in the Permitting Handbook.

11.2 LANDOWNER RECOMMENDED BMPS

In addition to development activities, the environment around Monticello Reservoir is susceptible to impacts associated with residential and recreational activities. These include, for example only, improper fertilizer/pesticide use, boat maintenance, and debris disposal. Adjacent property owners can mitigate negative impacts otherwise associated with their property uses and instead make significant positive contributions to the Reservoir environment, and ultimately the watershed, by employing BMPs that preserve bank integrity and minimize non-point sources of pollution and contamination. Adjacent property owners should understand that using BMPs will help to preserve the scenic, environmental, and recreational qualities of the reservoir that they so highly value. Examples of effective BMPs recommended to adjacent property owners are provided in the succeeding section. SCE&G is available to provide more information and to assist landowners in determining effective BMPs for activities on their properties. Also, anyone may contact the Natural Resource Conservation Service or local county extension office (<http://www.sc.nrcs.usda.gov/contact/>).

11.2.1 MINIMIZING NON-POINT SOURCE POLLUTION

Reservoir pollution may result from a variety of activities related to residential development, agriculture, forestry, and construction. Contaminants may enter the reservoir and tributaries via overland flows carrying biological, chemical, and other substances picked up and carried by runoff from rain events. This runoff water may contain sediment, bacteria, oil, grease, detergents pesticides, fungicides, fertilizers, and other pollutants. These pollutants, depending on type, quantities, and concentrations can overwhelm a reservoir's natural ability to filter and process them, thus leading to degraded water quality and aquatic environments.

Although a single point of impact or action may seem insignificant in its effect on the reservoir, the cumulative effects of the resource may be considerable. With this in mind, SCE&G

encourages adjacent land owners to be mindful that they are members of a larger community that uses and impacts the reservoir. Employing the following BMPs can go a long way in preserving and improving reservoir water quality:

- Use permeable paving materials and reduce the area of impervious surfaces, particularly driveways, sidewalks, walkways, and parking areas;
- Dispose of vehicle fluids, paints, and/or household chemicals as indicated on their respective labels and do not deposit these products into storm drains, project waters, or onto the ground;
- Use soap sparingly when washing vehicles and wash them on a grassy areas , preferably sloping gently away from the reservoir, so the ground can filter the water naturally;
- Use hose nozzles with triggers to save water and dispose of used soapy water in sinks or other vessels that direct the materials into sewer systems, not in the street;
- Maintain septic tanks and drain fields according to the guidelines and/or regulations established by appropriate regulatory authorities;
- Remove ~~and dispose of~~ pet waste and dispose of properly in areas that do not drain to the reservoir; and
- Use only low or no phosphorous fertilizer on lawns near the reservoir.

12.0 PUBLIC EDUCATION AND OUTREACH

This SMP is intended to foster management of shoreline use and development to achieve consistency with the FERC License, as well as to promote protection of public safety and environmental quality (water quality, natural habitat, aesthetics, etc.). To garner support and compliance from the public and lake users, it is key to educate them to the need and means to protect shoreline resources. Additionally, the public must be aware of the management and permitting programs put in place to provide this protection. To accomplish the task of increasing public awareness of the goals and objectives of this SMP SCE&G has developed an education and outreach program that includes the components described below.

12.1 SHORELINE MANAGEMENT PLAN EDUCATION

SCE&G's Public Education and Outreach program seeks to educate the public on various aspects of the management of Monticello Reservoir, including the Permitting Handbook, recommended BMP use, relevant Project Operations information, and the Safety Program. To accomplish this, SCE&G uses various public education measures including informational pamphlets, public meetings, newsletters, and an internet webpage.

The Internet, in particular, presents an excellent mechanism for disseminating information and improving awareness. SCE&G maintains a website designed to provide information on the SMP and the Permitting Handbook. Printed copies of the following materials may also be obtained by contacting SCE&G Lake Management at (803) 217-9221. Information and materials that will be available at the website include the following:

- Permitting Handbook;
- Permit application forms;
- Examples and information on BMPs;
- Alternative and example designs for shoreline stabilization; and
- Useful links and other related information.

Additional outreach mechanisms that SCE&G intends to employ in implementing the SMP include the following:

- Provide speakers for homeowner and other organizations' meetings;

- Provide information to realtors and encourage dissemination of this information to all potential Reservoir shoreline back-property buyers; and
- Develop and distribute new, “user friendly” brochures that include general reservoir information, permitting processes, shoreline BMPs, and relevant contact information.

12.2 PUBLIC ACCESS AREA MAPS

A figure depicting existing and future Public Access Areas on Monticello Reservoir is included as Figure 12-1.

12.3 WILDLIFE MANAGEMENT AREAS/WATERFOWL HUNTING ONLY

The waters of Monticello Reservoir, excluding the Recreation Lake, are designated as a waterfowl management area and are available for public waterfowl hunting. The designation for waterfowl management allows hunting on or in the water only and not on adjacent land. A South Carolina Wildlife Management Area (WMA) permit is required to hunt in areas with this designation. Regulations pertaining to Monticello Reservoir are available at SCDNR's website at: <http://dnr.sc.gov/wma/index.html>, or by contacting SCDNR at:

Waterfowl and Hunting Regulations
 S.C. Department of Natural Resources
 Wildlife and Fresh ~~Water~~ water Fisheries
 1000 Assembly Street
 Columbia, South Carolina 29201
Mailing Address:
P.O. Box 167
Columbia, South Carolina 29202
 Telephone: 803-734-3886

12.4 WATER SAFETY

Due to operation of the pumped storage generating plant, the waters of Monticello Reservoir can fluctuate several feet in a matter of a few hours. This rapid fluctuation makes it especially important for boaters and other recreationists to exercise a high degree of care and fully assume personal responsibility for their safety by being especially aware and cautious. For public safety, hazardous areas which are marked should not be entered and any other warnings posted around the reservoir should be observed as well.

SCE&G and SCDNR cooperate to mark shoals and other hazardous areas to increase boating safety. However, boaters should not assume all shoals and hazardous areas have been marked.

SCDNR also enforces the boating laws of South Carolina. Boaters should ensure that watercraft and safety equipment are in good working condition and in compliance with all applicable state laws.

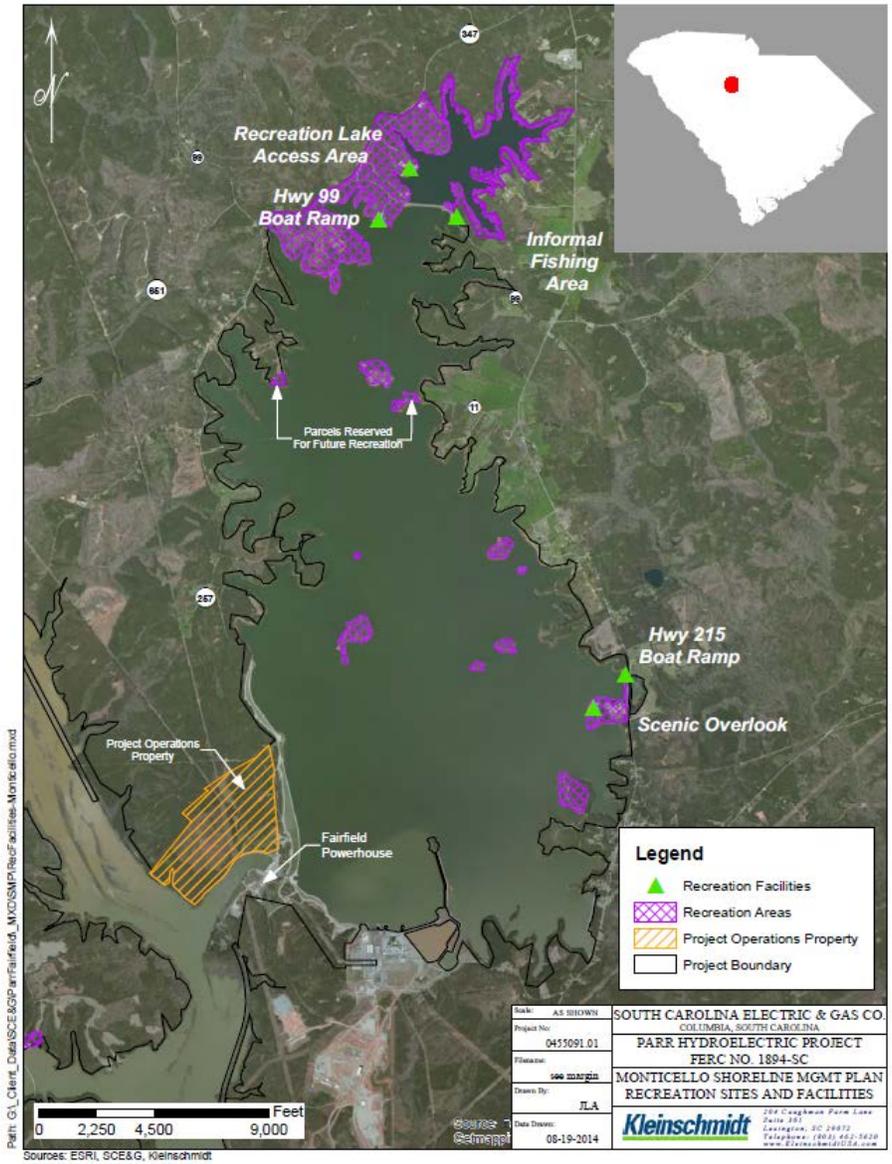


FIGURE 12-1 MONTICELLO RESERVOIR PUBLIC ACCESS AREA MAP

13.0 MONITORING AND REVIEW PROCESS

13.1 OVERALL LAND USE MONITORING

As demographics and user groups change within the Project area, changes in residential and commercial areas may occur. Often this type of use change is incremental and cumulative, occurring over a period of years or decades. To monitor land use around Monticello Reservoir, SCE&G will employ a geographic information system (GIS) to compare new and existing permit applications against GIS data for the land management classifications. Such monitoring will provide long-term data that should be useful in identifying areas experiencing change. Every 10 years, during the SMP review process (see Section 13.2 on Review Process below), SCE&G will report on changes in land use for the various land management classifications. If it is found that material changes within the Project boundary have occurred that are not consistent with the current SMP goals, amendments to the SMP may be warranted. Such situations might include significant changes in land ownership, major commercial upgrades or uses, or new residential uses or pressures.

13.2 REVIEW PROCESS

SCE&G proposes a 10 year SMP review cycle interval. A 10 year SMP review period interval should provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. The SMP review process will begin sufficiently in advance of the end of each period so that it will be completed within the 10 year time frame. One month prior to the scheduled start of the review process, its occurrence will be advertised in various media formats (e.g., web site, newsletter, contact with homeowner associations, etc.). SCE&G will use those same media avenues to issue a report on the outcome of the review process. As in the past, SCE&G will solicit input from interested parties in addressing issues that arise and have a bearing on Reservoir management. This includes keeping lines of communication open during the time between review periods. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook periodically with interested stakeholders to ensure its effectiveness; however, changes to the permitting process may be made, as needed, outside of the scheduled review periods.

14.0 REFERENCES

- Federal Power Commission (F.P.C.). 1974. Order Issuing New License for the Parr Hydroelectric Project. August 28, 1974. 52 F.P.C. 537.
- Federal Energy Regulatory Commission (FERC). 2012. Guidance for Shoreline Management Planning at Hydropower Projects. Online. [URL]: <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/smpbook.pdf>.
- Federal Energy Regulatory Commission (FERC). 2001. Order Approving Land use and Shoreline Management Plan. June 4, 2001. 95 FERC ¶ 61,351.

SHORELINE MANAGEMENT PLAN PARR RESERVOIR

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

Prepared for:

**South Carolina Electric & Gas Company
Cayce, South Carolina**

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtGroup.com

July 2015

SHORELINE MANAGEMENT PLAN
PARR RESERVOIR

PARR HYDROELECTRIC PROJECT
(FERC No. 1894)

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July 2015

**PARR HYDROELECTRIC PROJECT
SHORELINE MANAGEMENT PLAN
PARR RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

EXECUTIVE SUMMARY

South Carolina Electric & Gas Company ("SCE&G") is the Licensee of the Parr Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 1894) ("Project"). The Project consists of the Parr Shoals Development and the Fairfield Pumped Storage Development. The developments are located along the Broad River in Fairfield and Newberry Counties, South Carolina.

The Project developments form two distinct Project reservoirs. Parr Reservoir is located along the Broad River, as impounded by Parr Dam, and functions as the lower reservoir for the Fairfield Development. Monticello Reservoir is located adjacent to the Broad River and functions as the upper reservoir for the Fairfield Development. Both Project reservoirs serve as popular recreation destinations and are used and enjoyed by local residents as well as visitors to the state.

In conjunction with its relicensing activities, SCE&G has assembled a diverse and inclusive group of stakeholders to advise and assist in the development of two Shoreline Management Plans ("SMPs"), each tailored to a specific reservoir. SMPs are comprehensive plans for the management of Project land and adjoining water resources and their uses, consistent with License requirements and broad Project purposes, and appropriately accessible and beneficial to adjacent shoreline residents and the recreating public. A SMP serves to identify existing and appropriate future uses and to provide plans and programs for responsible future use and management of project lands and waters as well as the flora and fauna encompassed within them. This SMP exists specifically to address shoreline uses surrounding Parr Reservoir. A SMP to address Monticello Reservoir is included under separate cover and is available from the SCE&G Lake Management Department (Lake Management).

In addition to a SMP for each Project reservoir, a Shoreline Management Handbook and Permitting Guidelines (Permitting Handbook) was developed for both developments in consultation with governmental, non-governmental, and individual stakeholders to address activities that will require consultation with and/or permits from SCE&G. These activities include construction, maintenance, and placement of docks on Monticello Reservoir, shoreline stabilization, lake access pathways and other shoreline activities.

The classification of Project lands surrounding Parr Reservoir is described in Section 5.0 and includes ~~four~~three management classifications. These classifications are as follows: Project Operations; Public Recreation; ~~Waterfowl Areas;~~ and, ~~Undeveloped-Non-Development~~ Areas. Public Recreation land includes land within SCE&G developed recreation areas and islands that are owned by SCE&G. Undeveloped areas are areas protected from development to preserve the environmental resources and aesthetic values. Lands reserved for Project operations are those lands that are specifically required for operation of the Project. They include areas such as plant facility locations, dams, electrical substations, etc. Land use prescriptions associated with these land management classifications are discussed in further detail in Section 6.0. Prescriptions are administered through the Permitting Handbook.

SCE&G maintains a strong commitment to the management of the waters and shoreline of Parr Reservoir, focusing on the social, ecological, and economic impacts of activities on and near the shoreline and water, taking into consideration in particular the environmental, aesthetic, and recreational character of the shoreline and lake. Section 7.0 details the activities and structures on and adjacent to Parr Reservoir that require SCE&G consultation and/or approval. The permitting procedures for shoreline activities or structures are set out in more detail in Section 8.0 and in the Permitting Handbook.

Section 9.0 details SCE&G's fee structure for the shoreline management program. Such fees can be one-time or periodic.

Periodic surveys of the Parr Reservoir shoreline are conducted by SCE&G and include, among other things, inventories of unauthorized structures. These represent violations of the SMP. SMP violations will be dealt with as deemed by SCE&G, in its sole discretion, to be appropriate. Consequences of violations may range from required removal of unauthorized structure, fines, and/or legal action, and are discussed more fully in Section 10.0.

SCE&G Shoreline Management Practices include actions taken to lessen or mitigate for potential impacts to a particular resource resulting from its direct or indirect use. These include but may not be limited to landowner Best Management Practices ("BMP"). Shoreline Management Practices are further described in Section 11.0 of this document.

Public education and outreach on the protection of valuable shoreline resources is integral to the effectiveness of the SMP. Section 12.0 of this document details specific measures to be undertaken to help educate both adjacent shoreline residents and other Project resource users. Among included objectives will be SMP education and BMP education.

In its Application for New License, SCE&G is proposing 10 year review periods for the SMP. The 10 year SMP review periods provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook with interested stakeholders periodically to ensure its effectiveness; however, changes to the permitting process may be made as it deems necessary and appropriate. This is discussed in Section 13.0.

TABLE OF CONTENTS (CONTINUED)

**SHORELINE MANAGEMENT PLAN
PARR RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ES-i
1.0 INTRODUCTION	1
2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN	5
3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN.....	6
3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS.....	7
3.2 PROJECT BOUNDARY	8
4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES	9
4.1 CONSULTATION.....	9
4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE CONSERVATION GROUP	11
4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE	11
4.1.3 MEETING SCHEDULE.....	12
5.0 LAND USE CLASSIFICATIONS	13
5.1 PROJECT OPERATIONS.....	15
5.2 PUBLIC RECREATION	15
5.2.1 PUBLIC ACCESS AREAS.....	15
5.2.2 PEARSON'S ISLAND AND SHOALS	15
5.2.3 FUTURE RECREATION AREAS.....	16
5.2.4 HUNTING	16
5.3 NON-DEVELOPMENT AREAS	16
6.0 LAND USE PRESCRIPTIONS.....	17
6.1 PROJECT OPERATIONS.....	17
6.2 PUBLIC RECREATION	17
6.2.1 PEARSON'S ISLAND AND SHOALS	18
6.2.2 HUNTING	18
6.3 NON-DEVELOPMENT AREAS	18
7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL.....	19
7.1 AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE PERMITTING HANDBOOK	19
7.2 PROHIBITED STRUCTURES AND ACTIVITIES	19
8.0 PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES	21

8.1	SHORELINE PERMITTING PROCEDURES	21
8.1.1	LINE VEGETATION MANAGEMENT	22
8.1.2	ACCESS PATH	22
8.1.3	WATER WITHDRAWAL.....	24
9.0	SCE&G PERMITTING FEE POLICIES	25
10.0	ENFORCEMENT OF SHORELINE MANAGEMENT PLAN	26
10.1	VIOLATIONS OF SHORELINE MANAGEMENT PLAN	26
11.0	SHORELINE MANAGEMENT PRACTICES.....	27
11.1	SCE&G SHORELINE MANAGEMENT PRACTICES.....	27
11.1.1	FOREST MANAGEMENT/SHORELINE MANAGEMENT PRACTICES.....	27
11.2	LANDOWNER RECOMMENDED BMPs	27
11.2.1	MINIMIZING NON-POINT SOURCE POLLUTION.....	27
12.0	PUBLIC EDUCATION AND OUTREACH.....	29
12.1	SHORELINE MANAGEMENT PLAN EDUCATION.....	29
12.2	PUBLIC ACCESS AREA MAPS	30
12.3	WATERFOWL HUNTING ON PARR RESERVOIR.....	30
12.4	SAFETY PROGRAMS	30
13.0	MONITORING AND REVIEW PROCESS	32
13.1	OVERALL LAND USE MONITORING.....	32
13.2	REVIEW PROCESS.....	32
14.0	REFERENCES	33

LIST OF TABLES

TABLE 4-1	PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING	10
TABLE 4-2	ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC.	11
TABLE 5-1	SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION	13

LIST OF FIGURES

FIGURE 1-1	PROJECT LOCATION AND BOUNDARY MAP	4
FIGURE 5-1	SHORELINE CLASSIFICATIONS MAP FOR PARR RESERVOIR.....	14
FIGURE 8-1	PERMITTED ACCESS PATH	23
FIGURE 12-1	PARR RESERVOIR PUBLIC ACCESS AREA MAP.....	31

**PARR HYDROELECTRIC PROJECT
SHORELINE MANAGEMENT PLAN
PARR RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

1.0 INTRODUCTION

The Parr Hydroelectric Project ("Project") is located on the Broad River in Fairfield and Newberry Counties, South Carolina (Figure 1-1). The Project is located approximately 31 river miles downstream of the Neal Shoals Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 2315) and 24 river miles upstream of the Columbia Diversion Dam. The Project consists of two developments: the Parr Shoals Development ("Parr Development") and the Fairfield Pumped Storage Development ("Fairfield Development"). Subsequently, two reservoirs are included as part of the Project, Monticello Reservoir¹ and Parr Reservoir. The normal maximum water level in Monticello Reservoir is El. 425.0 feet National Geodetic Vertical Datum ("NGVD"), which corresponds to a surface area of 6,800 acres, and a gross storage of 400,000 acre-feet. Monticello Reservoir has approximately 57 miles of shoreline within the Project boundary². Parr Reservoir's normal maximum water level is at El. 266.0 feet NGVD, with a corresponding surface area of 4,400 acres. The gross storage is estimated to be 32,000 acre-feet. Parr Reservoir has approximately 88 miles of shoreline within the Project boundary.

An active storage of up to 29,000 acre-feet is transferred between the two reservoirs by the pumped storage operations of the Fairfield Development. Fairfield Development's alternate cycles of generation and pumping results in daily fluctuations in the water levels of both Monticello and Parr Reservoirs. Monticello, when beginning at normal maximum pool elevation, drops 4.5 to 5 feet over a 10 to 12 hour period during the generating phase of operation. At the

¹ The State of South Carolina considers Monticello Reservoir waters of the State and refers to it as "Lake Monticello".

² Standard License Article 5 requires licensees to acquire and retain sufficient property and rights to construct, maintain, and operate their projects, as identified in their specific license, including any property or rights needed to accomplish all designated project purposes. As such, Project lands are those lands within the FERC project boundary owned by SCE&G in fee title and those lands for which SCE&G has acquired or retained an easement.

same time, the water from Monticello and from the Broad River is flowing into Parr Reservoir, causing it to rise as much as 10 feet. During the pumping cycle, the reverse occurs – the water level rises in Monticello Reservoir and drops in Parr Reservoir.

The Project boundary encompasses land around each reservoir, extending between 50 and 200 horizontal feet from the high water mark. South Carolina Electric & Gas Company ("SCE&G") manages SCE&G-owned lands within the Project boundary ("Project property") to comply with the FERC License for the Project (the "Licensee"). The goal of project land management is to serve the public interest by providing recreational access and opportunities, protecting wildlife habitat and water quality, producing electricity, and protecting and preserving cultural and aesthetic resources. The Shoreline Management Plan ("SMP") provides a set of administrative policies, procedures, and practices by which SCE&G seeks to manage the Project shoreline to achieve these goals. Future proposals for specific shoreline related developments or activities will be reviewed for consistency with the SMP.

A draft of the initial Project SMP was filed with the FERC in 1991. After several years of discussion and revisions, the initial SMP was approved by the FERC on June 4, 2001. The history of the Project's SMP is described in more detail in Section 3.0 (History of the Shoreline Management Plan). The current relicensing³ of the Project provides a near term impetus and opportunity for SCE&G to review the existing SMP in cooperation with relicensing stakeholders, including federal and state regulatory agencies, interested non-governmental organizations ("NGO"s), and individuals. Through discussions with these parties, it was decided that the existing FERC approved SMP, which encompasses both Parr and Monticello Reservoirs, should be divided into two distinct SMP's, one for each reservoir. Hence, this SMP has been prepared for Parr Reservoir and is being submitted to FERC as part of SCE&G's Parr Hydroelectric Project comprehensive relicensing package. A SMP for Monticello Reservoir is included under separate cover.

The management guidelines set forth in this SMP are applicable to all lands within the Project boundary surrounding Parr Reservoir. Among other things, the current document includes the following components:

³ The current operating License for the Project is due to expire on June 30, 2020. As such, SCE&G will file for a new License with FERC on or before June 30, 2018.

- Detailed descriptions, management prescriptions and mapping of land classifications;
- Summary information on the Permitting Handbook and fee policies;
- Best management practices ("BMP"s);
- Public education and outreach;
- Reservoir monitoring; and,
- A proposed review process.

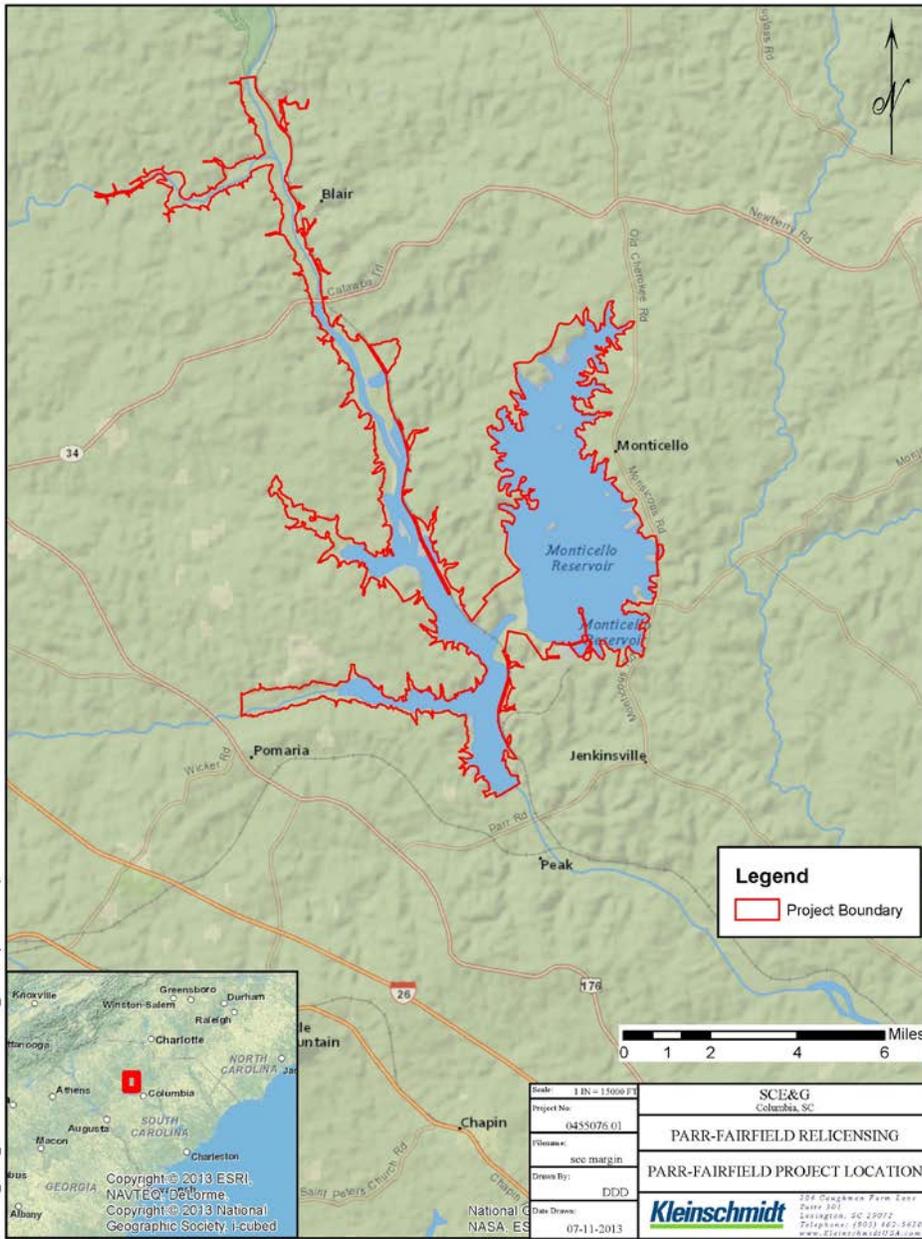


FIGURE 1-1 PROJECT LOCATION AND BOUNDARY MAP

2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN

The Project has served as a major source of power generation for SCE&G's customers and recreation for local residents and visitors to South Carolina for several decades. Consistent with FERC's Standard Land Use Article, a licensee may authorize specific non-project uses and occupancies of a project's shoreline. Examples of non-project uses at Parr Reservoir include access paths across SCE&G property, and water withdrawal. SCE&G has a responsibility to ensure that non-Project uses remain consistent with Project purposes, including protection and enhancement of the Project's scenic, recreational, and environmental values.

As development increases in areas surrounding the Project, so too does stress placed upon Project reservoirs and the surrounding watershed. Thus, a comprehensive SMP for each reservoir that recognizes and addresses sources of potential environmental impact is essential to managing each reservoir for the benefit of all interests and to ensure that non-Project uses remain consistent with the License.

The implementation of the SMP by SCE&G will help to maintain and conserve the area's natural and man-made resources. The SMP will comply with the terms of the License, as well as the regulations and orders of FERC, and is intended to assist in providing a balance between recreational use and development, environmental protection, and energy production.

3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN

Parr Reservoir is formed by the Parr Shoals Dam ("Dam"), which was originally constructed between 1912 and 1914. The Dam is situated across the Broad River and houses a 14.88 megawatt (MW) hydroelectric facility, located in an integral powerhouse. On August 28, 1974, the Federal Power Commission (FPC), predecessor to the FERC, issued SCE&G a new operating License for the Parr Shoals Development. In addition to relicensing the existing facilities, the new License authorized the construction of the 511.2 MW Fairfield Pumped Storage Development. This resulted in the creation of the Fairfield Development's upper pool, Monticello Reservoir. The new License also authorized the enlargement of the existing Parr Reservoir to serve as the lower pool to the Fairfield Development. This involved raising the height of the Dam approximately 9 feet, thereby nearly doubling Parr Reservoir's surface area. The construction of newly licensed facilities was completed in 1978, with the facilities beginning commercial operation that same year (F.P.C., 1974). The newly developed Project, including both Parr and Fairfield Developments, was subsequently referred to as the Parr Hydroelectric Project.

Article 48 of the Project License issued in 1974 required that SCE&G purchase in fee and include within the Project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the Project boundary shall include, but not be limited to: the islands in the Parr and Monticello Reservoirs formed by the 266-foot and 425-foot contour intervals, respectively; shoreline lands up to the 270-foot contour, or 50 feet (measured horizontally) from the Parr Reservoir's 266-foot contour, whichever is greater; and, shoreline lands up to the 430-foot contour interval, or 50 feet (measured horizontally) from Monticello Reservoir's 425-foot contour, whichever is greater. Provided that the Project boundary, except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontally measured, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given. The FPC determined that acquiring these lands would provide SCE&G with adequate shoreline control around the reservoirs, in addition to serving the purposes of Project operation and recreation (F.P.C., 1974). Furthermore, Article 20 of the Project License orders that SCE&G allow public access, to a reasonable extent to Project waters and adjacent Project lands (with the exception of lands necessary for the protection of life, health, and property) for navigation and outdoor recreational

purposes. This Article also allows SCE&G to grant permits for public access to the reservoirs subject to FERC approval (F.P.C., 1974).

In 1991, SCE&G recognized that appropriate policies and procedures should be in place to govern shoreline activities at the Project. Utilizing experience gained at their Saluda Hydroelectric Project (FERC No. 516), SCE&G filed a proposed SMP with FERC to regulate the use of Project shorelines. After extensive stakeholder consultation, an amended SMP was filed with FERC. It was approved on June 4, 2001. The SMP was included as part of the Project's Exhibit R (FERC, 2001).

The SMP approved in 2001 primarily covered activities associated with Monticello Reservoir. It dealt with the following matters: water quality management; forest management; waterfowl management; nuclear exclusion zone restrictions for the operation of SCE&G's V.C. Summer Nuclear Station; fishing, boating, and hunting; public access and recreation; private boat docks and access; vegetation removal; erosion control; and, prohibited activities.

In 2006, SCE&G amended the SMP's policy regarding common docks on Monticello Reservoir. The original policy allowed for two to five property owners to share a single common dock if the shoreline frontage requirement of 200 feet was met. The policy was amended to allow no more than two individual, adjacent single family residential lots to share a common dock. The shoreline frontage requirement of 200 feet was retained.

As noted, the previous SMP included very little pertaining to Parr Reservoir. As such, the need for a new SMP specifically pertaining to Parr Reservoir was identified.

3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS

The SMP serves as a reference document for SCE&G in implementing the Standard Land Use Article, which authorizes SCE&G to permit certain non-project uses of project lands and waters. FERC did not begin including the Standard Land Use Article in new licenses until the early 1980's; thus, it was not included in the Project License issued in 1974 (FERC, 2012). However, FERC granted SCE&G the authority to permit certain non-Project uses through the approval of the 2001 SMP, and added the Standard Land Use Article to the License (Article 62) in 2011, as revised in 2013 (Article 63). This present document, submitted in conjunction with SCE&G's License application, presents a management plan, covering only Parr Reservoir (a SMP for

Monticello Reservoir is included under separate cover), while adhering to the historical management goals agreed to and developed with agencies and stakeholders.

In addition to an updated SMP for each Project reservoir, a Permitting Handbook was developed in consultation with stakeholders and agencies to address activities requiring consultation with and/or permits from SCE&G. These activities include, but are not limited to the following: shoreline stabilization, access path development, and other shoreline activities. SCE&G will review the Permitting Handbook with interested stakeholders periodically to evaluate its effectiveness; however, SCE&G may make changes to the permitting process at any time as it determines in its sole judgment to be necessary and appropriate.

3.2 PROJECT BOUNDARY

SCE&G owns in fee or obtained flowage rights for all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. A Project boundary map is included as Figure 1-1.

4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES

The overall goal of this SMP is to define, document, and present the processes and criteria that SCE&G will employ to manage and balance private and public access to and uses of Project lands, specifically including Parr Reservoir's shoreline, consistent with public safety, energy production operations, environmental protection for Project land as well as Project waters, and reasonable recreational opportunities. This SMP will help to ensure the protection and enhancement of the Project's scenic, environmental, recreational, natural and cultural resources over the term of the License.

This SMP represents a consensus-based, updated management plan intended for submittal with the Project No. 1894 License Application. Specific goals relative to the SCE&G relicensing process that are discussed under this SMP include the following:

1. Provide for reasonable current and future public access;
2. Provide for current and future recreational needs within the Project;
3. Protect fish and wildlife habitat;
4. Protect cultural resources;
5. Protect the ability to meet operational needs;
6. Facilitate compliance with License articles;
7. Minimize adverse impacts to water quality;
8. Protect scenic values;
9. Monitor and permit shoreline activities;
10. Provide a summary catalogue of the types and locations of existing recreational opportunities;
11. Establish Land Management Classifications and Land Use Prescriptions to help in the management of non-Project uses of the Parr Reservoir shoreline lands within the Project boundary;
12. Describe the SMP amendment and monitoring process; and
13. Educate and encourage property owners who own property adjacent to or adjoining Project Property (herein referred to as "adjacent property owners") on the use of voluntary BMPs.

4.1 CONSULTATION

The Project relicensing provides an opportunity for SCE&G to seek input on Project-related shoreline management issues from interested stakeholders. SCE&G recognizes that successfully

completing the relicensing process requires identifying and resolving Project issues in consultation with federal and state resource agencies, local and national NGOs, homeowner associations, and individuals who have an interest in the Parr Hydroelectric Project (Table 4-1). SCE&G began public outreach efforts in January 2013 by holding a series of public workshops in Winnsboro, Newberry, Columbia, and Jenkinsville, SC. Since that time, SCE&G has sought active public involvement in the process and fostered commitment to issue resolution among SCE&G and stakeholders.

TABLE 4-1 PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING

STAKEHOLDER GROUPS
American Rivers
American Whitewater
Catawba Indian Nation
City of Columbia
Chestnut Hill Plantation HOA
Coastal Conservation League
Congaree Riverkeeper
Environmentalists Inc.
Fairfield County
Gills Creek Watershed
National Marine Fisheries Service
National Park Service
Newberry County
South Carolina Department of Health and Environmental Control
South Carolina Department of Natural Resources
South Carolina Department of Parks, Recreation and Tourism
South Carolina Electric & Gas Company
South Carolina Historic Preservation Office
Town of Winnsboro, SC
Tyger-Enoree River Alliance
United States Fish and Wildlife Service
United States Forest Service
University of South Carolina

4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE CONSERVATION GROUP

In support of the relicensing effort, SCE&G formed three Resource Conservation Groups ("RCG"s) to identify, address and resolve Project-related issues by resource area. The RCGs are as follows: the Fish, Wildlife and Water Quality RCG; the Project Operations RCG; and the Lake & Land Management and Recreation RCG. Consideration of potential issues by resource area allows for more focused topic discussion and targeted issue resolution. Some RCGs have established sub-groups, or Technical Working Committees ("TWC"s), for issues requiring special knowledge, education, or experience. Consequently, the Lake & Land Management and Recreation RCG has a Lake and Land Management TWC as well as a Recreation TWC. The Lake and Land Management TWC is discussed further below.

4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE

The primary mission of the Lake and Land Management TWC is to revise the existing Parr Hydroelectric Project SMP to provide a management framework within which Project resources can be effectively protected while assuring appropriate public and private access to the Project resources and the recreational opportunities they present. Another important focus of the TWC is to allow interested parties an effective opportunity to provide input on resource issues and the overall future management of shoreline resources. The resulting collaboration has resulted in the contribution of valuable information by entities and individuals familiar with the Project. The forum was instrumental in addressing important issues relevant to the operation and management of the Project over the term of the new License. In working collaboratively, the members of the TWC (Table 4-2) aimed to blend the objectives of the state and federal resource agencies with other stakeholder interests.

TABLE 4-2 ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC

STAKEHOLDER GROUPS

American Rivers

American Whitewater

Coastal Conservation League

Congaree Riverkeeper

Fairfield County

STAKEHOLDER GROUPS

Gills Creek Watershed

Adjacent Property Owners

National Marine Fisheries Service

National Park Service

South Carolina Department of Health and Environmental Control

South Carolina Department of Natural Resources

South Carolina Department of Parks, Recreation and Tourism

South Carolina Electric & Gas Company

Tyger-Enoree River Alliance

United States Fish and Wildlife Service

United States Forest Service

4.1.3 MEETING SCHEDULE

Between October of 2013 and January of 2018, SCE&G has held numerous meetings of the Lake and Land Management and Recreation RCG and Lake and Land Management TWC to discuss the details of the Project SMPs. The efforts of the TWC are reflected herein.

5.0 LAND USE CLASSIFICATIONS

Three distinct land management classifications have been developed for the shorelines surrounding Parr Reservoir. These land management classifications are as follows: Project Operations; Public Recreation; and, Non-Development Areas. The Public Recreation Classification includes designated public recreation areas, WMA and some islands within Parr Reservoir. Although SCE&G intends to manage its lands according to this classification system, the public generally will not be precluded from access to SCE&G-owned lands regardless of classification, with the exception of lands reserved and used for Project operations or other areas specifically protected from public access and posted as such. The sections below explain/define the land management classifications. The acreages and parcels for each of the classifications are provided in Table 5-1. Figure 5-1 depicts their distribution around Parr Reservoir.

TABLE 5-1 SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION

CLASSIFICATION	SHORELINE MILES	ACRES
Project Operations*	2.77	90
Public Recreation*	2.84	219
Waterfowl Areas*	2.47	723
Non-Development Areas*	79.91	2,188
TOTAL	87.99	3,220

*No docks allowed

Commented [AWR1]: Include under Public Recreation

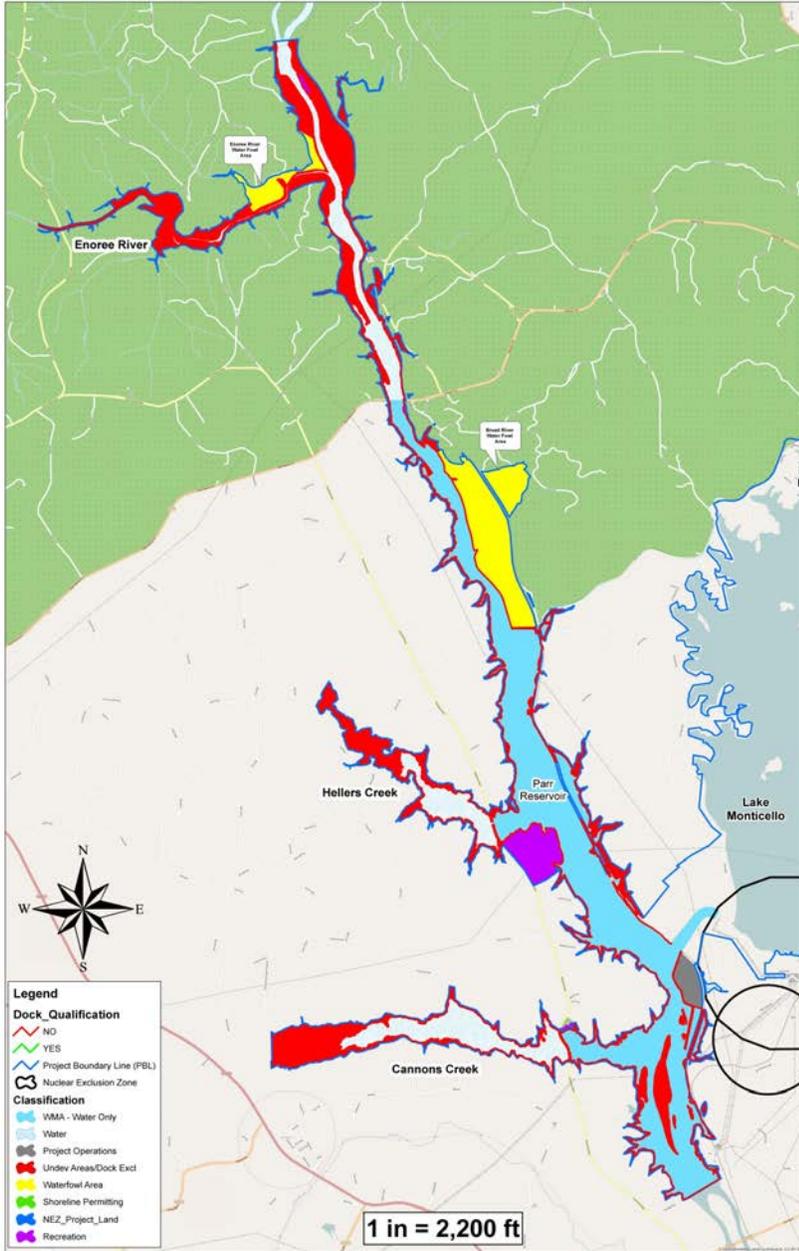


FIGURE 5-1 SHORELINE CLASSIFICATIONS MAP FOR PARR RESERVOIR

5.1 PROJECT OPERATIONS

Areas under this classification include SCE&G-owned and managed lands required for operation of the Parr Development. Public access to these lands is restricted to ensure public safety or to assure the security of the infrastructure system.

5.2 PUBLIC RECREATION

Project lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Public recreation lands include the following:

- Public boat launches, and other areas currently being managed as public access;
- Islands owned by SCE&G;
- Properties owned by SCE&G that are set aside for future recreational development;
- Public Hunting.

5.2.1 PUBLIC ACCESS AREAS

SCE&G has developed and maintains two public parks and one primitive boat ramp on Parr Reservoir. These include the following:

- Cannon's Creek Public Access Area
- Heller's Creek Public Access Area
- Highway 34 Primitive Ramp

Each park provides facilities for boat launching, courtesy dock(s), and/or picnic facilities for public use.

5.2.2 PEARSON'S ISLAND AND SHOALS

Pearson's Island is located within Parr Reservoir and is available for public recreational use in accordance with authorized activities (See the Permitting Handbook for authorized activities). Due to the fluctuation of Parr Reservoir associated with the Fairfield Development's pumped storage operations, shoals (areas of exposed, or nearly exposed, shallow lake bottom) in Parr Reservoir may be dewatered and are open for passive recreational activities.

5.2.3 FUTURE RECREATION AREAS

Future Recreation Areas include lands SCE&G has set aside for future recreational development, if and when it is determined additional recreation access is needed.

5.2.4 PUBLIC HUNTING

Portions of Project lands are included in the South Carolina Department of Natural Resources ("SCDNR") statewide Wildlife Management Areas (WMA) Program. These areas are open to the public for hunting and other recreational activities (visit <http://dnr.sc.gov/wma/index.html> for additional information). The Broad River and Enoree River WMA's are open to public hunting only on specified days. ~~Public Hunting-hunting~~ is not allowed on SCE&G property unless designated under SCDNR's Wildlife Management Areas (WMA) Program. For additional information on these areas, please visit the SCDNR website at <http://dnr.sc.gov/wma/index.html>.

5.3 NON-DEVELOPMENT AREAS

Project lands under this classification are protected from private development. This is done for the protection of the environmental and aesthetic integrity of the shoreline.

6.0 LAND USE PRESCRIPTIONS

Land use prescriptions are based upon and reflect the guiding principles regarding the management of the SCE&G-owned lands within each classification. SCE&G publishes a detailed Permitting Handbook (included under separate cover) that contains descriptions of the permitting processes and specifications for various shoreline developments. Activities that require consultation with and/or permits from SCE&G include the following: construction, maintenance and placement of docks and boat lifts, shoreline stabilization; construction and maintenance of shoreline pathways, and other shoreline activities. Persons interested in shoreline development must contact SCE&G's Lake Management Department (803) 217-9221, or at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs> to obtain permitting guidance and a copy of the Permitting Handbook. Section 8.0 of this document discusses the Permitting Handbook in greater depth. General information regarding permitting requirements is included where applicable within the scope of each management prescription below.

6.1 PROJECT OPERATIONS

Properties classified as Project Operation contain project works critical to the operation of the Parr Shoals Development. Public access to, or activities upon, these lands is restricted for reasons of safety and security.

6.2 PUBLIC RECREATION

Project lands devoted to public recreation include developed park sites, properties set aside for future recreational development, Pearson's Island and shoals on Parr Reservoir owned by SCE&G⁴. With the exception of Pearson's Island, which is maintained in its natural condition, SCE&G manages the areas based on the specific, designated recreational activities including swimming, fishing, picnicking, and boat launching. Primitive camping is allowed at the three park sites (Cannon's Creek Access Area, Heller's Creek Access Area, and Highway 34 Primitive Ramp). Private permitted activities are excluded. SCE&G developed and maintained access areas on Parr Reservoir are depicted in Figure 12-1.

⁴ SCE&G manages some of the lands classified for public recreation for timber. Information on SCE&G's forest management practices is included in Section 11.1.1.

6.2.1 PEARSON'S ISLAND AND SHOALS

Pearson's Island is located on Parr Reservoir and is open for passive public recreational use, such as fishing, walking, and bird watching. Hunting is prohibited on SCE&G owned islands. Due to the fluctuation of Parr Reservoir resulting from the Fairfield Development's pumped storage operations, shoals (areas of exposed or nearly exposed, shallow lake bottom) in Parr Reservoir may be dewatered and are open for passive recreational activities.

6.2.2 HUNTING

Hunting is not allowed on SCE&G property unless designated under SCDNR's WMA Program. WMA Program areas may be available for hunting of waterfowl, small game and/or deer. Other recreational activities are allowed as well. See SCDNR website for regulations and WMA maps.

Portions of Parr Reservoir are designated as a waterfowl management area under the WMA program. This area is discussed under Section 12.3.

6.3 NON-DEVELOPMENT AREAS

Lands under this classification warrant special protection because they may provide important habitat or aesthetic values. Meandering paths and water withdrawals must be permitted and may be considered on a case-by-case basis.

7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL

SCE&G maintains a strong commitment to managing the shoreline of Parr Reservoir for multiple resources by considering the impact of various activities on the environmental, aesthetic, and recreational character of the lands. SCE&G owns and manages property around the entire periphery of Parr Reservoir. Thus, any activity occurring on the "shoreline" is occurring on SCE&G property. Activities not in compliance with the shoreline activity parameters outlined in this SMP and in the Permitting Handbook may constitute a trespass which SCE&G may elect to prosecute.

7.1 AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE PERMITTING HANDBOOK

Only the following activities and structures may be permitted on Parr Reservoir:

- Construction of a meandering access path;
- Water withdrawal for non-commercial agricultural/landscaping irrigation purposes.

7.2 PROHIBITED STRUCTURES AND ACTIVITIES

Activities and structures that SCE&G does not allow include, but are not limited to, the following:

Prohibited Structures:

- Private boat docks;
- Private shoreline stabilization;
- Boathouses;
- Private boat ramps;
- Commercial marinas;
- Marine rails;
- Sea walls;
- Fences;
- Electrical service;
- Permanent structures;
- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, canoes or other watercraft or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Jet skiing;
- Water skiing;
- Parasailing
- Paragliding
- Mooring;
- Excavations/dredging (except commercial operations permitted by the state);
- Effluent discharges;
- Storage or stockpiling of construction material;
- Livestock access to reservoir⁵
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Use of herbicides: and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

⁵ Unless grandfathered through deed reservations.

8.0 PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES

8.1 SHORELINE PERMITTING PROCEDURES

Applicants must obtain the proper permit(s), per the SCE&G's Permitting Handbook, prior to the initiation of any construction or activity on the Parr Reservoir shoreline, which consists of the lands below the 266-foot contour interval and designated Project property. As noted above, some activities may also require local, state, and/or federal permits.

Whether a non-Project use is approved under the Standard Land Use article or through prior FERC approval, SCE&G is responsible for ensuring that the use is consistent with the purposes of protecting or enhancing the scenic, recreational, and other environmental values of the Project. To assist applicants in the permitting process, the staff at the SCE&G Lake Management Department is available to answer questions regarding documentation, permits, and specification requirements for their particular project. Permits from SCE&G are required for the following activities:

- Construction of a meandering access path;
- Water withdrawal for non-commercial agricultural/landscaping irrigation purposes.

It is highly advisable to begin the consultation process with SCE&G Lake Management staff at the planning stage of a project. SCE&G staff will be available to discuss specific permitting requirements with the property owner. Depending on the proposed new facility or activity, local, state and federal resource agencies may impose requirements on construction start/stop dates, the placement of erosion control devices, treatment plans, remedial measures, submittal of start construction notifications, and/or best management practices. Any permit applicant should be aware of such conditions, as violations may nullify a permit.

An overview of permitted activities is included below. Detailed information on SCE&G's permitting process, guidelines, and specifications, is provided in SCE&G's Permitting Handbook available at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs>, by calling (803) 217-9221, or by writing:

SCE&G Lake Management Department
6248 Bush River Road
Columbia, SC 29212

8.1.1 SHORELINE VEGETATION MANAGEMENT

In general, SCE&G maintains a policy of non-disturbance of any vegetation below the 266-foot contour or on Project property without approval from SCE&G. Permission to remove vegetation within a permitted access path will only be granted by SCE&G Lake Management after a site visit with the applicant. Once clearing of the access path is completed according to the permit, the applicant may maintain the site in the permitted condition. Any unauthorized removal of shoreline vegetation may result in the cancellation of permits issued by SCE&G, as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or shoreline manipulation as SCE&G determines is necessary to mitigate and correct the situation.

8.1.2 ACCESS PATH

A single pedestrian access path may be cleared from the adjacent property owner's land upon approval of SCE&G. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches at breast height may be removed within the access path. A SCE&G Lake Management representative will identify and designate the location of all access paths. Access path restrictions are included in the Permitting Handbook. An example of a permitted access path is included as Figure 8-1.

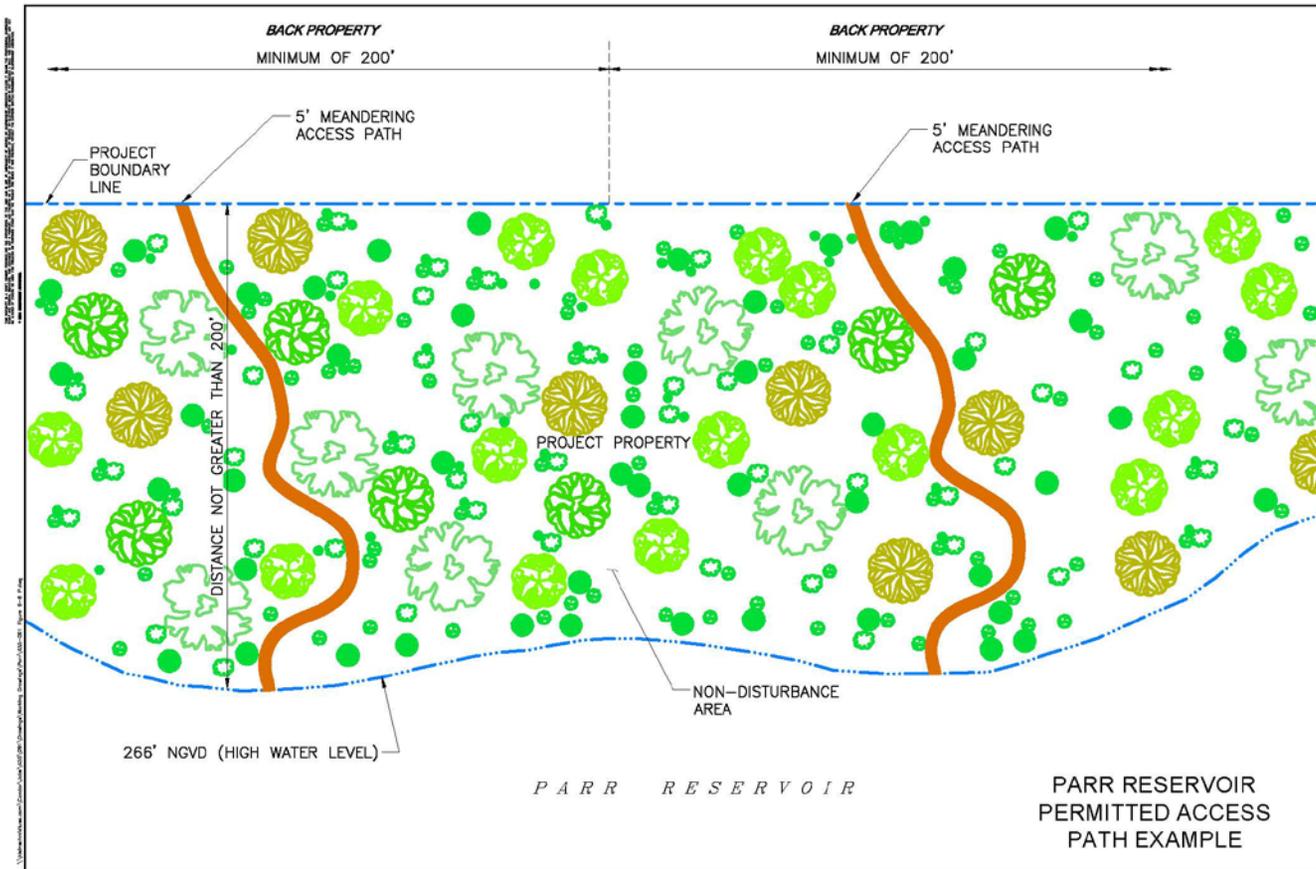


FIGURE 8-1 PERMITTED ACCESS PATH

8.1.3 WATER WITHDRAWAL

Water withdrawals requiring piping and other transportation/delivery equipment to be placed along the shoreline or in the littoral zone, are managed according to the terms of this SMP. Water withdrawal for residential property must be for irrigation purposes only. Permits are required, and will not be issued for any other purpose. Associated pumps and electrical service must be located outside SCE&G property. SCE&G reserves the right to prohibit withdrawal during times of drought or water drawdown.

Applications for a permit to remove water must be submitted to SCE&G for review. Water withdrawal applications for greater than one million gallons per day (MGD) will be forwarded to the FERC for approval. Requests for withdrawal of one MGD or less may require agency consultation prior to approval. SCE&G may impose limits in granting permits for approved applications (see Permitting Handbook). The applicant may be required to bear the expenses of filing the application and will be required to compensate SCE&G for water withdrawn.

9.0 SCE&G PERMITTING FEE POLICIES

FERC allows licensees the right to charge reasonable fees to cover the costs of administering shoreline management programs, which add management responsibilities and associated costs to project operations. SCE&G administers its SMP in part through a permitting program, which does include a fee component. This ensures that activities occurring within the Project and in particular on Project land, are consistent with the overall goals for the Project, and that SCE&G's customers are not burdened with the full cost of administering programs that also have significant private, and often non-customer, benefit. Permit fees are due with applications and are required for docks, boat lifts, access paths, water withdrawal, and erosion control projects. Should an application be denied, associated permit fees will be returned. Periodic permit renewal fees may be required depending on the shoreline activity. One-time and periodic permit fees for Parr Reservoir shoreline activities are detailed in the Permitting Handbook. Failure to comply with this policy may result in, among other things, revocation of existing permits, fines, or legal action, as well as loss of consideration for future permits.

SCE&G will give reasonable public notice through appropriate communication avenues before changing the fee structure.

10.0 ENFORCEMENT OF SHORELINE MANAGEMENT PLAN

10.1 VIOLATIONS OF SHORELINE MANAGEMENT PLAN

SCE&G conducts periodic surveys of the Parr Reservoir shoreline to inventory and inspect permitted uses throughout the year. Lake Management representatives make note of unauthorized structures that they see, as well as urging residents and Reservoir visitors to report anything they believe to be unauthorized activity below the 266-foot contour, or on designated Project property. Anyone believing that an activity violating the SMP is occurring is urged to contact SCE&G Lake Management at (803) 217-9221.

SCE&G Lake Management representatives will issue Stop Work Directives and or Trespass Notices for any violations detected on SCE&G property. Any unauthorized clearing of trees or underbrush will result in the revocation of any SCE&G issued permits within 30 days if the violation(s) is (are) not corrected or a course of and schedule for corrective action has not been agreed to and approved by SCE&G. SCE&G may also commence legal action, if it deems it necessary, to require re-vegetation of the affected area. Removal of merchantable timber will require reimbursement to SCE&G subject to valuation of the Forestry Operations Department, including legally allowable "penalties." Consequences for violations may also include restrictions of access to SCE&G property, legal actions, fines, and loss of consideration for future permits.

11.0 SHORELINE MANAGEMENT PRACTICES

11.1 SCE&G SHORELINE MANAGEMENT PRACTICES

SCE&G has established a set of management practices that apply to all of the lands included in the Project Boundary. These practices are reflective of each of their developments unique qualities. The current management practices for the Parr Development (which includes Parr Reservoir) are described in this section, but may be reviewed during the period of the FERC license.

11.1.1 FOREST MANAGEMENT/SHORELINE MANAGEMENT PRACTICES

SCE&G manages timber within the Parr Project boundary line in accordance with South Carolina's Best Management Practices for Forestry publication. An online copy of this publication is available at <http://www.state.sc.us/forest/refbmp.htm>.

11.2 LANDOWNER RECOMMENDED BMPs

In addition to development activities, the environment around Monticello-Parr Reservoir is susceptible to impacts associated with residential and recreational activities. These include, for example only, improper fertilizer/pesticide use, boat maintenance, and debris disposal. Adjacent property owners can mitigate negative impacts otherwise associated with their property uses and instead make significant positive contributions to the Reservoir environment, and ultimately the watershed, by employing BMPs that preserve bank integrity and minimize non-point sources of pollution and contamination. Adjacent property owners should understand that using BMPs will help to preserve the scenic, environmental, and recreational qualities of the reservoir that they so highly value. Examples of effective BMPs recommended to adjacent property owners are provided in the succeeding section. SCE&G is available to provide more information and to assist landowners in determining effective BMPs for activities on their properties. Also, anyone may contact the Natural Resource Conservation Service or local county extension office (<http://www.sc.nrcs.usda.gov/contact/>).

11.2.1 MINIMIZING NON-POINT SOURCE POLLUTION

Reservoir pollution may result from a variety of activities related to residential development, agriculture, forestry, and construction. Contaminants may enter the reservoir and tributaries via

overland flows carrying biological, chemical, and other substances picked up and carried by runoff from rain events. This runoff water may contain sediment, bacteria, oil, grease, detergents pesticides, fungicides, fertilizers, and other pollutants. These pollutants, depending on type, quantities, and concentrations can overwhelm a reservoir's natural ability to filter and process them, thus leading to degraded water quality and aquatic environments.

Although a single point of impact or action may seem insignificant in its effect on the reservoir, the cumulative effects of the resource may be considerable. With this in mind, SCE&G encourages adjacent land owners to be mindful that they are members of a larger community that uses and impacts the reservoir. Employing the following BMPs can go a long way in preserving and improving reservoir water quality:

- Use permeable paving materials and reduce the area of impervious surfaces, particularly driveways, sidewalks, walkways, and parking areas;
- Dispose of vehicle fluids, paints, and/or household chemicals as indicated on their respective labels and do not deposit these products into storm drains, project waters, or onto the ground;
- Use soap sparingly when washing vehicles and wash them on a grassy areas , preferably sloping gently away from the reservoir, so the ground can filter the water naturally;
- Use hose nozzles with triggers to save water and dispose of used soapy water in sinks or other vessels that direct the materials into sewer systems, not in the street;
- Maintain septic tanks and drain fields according to the guidelines and/or regulations established by appropriate regulatory authorities;
- Remove and dispose of pet waste properly in areas that do not drain to the reservoir; and
- Use only low or no phosphorous fertilizer on lawns near the reservoir.

12.0 PUBLIC EDUCATION AND OUTREACH

This SMP is intended to foster management of shoreline use and development to achieve consistency with the FERC License, as well as the promote protection of public safety and environmental quality (water quality, natural habitat, aesthetics, etc.). To garner support and compliance from the public and lake users, it is key to educate them to the need and means to protect shoreline resources. Additionally, the public must be aware of the management and permitting programs put in place to provide this protection. To accomplish the task of increasing public awareness of the goals and objectives of this SMP SCE&G has developed an education and outreach program that includes the components described below.

12.1 SHORELINE MANAGEMENT PLAN EDUCATION

SCE&G's Public Education and Outreach program seeks to educate the public on various aspects of the management of Parr Reservoir, including the Permitting Handbook, recommended BMP use, relevant Project Operations information, and the Safety Program. To accomplish this, SCE&G uses various public education measures including informational pamphlets, public meetings, newsletters, and an internet webpage.

The Internet, in particular, presents an excellent mechanism for disseminating information and improving awareness. SCE&G maintains a website designed to provide information on the SMP and the Permitting Handbook. Printed copies of the following materials may also be obtained by contacting SCE&G Lake Management at (803) 217-9221. Information and materials that will be available at the website include the following:

- Permitting Handbook;
- Permit application forms;
- Examples and information on BMPs;
- Alternative and example designs for shoreline stabilization on Monticello Reservoir; and
- Useful links and other related information.

Additional outreach mechanisms that SCE&G intends to employ in implementing the SMP include the following:

- Provide speakers for homeowner and other organizations' meetings;

- Provide information to realtors and encourage dissemination of this information to all potential adjacent property buyers; and
- Develop and distribute new, “user friendly” brochures that include general reservoir information, permitting processes, shoreline BMPs, and relevant contact information.

12.2 PUBLIC ACCESS AREA MAPS

A figure depicting existing and future Public Access Areas on Parr Reservoir is included as Figure 12-1. Waterfowl area maps are available from the SCDNR at:
<http://dnr.sc.gov/wma/maps.html>.

12.3 WATERFOWL HUNTING ON PARR RESERVOIR

Portions of Parr Reservoir are open for public waterfowl hunting only during specified days and times during state waterfowl seasons. Regulations and maps pertaining to Parr Reservoir are available at SCDNR's website at: <http://dnr.sc.gov/wma/index.html>, or by contacting SCDNR at:

Waterfowl and Hunting Regulations
S.C. Department of Natural Resources
Wildlife and Fresh Water Fisheries
1000 Assembly Street
Columbia, South Carolina 29201
Telephone: 803-734-3886

12.4 SAFETY PROGRAMS

Due to operation of the pumped storage generating plant, the waters of Parr Reservoir can fluctuate several feet in a matter of a few hours. This rapid fluctuation makes it especially important for boaters and other recreationists to exercise a high degree of care and fully assume personal responsibility for their safety by being especially aware and cautious. For public safety, hazardous areas which are marked should not be entered and any other warnings posted around the reservoir should be observed as well.

SCE&G and SCDNR cooperate to mark shoals and other hazardous areas to increase boating safety. However, boaters should not assume all shoals and hazardous areas have been marked.

SCDNR also enforces the boating laws of South Carolina. Boaters should ensure that watercraft and safety equipment are in good working condition and in compliance with all applicable state laws.

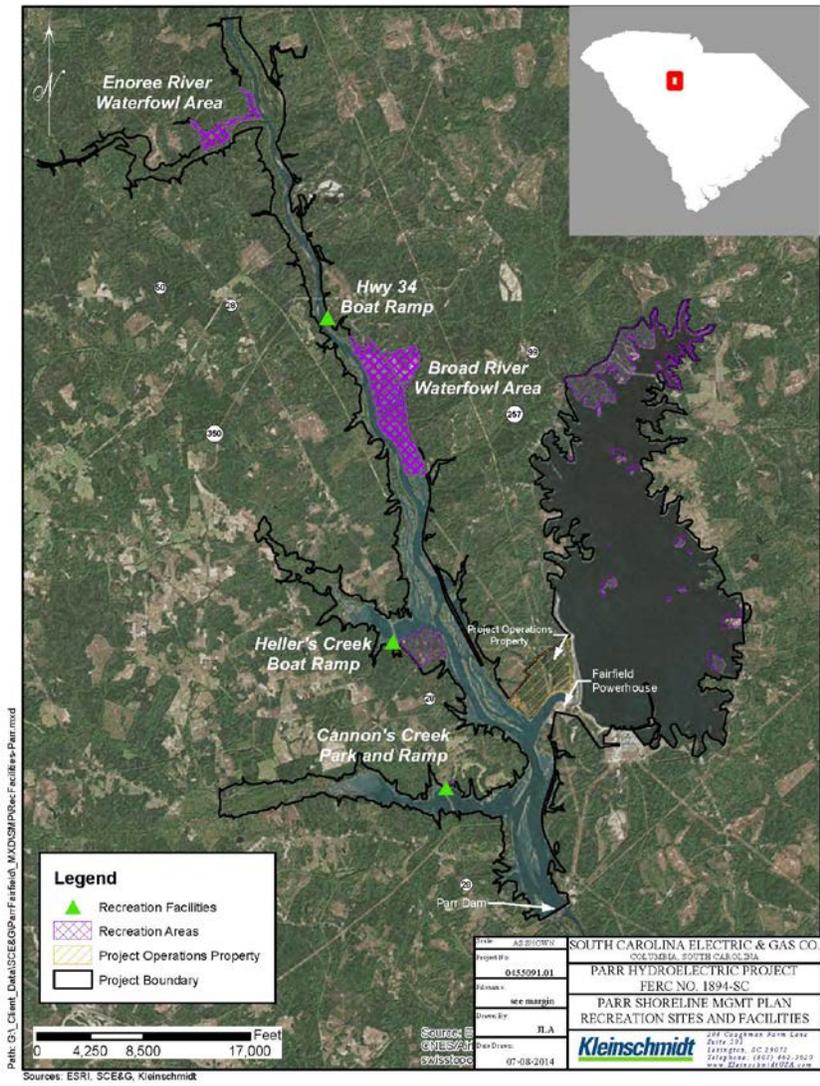


FIGURE 12-1 PARR RESERVOIR PUBLIC ACCESS AREA MAP

13.0 MONITORING AND REVIEW PROCESS

13.1 OVERALL LAND USE MONITORING

As demographics and user groups change within the Project area, changes in residential and commercial areas may occur. Often this type of use change is incremental and cumulative, occurring over a period of years or decades. To monitor land use around Parr Reservoir, SCE&G will employ a geographic information system (GIS) to compare new and existing permit applications against GIS data for the land management classifications. Such monitoring will provide long-term data that should be useful in identifying areas experiencing change. Every 10 years, during the SMP review process (see Section 13.2 on Review Process below), SCE&G will report on changes in land use for the various land management classifications in addition to filing Form 80 surveys. If it is found that material changes within the Project boundary have occurred that are not consistent with the current SMP goals, amendments to the SMP may be warranted. Such situations might include significant changes in land ownership, major commercial upgrades or uses, or new residential uses or pressures.

13.2 REVIEW PROCESS

SCE&G proposes a 10 year SMP review cycle interval. A 10 year SMP review period interval should provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. The SMP review process will begin sufficiently in advance of the end of each period so that it will be completed within the 10 year time frame. One month prior to the scheduled start of the review process, its occurrence will be advertised in various media formats (e.g., web site, newsletter, contact with homeowner associations, etc.). SCE&G will use those same media avenues to issue a report on the outcome of the review process. As in the past, SCE&G will solicit input from interested parties in addressing issues that arise and have a bearing on Reservoir management. This includes keeping lines of communication open during the time between review periods. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook periodically with interested stakeholders to ensure its effectiveness; however, changes to the permitting process may be made periodically, as needed, outside of the scheduled review periods.

14.0 REFERENCES

- Federal Power Commission (F.P.C.). 1974. Order Issuing New License for the Parr Hydroelectric Project. August 28, 1974. 52 F.P.C. 537.
- Federal Energy Regulatory Commission (FERC). 2012. Guidance for Shoreline Management Planning at Hydropower Projects. Online. [URL]: <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/smpbook.pdf>.
- Federal Energy Regulatory Commission (FERC). 2001. Order Approving Land use and Shoreline Management Plan. June 4, 2001. 95 FERC 61,351.

From: Kelly Miller
To: "Hendrix, William B."; Jeff Carter
Cc: [randy.mahan \(rmahan@sc.rr.com\)](mailto:randy.mahan@sc.rr.com); [Erich Miarka \(erich.miarka@gillscreekwatershed.org\)](mailto:Erich.Miarka@gillscreekwatershed.org); [Robert Stroud \(StroudR@dnr.sc.gov\)](mailto:Robert.Stroud@dnr.sc.gov); [Mark Davis](mailto:Mark.Davis@scana.com); [Alison Jakupca](mailto:Alison.Jakupca@scana.com); [Steve Summer](mailto:Steve.Summer@scana.com); [Malcolm Leaphart \(mwleapjr@att.net\)](mailto:Malcolm.Leaphart@att.net); btrump@scana.com; [Frank Henning@nps.gov](mailto:Frank.Henning@nps.gov); [J. Hagood Hamilton Jr. \(jhamilton@scana.com\)](mailto:J.HagoodHamilton@scana.com); [Pace Wilber \(Pace.Wilber@noaa.gov\)](mailto:Pace.Wilber@noaa.gov); [Bill Marshall \(marshallb@dnr.sc.gov\)](mailto:Bill.Marshall@dnr.sc.gov); [Edye Joyner](mailto:Edye.Joyner@scana.com); [Dick Christie \(dchristie@comporium.net\)](mailto:Dick.Christie@comporium.net); [Chuck Hightower \(hightocw@dhec.sc.gov\)](mailto:Chuck.Hightower@dhec.sc.gov); [Scott Collins \(secollins@scana.com\)](mailto:Scott.Collins@scana.com); [Wayne and Ginny Boland \(wayneboland@bellsouth.net\)](mailto:Wayne.and.Ginny.Boland@bellsouth.net); [John Fantry \(jfantry@bellsouth.net\)](mailto:John.Fantry@bellsouth.net); [STUTTS.BRANDON.G](mailto:STUTTS.BRANDON.G@scana.com); [Bill Stangler \(CRK@congariverkeeper.org\)](mailto:Bill.Stangler@congariverkeeper.org); [Henry Mealing](mailto:Henry.Mealing@dnr.sc.gov); [Greg Mixon \(mixong@dnr.sc.gov\)](mailto:Greg.Mixon@dnr.sc.gov); [Rusty Wenerick \(weneriwr@dhec.sc.gov\)](mailto:Rusty.Wenerick@dhec.sc.gov); [Jaclyn Daly \(Jaclyn.Daly@noaa.gov\)](mailto:Jaclyn.Daly@noaa.gov); [Gerrit Jobsis \(gjobsis@americanrivers.org\)](mailto:Gerrit.Jobsis@americanrivers.org); [BRESNAHAN.AMY](mailto:BRESNAHAN.AMY@scana.com); [Merrill McGregor \(merrillm@sccl.org\)](mailto:Merrill.McGregor@merrillm@sccl.org); [Joe Wojcicki](mailto:Joe.Wojcicki@scana.com); [Jon Durham \(jondurham@bellsouth.net\)](mailto:Jon.Durham@bellsouth.net); [Byron Hamstead \(Byron.hamstead@fws.gov\)](mailto:Byron.Hamstead@fws.gov); [ARGENTIERI.WILLIAM.R](mailto:ARGENTIERI.WILLIAM.R@scana.com); rammarell@scana.com; [Lorianne Riggin \(RigginL@dnr.sc.gov\)](mailto:Lorianne.Riggin@dnr.sc.gov); [Jay Maher](mailto:Jay.Maher@scana.com); [Charlene Coleman \(cheetahtk@yahoo.com\)](mailto:Charlene.Coleman@scana.com); [David Haddon \(dhaddon@scana.com\)](mailto:David.Haddon@scana.com); tboozier@scana.com; [Corbin Johnson \(Corbin.Johnson@scana.com\)](mailto:Corbin.Johnson@scana.com); [Randy Mahan \(randolph.mahan@scana.com\)](mailto:Randy.Mahan@scana.com)
Subject: RE: draft LLM TWC meeting notes - 8/20/15
Date: Monday, September 21, 2015 9:19:00 AM

Thank you Mr. Hendrix,

I think that we have identified where the confusion on this issue is coming from. Our answer to Mr. Carter was to address how the lands inside the Project Boundary are **currently** being managed under the [existing Shoreline Management Plan](#) approved by FERC. The discussion held on August 20 was focused on how we **propose** to manage Project lands under the **new** Shoreline Management Plan that will be filed with the Final License Application and become effective after FERC has issued the new license and approved the Plan.

As you pointed out, the TWC has included language addressing public hunting on non-WMA project lands in the draft of the new Shoreline Management Plan (revised draft will be distributed soon). There is nothing in the current Shoreline Management Plan that addresses the hunting issue at Parr. Thus, it remains a "gray area" until FERC issues the new license for the Project and approves the new Shoreline Management Plan.

We will certainly discuss this issue more at an upcoming meeting and will alert the TWC members as to when this topic will be included on the agenda.

Thanks,
Kelly

Kelly Miller
Regulatory Coordinator

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From: Hendrix, William B. [mailto:HendrixWB@scdot.org]

Sent: Thursday, September 17, 2015 9:18 AM

To: Kelly Miller <Kelly.Miller@KleinschmidtGroup.com>; Jeff Carter <jmcarter00@sc.rr.com>

Cc: randy mahan (rmahan@sc.rr.com) <rmahan@sc.rr.com>; Erich Miarka (erich.miarka@gillscreekwatershed.org) <erich.miarka@gillscreekwatershed.org>; Robert Stroud (StroudR@dnr.sc.gov) <StroudR@dnr.sc.gov>; Mark Davis <mddavis629@gmail.com>; Alison Jakupca <Alison.Jakupca@KleinschmidtGroup.com>; Steve Summer <ssummer@scana.com>; Malcolm Leaphart (mwleapjr@att.net) <mwleapjr@att.net>; btrump@scana.com <btrump@scana.com>; Frank_Henning@nps.gov <Frank_Henning@nps.gov>; J. Hagood Hamilton Jr. (jhamilton@scana.com) <jhamilton@scana.com>; Pace Wilber (Pace.Wilber@noaa.gov) <Pace.Wilber@noaa.gov>; Bill Marshall (marshallb@dnr.sc.gov) <marshallb@dnr.sc.gov>; Edye Joyner <edye@bteamkayaking.com>; Dick Christie (dchristie@comporium.net) <dchristie@comporium.net>; Chuck Hightower (hightocw@dhec.sc.gov) <hightocw@dhec.sc.gov>; Scott Collins (secollins@scana.com) <secollins@scana.com>; Wayne and Ginny Boland (wayneboland@bellsouth.net) <wayneboland@bellsouth.net>; John Fantry (jfantry@bellsouth.net) <jfantry@bellsouth.net>; STUTTS, BRANDON G <BSTUTTS@scana.com>; Bill Stangler (CRK@congareriverkeeper.org) <CRK@congareriverkeeper.org>; Henry Mealing <Henry.Mealing@KleinschmidtGroup.com>; Greg Mixon (mixong@dnr.sc.gov) <mixong@dnr.sc.gov>; Rusty Wenerick (weneriwr@dhec.sc.gov) <weneriwr@dhec.sc.gov>; Jaclyn Daly (Jaclyn.Daly@noaa.gov) <Jaclyn.Daly@noaa.gov>; Gerrit Jobsis (gjobsis@americanrivers.org) <gjobsis@americanrivers.org>; BRESNAHAN, AMY <Amy.Bresnahan@scana.com>; Merrill McGregor (merrillm@scccl.org) <merrillm@scccl.org>; Joe Wojcicki <bypas2000@yahoo.com>; Jon Durham (jondurham@bellsouth.net) <jondurham@bellsouth.net>; Byron Hamstead (Byron_hamstead@fws.gov) <Byron_hamstead@fws.gov>; ARGENTIERI, WILLIAM R <BARGENTIERI@scana.com>; rammarell@scana.com <rammarell@scana.com>; Lorianne Riggin (RigginL@dnr.sc.gov) <RigginL@dnr.sc.gov>; Jay Maher <Jay.Maher@KleinschmidtGroup.com>; Charlene Coleman (cheetahtk@yahoo.com) <cheetahtk@yahoo.com>; David Haddon (dhaddon@scana.com) <dhaddon@scana.com>; tboozier@scana.com; Corbin Johnson (Corbin.Johnson@scana.com) <Corbin.Johnson@scana.com>; Randy Mahan (randolph.mahan@scana.com) <randolph.mahan@scana.com>

Subject: RE: draft LLM TWC meeting notes - 8/20/15

Kelly, I am somewhat confused by your reply to Mr. Carter. It was my recollection of the meeting that this matter of public hunting on Non-WMA property was covered by the revision that was made during the meeting to Paragraph 6.2.2 (Hunting) of the Parr SMP. As you will recall, during the meeting I pointed out that the paragraph was not accurate as written as there is hunting on SCE&G lands that are not designated WMA, as SCE&G currently leases the land within the PBL north of Hwy. 34 to its employees for hunting. It was my recollection that Bill revised the paragraph to read "Public Hunting is not allowed..." Is this not the case? Can you please forward this page with the tracking changes shown?

I think there is certainly such a degree of confusion in regards to the lands within the PBL above Hwy. 34 that warrant making this topic an agenda item for the next meeting. I would think the committee would certainly want to produce a final product free of any "gray areas."

Thank you.
Billy Hendrix

From: Kelly Miller [<mailto:Kelly.Miller@KleinschmidtGroup.com>]
Sent: Wednesday, September 16, 2015 10:23 AM
To: Jeff Carter
Cc: randy mahan (rmahan@sc.rr.com) ; Erich Miarka (erich.miarka@gillscreekwatershed.org) ; Robert Stroud (StroudR@dnr.sc.gov) ; Mark Davis; Alison Jakupca; Steve Summer; Malcolm Leaphart (mwleapjr@att.net) ; btrump@scana.com; Frank_Henning@nps.gov ; J. Hagood Hamilton Jr. (jhamilton@scana.com) ; Pace Wilber (Pace.Wilber@noaa.gov); Bill Marshall (marshallb@dnr.sc.gov) ; Hendrix, William B.; Edye Joyner; Dick Christie (dchristie@comporium.net); Chuck Hightower (hightocw@dhec.sc.gov) ; Scott Collins (secollins@scana.com) ; Wayne and Ginny Boland (wayneboland@bellsouth.net); John Fantry (jfantry@bellsouth.net); STUTTS, BRANDON G ; Bill Stangler (CRK@congareeriverkeeper.org) ; Henry Mealing; Greg Mixon (mixong@dnr.sc.gov) ; Rusty Wenerick (weneriwr@dhec.sc.gov) ; Jaclyn Daly (Jaclyn.Daly@noaa.gov); Gerrit Jobsis (gjobsis@americanrivers.org) ; BRESNAHAN, AMY; Merrill McGregor (merrillm@scccl.org); Joe Wojcicki; Jon Durham (jondurham@bellsouth.net); Byron Hamstead (Byron_hamstead@fws.gov); ARGENTIERI, WILLIAM R; rammarell@scana.com ; Lorianne Riggin (RigginL@dnr.sc.gov) ; Jay Maher; Charlene Coleman (cheetahrk@yahoo.com); David Haddon (dhaddon@scana.com); tboozier@scana.com; Corbin Johnson (Corbin_Johnson@scana.com); Randy Mahan (randolph.mahan@scana.com)
Subject: RE: draft LLM TWC meeting notes - 8/20/15

Mr. Carter,

Thank you for your comment regarding WMA lands within the Parr PBL. In order to fully and accurately answer your question, we also consulted with Bill Marshall with SCDNR. Here is a summary of the information we collected.

Shoreline around the Nuclear Exclusion Zone and some other specific lands owned by SCE&G are designated as part of the Property Watch Program, where SCE&G does not allow public hunting. This is enforced by SCDNR. Currently, the land within the PBL upstream of Hwy 34 has not been communicated to SCDNR as land that needs to be included in this program. However, if SCE&G does not want to allow public hunting above Hwy 34, they can communicate this with SCDNR for enforcement.

Right now, it appears that the lands in question are in a "gray area," where they are not part of the WMA (please see the SCDNR Map #4 attached), and they are also not included in the Property Watch Program. Public hunting is not encouraged, but it is also not prohibited.

To answer your question, all PBL property north of Hwy 34 is **not** designated within South Carolina's WMA, however, it has also not been designated to SCDNR as an area where hunting is prohibited to the public.

We will include your question and this response as part of the meeting notes record.

I hope this answers your question and if you have any further questions or comments, please let me know. As always, we appreciate your continued participation in the Lake and Land Management TWC, and the Parr Hydro Project Relicensing.

Thanks,
Kelly

Kelly Miller
Regulatory Coordinator

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From: Jeff Carter [<mailto:jmcarter00@sc.rr.com>]

Sent: Monday, September 14, 2015 7:50 PM

To: Kelly Miller <Kelly.Miller@KleinschmidtGroup.com>

Cc: randy mahan (rmahan@sc.rr.com) <rmahan@sc.rr.com>; Erich Miarka (erich.miarka@gillscreekwatershed.org) <erich.miarka@gillscreekwatershed.org>; Robert Stroud (StroudR@dnr.sc.gov) <StroudR@dnr.sc.gov>; Mark Davis <mddavis629@gmail.com>; Alison Jakupca <Alison.Jakupca@KleinschmidtGroup.com>; Steve Summer <ssummer@scana.com>; Malcolm Leaphart (mwleapjr@att.net) <mwleapjr@att.net>; btrump@scana.com <btrump@scana.com>; Frank_Henning@nps.gov <Frank_Henning@nps.gov>; J. Hagood Hamilton Jr. (jhamilton@scana.com) <jhamilton@scana.com>; Pace Wilber (Pace.Wilber@noaa.gov) <Pace.Wilber@noaa.gov>; Bill Marshall (marshallb@dnr.sc.gov) <marshallb@dnr.sc.gov>; William Hendrix (HendrixWB@dot.state.sc.us) <HendrixWB@dot.state.sc.us>; Edye Joyner <edye@bteamkayaking.com>; Dick Christie (dchristie@comporium.net) <dchristie@comporium.net>; Chuck Hightower (hightocw@dhec.sc.gov) <hightocw@dhec.sc.gov>; Scott Collins (secollins@scana.com) <secollins@scana.com>; Wayne and Ginny Boland (wayneboland@bellsouth.net) <wayneboland@bellsouth.net>; John Fantry (jfantry@bellsouth.net) <jfantry@bellsouth.net>; STUTTS, BRANDON G <BSTUTTS@scana.com>; Bill Stangler (CRK@congareriverkeeper.org) <CRK@congareriverkeeper.org>; Henry Mealing <Henry.Mealing@KleinschmidtGroup.com>; Greg Mixon (mixong@dnr.sc.gov) <mixong@dnr.sc.gov>; Rusty Wenerick (weneriwr@dhec.sc.gov) <weneriwr@dhec.sc.gov>; Jaclyn Daly (Jaclyn.Daly@noaa.gov) <Jaclyn.Daly@noaa.gov>; Gerrit Jobsis (gjobsis@americanrivers.org) <gjobsis@americanrivers.org>; BRESNAHAN, AMY <Amy.Bresnahan@scana.com>; Merrill McGregor (merrillm@scccl.org) <merrillm@scccl.org>; Joe Wojcicki <bypas2000@yahoo.com>; Jon Durham (jondurham@bellsouth.net) <jondurham@bellsouth.net>; Byron Hamstead (Byron_hamstead@fws.gov) <Byron_hamstead@fws.gov>; ARGENTIERI, WILLIAM R <BARGENTIERI@scana.com>; rammarell@scana.com <rammarell@scana.com>; Lorianne Riggin (RigginL@dnr.sc.gov) <RigginL@dnr.sc.gov>; Jay Maher <Jay.Maher@KleinschmidtGroup.com>; Charlene Coleman (cheetahtrk@yahoo.com) <cheetahtrk@yahoo.com>; David Haddon (dhaddon@scana.com) <dhaddon@scana.com>; tboozier@scana.com; Corbin Johnson (Corbin.Johnson@scana.com) <Corbin.Johnson@scana.com>; Randy Mahan (randolph.mahan@scana.com) <randolph.mahan@scana.com>

Subject: Re: draft LLM TWC meeting notes - 8/20/15

Kelly, I was unable to attend the meeting but would like to request clarification of WMA property within the PBL. Although I fully support no hunting above Highway 34 which is my current understanding, however, there appears to be a question as to if the entire Parr Reservoir is or is not WMA.

Please refer to page 71 of the SCDNR 2015-2016 Hunting & Fishing Regulation Guide and it identifies the entire 4,400 acres within WMA.

Additionally, I visited the State Office of DNR and was informed by a Law Enforcement Officer that they allow hunting on all PBL property above Hwy. 34. My question is as follows; Does all PBL property north of Highway 34 considered within the designated SCWMA and therefore available to be hunted by the public?

Would you allow this to be part of the follow up from the meeting held August 20, 2015?

Sent from my Verizon Wireless 4G LTE Tablet

On Sep 14, 2015 4:23 PM, Kelly Miller <Kelly.Miller@KleinschmidtGroup.com> wrote:

All,

Attached are the draft notes from our LLM TWC meeting held on August 20, 2015. Please review and return any edits or comments to me by Friday, September 25th.

Thanks,
Kelly

Kelly Miller
Regulatory Coordinator

Kleinschmidt

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MEETING NOTES

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

August 26, 2015

draft KDM 09-10-15

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Ray Ammarell (SCE&G)	Bill Marshall (SCDNR)
Randy Mahan (SCE&G)	Lynn Quattro (SCDNR)
Brandon Stutts (SCANA)	Ross Self (SCDNR)
Caleb Gaston (SCANA)	Jim Bulak (SCDNR)
Pace Wilber (NOAA)	Bill Post (SCDNR)
Jaclyn Daly (NOAA)	Chad Holbrook (SCDNR)
Fritz Rohde (NOAA)	Hal Beard (SCDNR)
Byron Hamstead (USFWS)	Ron Ahle (SCDNR)
Rusty Wenerick (SCDHEC)	Henry Mealing (Kleinschmidt)
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Gerrit Jobsis (American Rivers)	Kelly Miller (Kleinschmidt)
Lorianne Riffin (SCDNR)	

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 possibly 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.

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Fisheries TWC Meeting**

September 29, 2015

Final KDM 11-10-15

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Randy Mahan (SCE&G)
Steve Summer (SCANA)
Brandon Stutts (SCANA)
Caleb Gaston (SCANA)
Byron Hamstead (USFWS)

Dick Christie (SCDNR)
Bill Marshall (SCDNR)
Ron Ahle (SCDNR)
Henry Mealing (Kleinschmidt)
Jordan Johnson (Kleinschmidt)
Kelly Miller (Kleinschmidt)

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.

The meeting opened with introductions, a safety review, and an agenda review. Henry then discussed the goals of the Reservoir Fluctuation Study Plan pertinent to Monticello Reservoir. The goals include improving habitat along the shoreline below the 420' contour and developing recommendations for fish attractors, or aquatic habitat structures, throughout the reservoir.

Dick said there are currently no structures around Monticello to improve spawning. Henry showed pictures of a variety of different fish attractors that are commonly used. SCDNR would like to develop an adaptive management plan for installing lasting fish enhancement structures around the reservoir.

The group discussed installing structures in shallow water for spawning/fry rearing and in deeper water to attract fish for fishermen. The structures in the shallow water would need to be deep enough to prevent exposure during max drawdowns. Markers would be installed where necessary for navigation purposes. Approximately four deep water attractors are already installed in the Recreation Lake.

The group discussed how SCE&G and SCDNR could work together to get these structures installed, including permits and funding. SCE&G would work with SCDNR to install structures through an Army Corps of Engineers' Programmatic Agreement SCDNR is currently working toward securing. SCE&G could create a fund for SCDNR to use as needed for maintaining or adding enhancement structures during the license. Bill said that this could be included as part of the PME measures and included in the License Application.

Byron asked if hydro-seeding was an option around the reservoir. Henry said that can work if the substrates are exposed long enough for plants to grow. This may not be an option around

Monticello because of daily fluctuations. However, aquatic habitat structures installed underwater would encourage algae growth. In the past, Cypress trees have been planted around Parr and Monticello reservoirs. Dick said button bushes might also be good to plant as shoreline enhancements.

The group reviewed a map of Monticello Reservoir and identified areas where enhancements could be installed. Brandon pointed out that shallow water structures shouldn't be installed around certain islands, since people like to park their boats in these shallow areas while recreating. Structures will need to be installed below 420.5', so that they remain submerged during fluctuations. The TWC agreed to focus on installing structures aimed at benefitting Centrarchids, and possibly Ictalurids. A side benefit of spawning/gravel areas is for freshwater mussel use.

Steve said that these enhancements may not increase population levels in the reservoir. Dick said that it will be difficult to measure, and if it is measured, negative results shouldn't put an end to the enhancement efforts. Is productivity increased, or are fish just drawn to these attractors from other areas? Dick said that although it isn't necessarily proven that these aquatic habitat structures increase fish populations, they do enhance fishing recreation and are supported by fishermen, and that is important.

During the next bi-annual shoreline erosion inspection on Monticello, Brandon or Caleb will scope out areas that will be good for installation of the aquatic habitat structures. Ron said that spawning and fry fish attractors should be installed in the same areas. Cove areas are good spots, because they are generally protected from high winds. If an area is identified as already providing good spawning habitat, maybe fry protection/nursery habitat should be installed nearby.

The group decided to develop a matrix that identifies sites where structures could be installed, what type of structure and how much should be installed, and how much it will cost to install and maintain each site. A strawman will also be developed for an Adaptive Enhancement Plan, that will identify where to start and how much to spend over the life of the license. An example of the matrix is included below.

Area	Spawning Area (ft ²)	Fry Area (ft ²)	Attractors (ft ²)
1	2,000	1,000	3,000
2	75	50	NA
3	1000	500	1,500
4	250	200	NA
5	NA	NA	2,000

The group discussed catfish habitat enhancement. Only certain species should be targeted, such as flat bullheads and snail bullheads. The group agreed that enhancement for Centrarchids will be the main focus of the TWC.

The group then shifted focus to Parr Reservoir. Jordan showed the group a map with the two foot contours that were captured by aerial photography. The group discussed ways to quantify what types of habitat are located in each contour. Everyone agreed to divide the reservoir into zones of similar habitat. A grid will be overlaid on each zone, and a random 10% of the grid will be

classified by habitat type. The classification will be applied to the entire zone area for each 2' contour.

Action items from this meeting are listed below.

ACTION ITEMS:

- Brandon and/or Caleb will collect information along Monticello Reservoir shoreline and identify and verify possible places to install aquatic habitat structures.
- Kleinschmidt will develop a matrix for aquatic habitat structures in Monticello Reservoir, and a strawman for an Adaptive Enhancement Plan for Monticello Reservoir, and send to TWC for review.
- Kleinschmidt will divide Parr Reservoir into zones for habitat evaluation, and send to TWC for review – completed and sent to TWC on 10-05-2015 for review.
- Kleinschmidt will classify substrate habitats within 2' contours along Parr Reservoir shoreline for each zone.

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY **Rare, Threatened and Endangered Species TWC Meeting**

March 1, 2016

Final KMK 03-28-16

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Brandon Stutts (SCE&G)
Caleb Gaston (SCE&G)
Tom McCoy (USFWS)
Fritz Rohde (NOAA)
Bill Marshall (SCDNR)

Rusty Wenerick (SCDHEC)
David Eargle (SCDHEC)
Bill Stangler (Congaree Riverkeeper)
Henry Mealing (Kleinschmidt)
Shane Boring (Kleinschmidt)
Kelly Kirven (Kleinschmidt)
Jared Porter (Kleinschmidt)

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.

The objective of the meeting was to review several reports that were issued to the TWC summarizing five studies that were completed during 2015, including the Rare, Threatened and Endangered Desktop Assessment, the American Eel Abundance Study, the Rocky Shoals Spider Lily Study, the Broad River Spiny Crayfish Study, and the Monticello Reservoir Mussel Survey. A brief PowerPoint presentation was prepared summarizing the methods and results of each study. This presentation is attached to the end of these notes. A second meeting objective was to identify any Protection, Mitigation, and Enhancement (PM&E) measures associated with the study issues for possible inclusion in the Settlement Agreement.

RTE Desktop Assessment

Henry said this report was originally issued in 2014, but after additional input from the USFWS, the report was revised and reissued in the late fall of 2015. The bald eagle is known to occur within the Project boundary, and SCE&G will continue to work with SCDNR on monitoring this species. There are also several fish that are known to occur within the Project boundary that will be further addressed through the IFIM study.

Bill Stangler said that the report has wording that suggests SCE&G is “likely to consult” with agencies on blueback herring and asked if there was a reason why they would not consult. This wording will be changed to remove “likely.” He also asked if striped bass and sturgeon spawning would be addressed during any additional studies. Henry said yes, striped bass will be looked at during the IFIM study, and both species will be studied further as part of the ongoing Downstream Flow Fluctuation investigation.

Bill Marshall said that SCDNR has noted that robust redhorse are known to occur in the Monticello Reservoir. He said that the SCDNR may have some concerns about entrainment impacts if it passed into that reservoir through the pumpback operations. Henry said that it probably did get there through pumpback operations at Fairfield, and that there may be mortality, but there is also survival. This may be something that will need to be addressed further as fish passage becomes an issue in the future.

Bill M. also said that a new State Wildlife Action Plan was completed last year, so the report may need to be updated to reflect those changes. Tom McCoy said that the official status of several of the species had also changed since the report was issued. These should be updated for the Draft and Final License Application. An addendum to the report will be prepared to address these changes. Bill M. and Tom M. were asked to send their recommended updates/edits to Kleinschmidt.

American Eel Abundance Report

Jared gave the group a summary of the American eel study that was completed in the spring and fall of 2015. Henry stated that Mark Cantrell with the USFWS accompanied Kleinschmidt and SCE&G on a site visit to help pick sites for installing the eel ramps. Jared noted that the ramps did not catch any eels or any other species and the fyke net didn't catch any eels either, although it did catch a wide variety of other species, including fish, crayfish and turtles. One backpack electrofishing effort did result in the collection of one American eel. The eel was a yellow eel; no elvers were found. These results are similar to the results of additional studies conducted by Ron Ahle with SCDNR.

Fritz asked what type of substrate was used on the eel ramps and Jared said Enkamat. Fritz pointed out that if the yellow eel life stage is what is located below the Project, Enkamat may not have been the best substrate. Henry agreed and said that during study plan development, everyone expected that elvers would be the dominant life stage of eel in the area, instead of the larger yellow eels. Henry said that based on the information collected during this study and the SCDNR study, future studies and fish passage should focus on the collection of larger eels. Fritz agreed and said he would send the group some additional information regarding eel passage.

Tom said that periodic monitoring as a PM&E measure in the new license might be a good idea. The group agreed that doing surveys on a 5-10 year basis, or when initiated by a pre-determined trigger, could be part of the Settlement Agreement. Henry said this could be tied into the fish passage requirements as described in the Accord Agreement. Tom said he would send the group some information on the triggers used for eel passage at the Wateree Project. Bill A. said that additional American eel studies could be initiated when a percentage of a trigger number is hit, similar to how fish passage study and design for American shad and blueback herring is set up in the Accord Agreement.

Fritz said that of the three methodologies used in the study, the only effective one was backpack electrofishing. He asked that the backpack electrofishing be replicated in the spring of 2016 to verify that yellow eels are the life stage of eel that are dominant below the Parr Shoals dam. This way, when additional studies are warranted, methodology can be targeted toward the collection of yellow eels. SCE&G agreed to do an additional year of backpack electrofishing downstream of the dam. Three sampling events will be scheduled during late March, mid-April and mid-May and the results will be issued as an addendum to the American Eel Abundance Report.

Rocky Shoals Spider Lily (RSSL) Report

Shane gave the group a summary of the RSSL study, and said that populations of the plant were concentrated around the top of Bookman Shoals and the top of Frost Shoals. Bill Stangler asked for clarification on the green polygons shown in the report. Shane said that the polygons were drawn around large population clusters of the plants. Henry said that transect elevation data is also being collected in some of the RSSL areas as part of the IFIM study.

Henry asked Bill S. if there was something specific that he wanted to see coming out of relicensing. Bill said that he would like to see something similar to what was done during the Columbia relicensing, such as long term monitoring and possible restoration efforts. If restoration isn't feasible in the Broad River downstream of the Project, it could be done elsewhere in the basin. Bill said that currently there is less usage in this stretch of the river, so the plant is less visible here than it is below Columbia. There is less human predation, but this could change if additional access is created downstream of Parr. Bill A stated that as part of the Saluda Project, SCE&G is a supporting member of the team that currently monitors the RSSL population below Columbia dam. SCE&G could carry this forward for consideration for the Parr Settlement Agreement – but more specific information will need to be added to the PM&E measure.

Broad River Spiny Crayfish Report

Jared gave an overview of the Broad River Spiny Crayfish study and said that Byron Hamstead (USFWS) accompanied Kleinschmidt staff to identify specific study areas for deploying crayfish traps. Jared said that ultimately, the traps did not collect any crayfish, but they did collect several fish species. He noted that the fyke net used during the American Eel Abundance Study collected many crayfish, but none of these were identified as the Broad River spiny crayfish. He noted that the traps were out during the months of September and October, and while flows were unusually high during October, which may have created unfavorable conditions for crayfish, the month of September was a typical month and provided prime conditions for crayfish.

Bill S. noted that the fyke net was deployed during spring and fall of 2015, and since crayfish were caught in the fyke net, asked if the timing was off during the crayfish study. Maybe the crayfish study should have occurred during the spring. Jared said that the study was planned for fall based on recommendations from Arnie Eversole and to make identification easier. He also noted that crayfish were also caught during the fall months in the fyke net.

Henry mentioned that during study plan development, Byron Hamstead noted that he did not believe any Broad River spiny crayfish were present in the study area, but he wanted the study to help verify this assumption.

Monticello Freshwater Mussel Survey Report

Shane gave an overview of the Monticello Freshwater Mussel survey and said that the study was conducted by Three Oaks during September and November in Monticello Reservoir and the Recreation Lake. No live mussels were found in the Recreation Lake and six species were found in Monticello Reservoir. David Eargle said that one of the species found in the reservoir, the Carolina creekshell, was unexpected, since it had never been identified in that area before. David stated that

the genetic testing would be less than \$1,000 based on discussions with Tim Savage (Three Oaks). He asked if genetics could be run on the samples collected, just to verify if that was the correct species, or if it was actually a similar species known to occur in the area. SCE&G agreed to contact Tim and have the additional testing completed on the samples. David said that knowing the correct identification wouldn't have any effect on Project operations, but it would be good information to know.

David said that he was curious as to why no mussels were found in the Recreation Lake. Ray said that there are racks on the intakes and fish cannot pass back and forth from the Recreation Lake and Monticello Reservoir. Upon initial filling, the Recreation Lake was treated with rotenone and stocked with fish. It is likely that mussels never had the opportunity to get established in that body of water.

David identified a few typos in the Three Oaks report and said he would send these over to Kleinschmidt to address.

Protection, Mitigation and Enhancement Measures

Several general PM&E measures were identified during the meeting, and are listed below. These should be developed with more detail through input from TWC members and will be considered as the relicensing process moves forward and a Settlement Agreement is developed.

- Periodic monitoring/studies for American eels throughout the term of the new license – possibly every 5-10 years, or based on a trigger system, similar to the triggers established in the Accord Agreement
- Establish long term monitoring of the Rocky Shoals Spider Lily populations located downstream of Parr Dam and upstream of Columbia Dam (similar to the monitoring already taking place downstream of Columbia Dam) – Possible restoration efforts for the species – Possible public outreach and education efforts (could tie into the education and outreach already established for the Columbia Project)

Action items identified during the meeting are listed below.

ACTION ITEMS:

- SCDNR and USFWS will send updates/edits for RT&E Desktop Assessment.
- Fritz will send Fish Passage Primer, which includes information on eel passage, to group.
- SCE&G and Kleinschmidt will perform 3 additional backpack electrofishing sessions during the spring of 2016 for American eels downstream of Parr Dam.
- David will send comments/edits for the Monticello Freshwater Mussel Survey Report to Kleinschmidt.
- Kleinschmidt will work with Three Oaks to get genetic testing done on mussel samples that are thought to be Carolina creekshell.

Rare Threatened and Endangered Species Desktop Assessment

Methods and Materials

- Objective- Identify RTE species potentially occurring in the Project vicinity
- Project Vicinity- Project Boundary and downstream reach of Broad River influenced by the Project
- USFWS and SCDNR county-level listings for Newberry, Fairfield, and Richland counties reviewed to find listed or at-risk species that may occur in study area
- Species on 2008 Birds of Conservation Concern list included for review
- Ten species considered priority species in the SCDNR Comprehensive Wildlife Conservation Strategy included for review

Results

- Some of the species reviewed may occur in the Project boundary
- Impacts are unlikely
- Species present in Project boundary not protected by state or federal law
- Of the 13 state and federally listed/protected species, only the bald eagle likely occurs in the study area regularly
- Fish species classified as SCDNR priority conservation species documented in study area
- Fish habitat requirements assessed further in IFIM Study

American Eel Abundance Report



Materials and Methods

- Objective- Characterize the abundance and distribution of American eels downstream of Parr Shoals Dam
- Two traps (3 ramps) set at base of dam near the west bank
- One trap (two ramps) set near powerhouse on east bank
- Fished from March 2-June 12 and October 9-November 16
- Fyke net set in west channel from March 2-June 12, and October 9-November 16
- Four backpack electrofishing efforts

Results

- One yellow eel collected over four total electrofishing efforts
- No elvers collected in traps or fyke net
- Ramp traps fished for a total of 3,428 hours
- Downtime associated with low leakage flows and flooding



Rocky Shoals Spider Lily Study Report



Materials and Methods

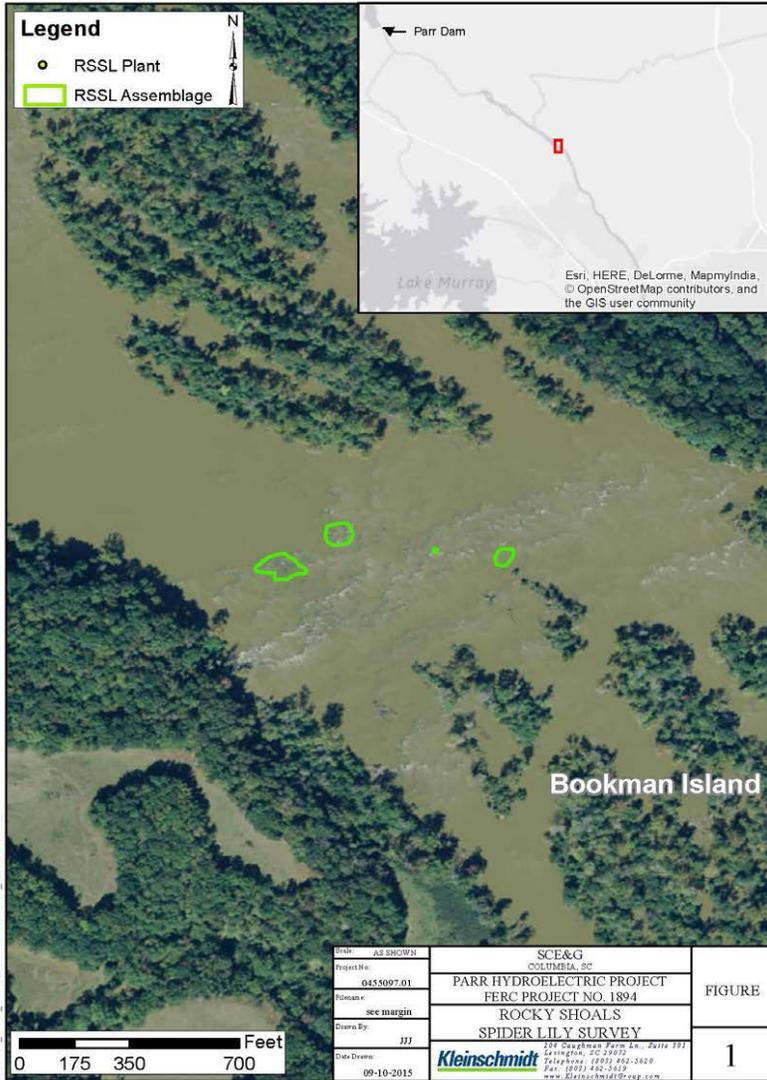
- Objective: Assess abundance and spatial distribution of RSSL between Parr Shoals Dam and Frost Shoals
- Crews floated Broad River between Parr Shoals Dam and Boatwright Island
- Study conducted during May 26-27(height of flowering season)
- Plants or clusters documented using handheld GPS
- Clusters of plants measured for length and width

Results

- 81 plants or clumps of plants documented
- Occurrences were limited to Bookman Shoals and Frost Shoals
- Majority of plants located on bedrock ledges, in water depths of 0-30 inches
- Basal areas ranged from 0.05 m²- 20,000 m²



Locations of RSSL



Path: G:\Client_Data\SCE&G\Parr\Fairfield_MXD\RSSL1.mxd

Path: G:\Client_Data\SCE&G\Parr\Fairfield_MXD\RSSL2.mxd

Path: G:\Client_Data\SCE&G\Parr\Fairfield_MXD\RSSL3.mxd

Source: Kleinschmidt, ESRI

Source: Kleinschmidt, ESRI

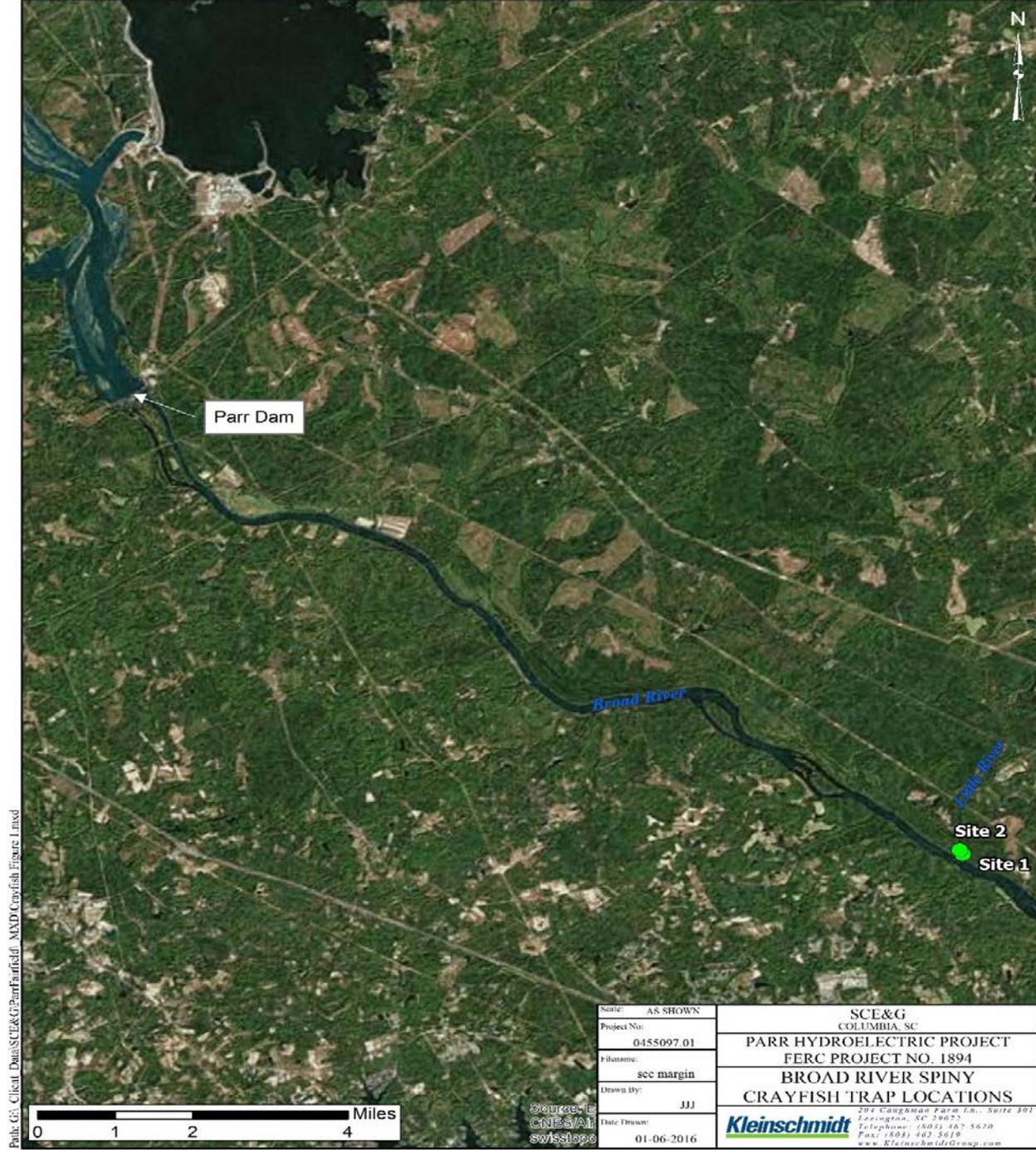
Source: Kleinschmidt, ESRI

Broad River Spiny Crayfish Study Report



Objectives, Methods, and Materials

- Study Objective- Assess the presence of the Broad River Spiny Crayfish in Parr Shoals Reservoir and in the Broad River Downstream of Parr Shoals Dam
- Study site determinations w/ USFWS
- Double entry traps wire mesh crayfish traps baited, set, and regularly checked at 3 sites (September-October 2015)
 1. Broad river at the Hwy 34 bridge
 2. Cannon's Creek arm of Parr Shoals Reservoir
 3. Confluence of Little River and Broad River, downstream of Parr Shoals Dam



Path: G:\Client_Data\SC\&G\Parr\Fairfield_MXD\Crayfish Figure 2.mxd

Path: G:\Client_Data\SC\&G\Parr\Fairfield_MXD\Crayfish Figure 1.mxd

Results

- Water temperatures ranged from 12-28°C for duration of study
- Traps fished for a total of 9,996 hours
- No crayfish collected
- Traps collected small sunfish throughout study



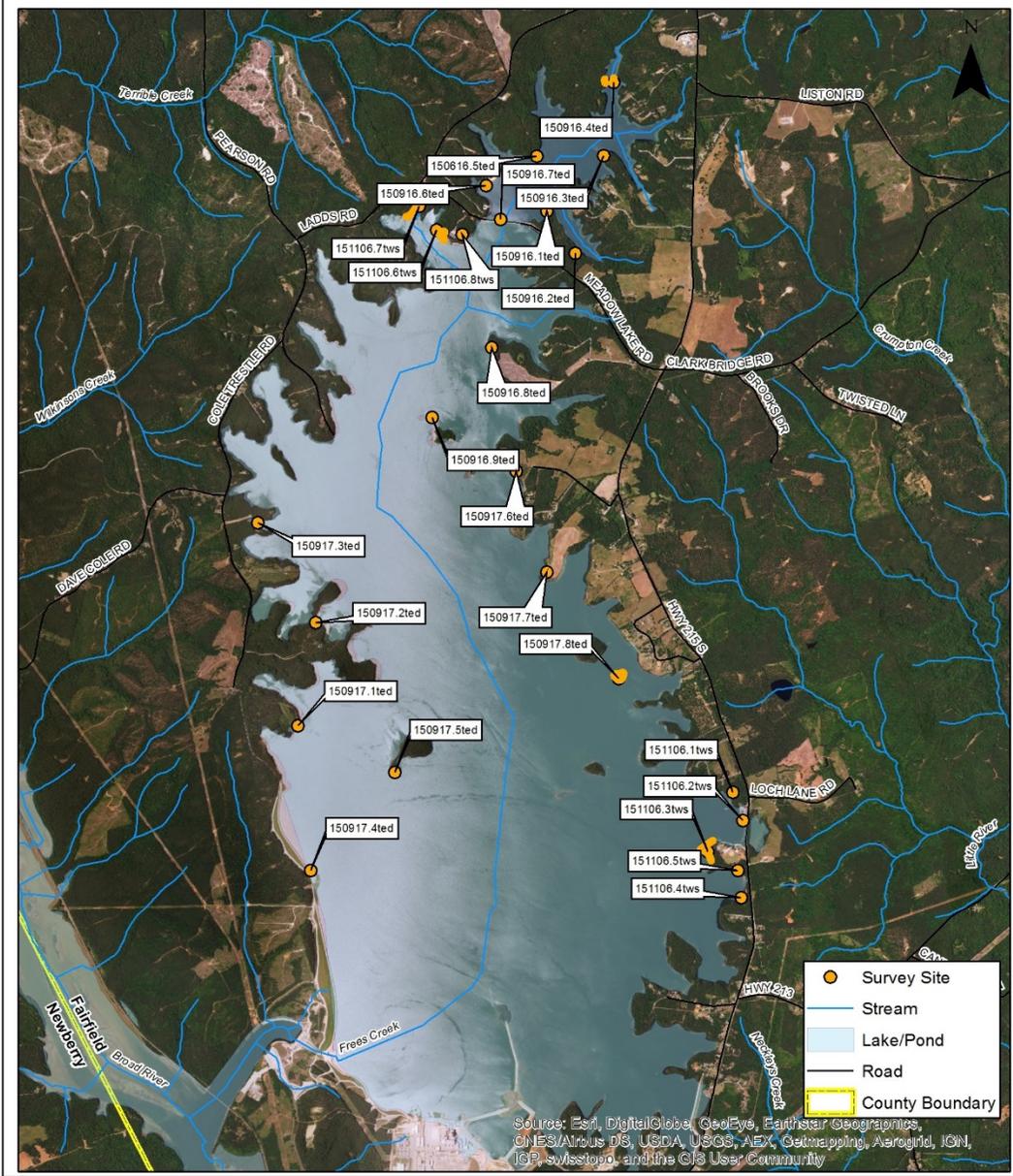
Monticello Freshwater Mussel Survey Report



Methods and Materials

- Surveys conducted by Tim Savidge (Three Oaks/Catena) on September 16-17 and November 6, 2015
- 25 sites surveyed via SCUBA and snorkeling
- Surveyors worked from shoreline habitats towards deeper water
- All mussels identified, enumerated, and returned to substrate





Prepared For:
Kleinschmidt

Freshwater Mussel Survey
 Monticello Reservoir
 Fairfield County, South Carolina

Date: December 2015
 Scale: 0 1,000 2,000 Feet
 Job No.: 3396
 Drawn By: KMS
 Checked By: TS

Figure
1

Results

- Six species documented: Carolina Lance (moderate priority), Eastern Floater, Florida Pondhorn, Paper Pondshell, Eastern Creekshell (moderate priority), Carolina Creekshell (highest priority)
- Relic shell material (Paper Pondshell) found in rec lake
- Reproduction appears to occur for at least 5 species
- Federally protected species (Carolina Heelsplitter and Savannah Liliput) unlikely to occur in Monticello Reservoir and are not known from the Broad River Basin.



MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Fisheries TWC Meeting**

March 3, 2016

Final KMK 03-07-16

ATTENDEES:

Bill Argentieri (SCE&G)	Dick Christie (SCDNR)
Ray Ammarell (SCE&G)	Bill Marshall (SCDNR)
Randy Mahan (SCE&G)	Alex Pellett (SCDNR) via conf. call
Brandon Stutts (SCANA)	Henry Mealing (Kleinschmidt)
Caleb Gaston (SCANA)	Kelly Kirven (Kleinschmidt)
Tom McCoy (USFWS) via conf. call	Jordan Johnson (Kleinschmidt)
Fritz Rohde (NOAA) via conf. call	

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.

Henry opened the meeting with introductions and told the group the purpose of the meeting was to review the Reservoir Fluctuation Report and identify any Protection, Mitigation and Enhancement (PM&E) measures that might be associated with fluctuation of Parr and Monticello reservoirs.

Parr Reservoir

Henry explained the methodology included in the study, where Parr Reservoir was divided into nine segments and 10% of each segment was analyzed to determine how much and what type of habitat was dewatered at each 2 foot increments from 266 down to 256.1 msl.

TWC members had expressed concern over the fluctuation of Parr Reservoir, and so the group tried to identify ways to improve habitat and navigation in the reservoir.

Bill M. asked for ways that navigation could be improved when the reservoir was low. Henry said that at Heller's Creek, stumps could be removed, however this would also remove important fish habitat. Bill M. suggested that only some stumps be removed, to allow for better navigation, but to still provide some fish habitat. Henry said that improving access from Heller's Landing could be considered as a PM&E measure.

Dick said another idea would be to limit fluctuations on both Parr and Monticello reservoirs during spring fish spawning. He understands that this is a difficult issue to address and that this could be something that is done only when conditions allow. Bill A. asked if it's more important to keep the habitat wetted or dry and Dick said that it's more important for the reservoir level to remain stable. Ideally, both reservoirs would be full and stable during spawning, however if the reservoir can't be full, then they should be stable, so fish nests aren't left dry when the water level drops. Bill A. and

Ray said they would talk with operators to see if this is possible. It would also depend on how much water is coming from upstream, although in the spring, generally there is excess water, which may make it easier to hold the reservoir at a steady level.

Henry said that Ron Ahle (SCDNR) had mentioned in a previous TWC meeting that it would be nice to stabilize one of the side channels as a small impoundment in Parr Reservoir, similar to the Recreation Lake at Monticello Reservoir, as a PM&E measure. The group discussed the possibility of this and how the US Army Corps of Engineers (USACE) might handle it. The group looked at maps of Parr and identified a small side channel area as the potential site for an impoundment. Brandon said it would likely be difficult to obtain a permit, plus mitigation would need to be done to account for the loss of wetlands or streams. The railroad would also need to be contacted to see how this would possibly affect their operations, since the railroad tracks run close to the area in question. Caleb also mentioned that duck hunters would need to be considered, since this proposed area for the impoundment is a heavily used location for duck hunting. Navigation into and out of this area could become an issue.

The group also listed the following items for consideration regarding the impoundment:

- build a berm or gate around the 262' or 260' mark, approximately 125 feet long
- the impoundment would need to be somewhat small, so it wouldn't affect storage in Parr (how many acre feet would this take away from operations)
- build a temporary structure that could be installed only during the spring (March, April, May), so sediment doesn't build up, hunting isn't affected, and water doesn't get stagnant
- potentially build a boat ramp that allows for access inside the impoundment (could be considered a recreation enhancement as well)

Tom was concerned about how this structure may cause navigation issues and possible sediment issues for fish and mussels when removed each year. He indicated that a permanent structure, such as a rice trunk, may be the best option. The group decided that this option needs to be discussed further, both internally for SCE&G and externally with the USACE.

Henry said the take-home message regarding Parr Reservoir fluctuations is that SCE&G doesn't bring the pond level up to 266' very often, as evidenced by the amount of vegetation growing in the upper contours. Below elevation 260', substrate is mainly sand and silt with large numbers of stumps. There is a large amount of natural structure occurring lower in the reservoir along the shorelines, while the upstream sections of the reservoir are more riverine.

Monticello Reservoir

One of the goals identified by the TWC in the Study Plan was to focus on identifying PM&E measures in this reservoir to enhance spawning/recruitment/and fishing to mitigate for fluctuations. Prior to the meeting, Dick prepared and distributed a document outlining potential enhancements for Monticello Reservoir, from SCDNR's perspective. This document is attached to the end of these notes.

Bill A. asked how SCE&G will show compliance with some of the enhancements that Dick proposed. Dick said that license articles could be worded to require consultation with agencies. Implementation of enhancements can be documented and agencies would send in letters of confirmation that work was completed. He is not concerned with performing creel surveys or other

studies to prove that enhancements are improving fish recruitment in the reservoir. He believes that the enhancements he is proposing have already been proven in many studies in other reservoirs to increase fish production. The installation of these enhancements should be considered successful compliance with the license article.

SCE&G said they are concerned about some of the proposed enhancements, including the amount of gravel needed and possible re-contouring of shorelines. Dick said these are just examples of some things that can be done, but SCDNR would be willing to negotiate on these items. He said that ideally, SCE&G would install all of the agreed upon enhancements versus just providing the funding for work to be done. However, SCDNR may be able to provide some assistance during installation, in the way of boats or technicians.

The group discussed the different ideas that Dick presented and agreed that a PM&E measure could address installing three different types of fish habitat: spawning, nursery, and deep water, which agrees with the report. Some of the attractors could be purchased from Mossback, or a similar company, and some could be built by SCE&G. Brandon and Caleb brought an example of a deep water attractor to the meeting that they built using scrap parts. A photo is included below.

PHOTO 1 DEEP WATER FISH ATTRACTOR BUILT BY SCE&G



The TWC and report initially identified “9 enhancement areas” on Monticello. The group discussed these and other areas of the reservoir and identified approximately 20 areas around the lake where spawning, nursery, and/or deep water fish attractors could be installed. Some of the 20 areas

included all three components, while others included only one or two. The group agreed to the following specifics for each habitat type:

- Spawning – areas will be approximately 1000ft x 10ft, and will include up to 200 spawning disks or gravel beds – spawning disks will be installed in groups of 3-5
- Nursery – areas will be paired with spawning sites above and will include approximately 15 nursery/fry structures, such as the fry cage built by Mossback or handmade stake beds or bamboo structures built by SCE&G.
- Deep water – each deep water site will be approximately 1500 square feet, with approximately 15 structures scattered around a central buoy. Structures can be constructed by SCE&G or purchased from Mossback.

SCE&G and Kleinschmidt will put together a PM&E proposal that addresses site location, cost estimation, and installation schedule. This will be brought back to the TWC for review and discussion. The group discussed several different schedules for the term of the new license, including installing enhancements in two sessions several years apart, or installing one or two sites per year for 15 years. The group also discussed prioritizing sites and installing in phases during the first 30 years of the license. Everyone agreed that at least one pause in the timeline is necessary for a check and adjust on the process.

Kleinschmidt will order a few fish attractors from Mossback to use for testing. The TWC will plan to meet at the reservoir later in the spring to field verify the sites identified and possibly install a few fish attractors to determine level of difficulty. Dick noted that Robert Stroud (SCDNR) should be involved, since he is the SCDNR representative assigned to Monticello Reservoir. Scott Collins (SCE&G) will also be consulted to ensure that the sites identified are not located in areas where docks can be permitted.

The meeting adjourned. Action items from this meeting are listed below.

ACTION ITEMS:

- SCE&G will discuss internally the option of building a berm at the site on Parr Reservoir identified in the meeting. Depending on the outcome of this discussion, they, potentially along with SCDNR, will talk with USACE about permitting this action.
- SCE&G and Kleinschmidt will put together a PM&E proposal detailing the next steps for installing fish habitat enhancement in Monticello Reservoir – types, places, timeline.
- Kleinschmidt will order some fish attractors from Mossback for testing.
- The TWC will meet later in the spring to visit the Monticello Reservoir sites identified in the meeting for fish habitat enhancement.

Aquatic habitat enhancement in Monticello Reservoir

Monticello Reservoir is a 6,800 acre impoundment associated with the Parr Shoals Hydroelectric Project (project). This project is a pump-back project that utilizes the Fairfield Pumped Storage Facility to generate electricity and refill the lake. The project has the capacity to transfer up to 29,000 acre-feet of water between Parr Shoals reservoir and Lake Monticello, and for the period 2005-2013, average daily fluctuations in Lake Monticello were 2.35 feet. However, the authorized daily operational range is 4.5 feet, which could result in a minimum reservoir level (MRL) of 420.5 feet and should be considered in the placement of any fish habitat.

When the project is operated at the minimum reservoir levels, the surface acreage is reduced from 6,800 acres to 6,467 acres, which results in the dewatering of about 333 acres or (14.5 million sq. feet) This shoreline, which is exposed on a daily basis, is generally devoid of aquatic or terrestrial vegetation, woody debris, or other structure that could provide habitat for aquatic organisms. Much of this shoreline is a silt/clay hardpan material.

To mitigate project effects on littoral habitat, the fisheries technical working committee (TWC) is developing a proposal to supplement aquatic habitat in Monticello Reservoir. The TWC recommended 1) enhancements should provide habitat for spawning, nursery area and deep water cover; 2) they should be installed in close proximity to facilitate movements from one habitat type to another; and 3) ideal spawning habitat would be located in the backs of coves protected from the wind.

Draft DNR Proposal: DNR recommends a robust fisheries enhancement program be implemented over the term of the new license. If the new license is issued for a term of 30-years, we recommend enhancement of a minimum of 15 coves on Lake Monticello. In the event a License is issued for more than 30 years, an additional 5 coves should be enhanced for each additional 10-year period. Enhancement efforts should focus on the creation of spawning, nursery and deep water cover or attraction habitats. In keeping with proposed language in the General Permit (GP) for Lake Monticello, *inshore enhancements* would include spawning and nursery habitats, and be placed in shallow water areas along shorelines and within coves, in a minimum depth of 3 feet below MRL (with the exception of felled or hinged trees). Ideal areas for inshore structures exist in areas with little to no human habitation, docks, piers or boat landings. *Open water enhancements* would be located in deep water areas away from shorelines, in water depths where the tops of the structures would be a minimum of 6 (?) feet below MRL and would not interfere with navigation. Ideal areas for open water structures exist where the absence of aquatic vegetation, submerged woody debris, or topographical depressions may provide natural fish habitat.

Spawning habitat – Cove selection is important and should be conducted in coordination with the resource agencies. Selected coves would be enhanced with structure that provides substrate suitable for spawning and cover to attract spawning fish and to provide protection for fry. Area covered (square feet) is probably more important than height (cubic feet) for spawning habitat. Spawning habitat should cover an area ranging from about 0.25 to 1 acre in each cove, which would result in a total reservoir enhancement of between 3.75 and 15 acres. Each area would be from 1000 – 2000 linear feet in length and 10-20 feet wide, depending on topography, and these areas would be located primarily in the backs of coves.

Enhancement materials could include, but are not limited to:

- gravel beds 3-4 inches in depth with aggregate ranging in size from pea gravel to crusher run (or native stone equivalent);
- spawning benches created by utilizing a 4 to 6 foot piece of log sawed lengthwise in half and attached to cinder blocks on each end; and
- spawning discs such as the Honey Hole spawning disc. Honey Hole recommends installing up to 24 discs per acre in groups of 3 to 8. We are thinking that a minimum of 200 discs/1000 linear feet of shoreline may be adequate if used alone, fewer if other spawning habitats are also used.

A combination of these various habitat types is recommended. Rock jetties less than 2 feet high and or stump fields and felled trees should be placed near the spawning habitat to provide cover for all life stages and to stabilize gravel. During periods of low water levels, exposed lake bottoms may be re-contoured to excavate a shallow depression in which to hold gravel for spawning beds. All of the structures utilized to provide spawning habitat would be generally located in water depths of 3 – 6 feet below MRL and marked with appropriate signage and/or noted with downloadable GPS data.

Nursery habitat – for each cove, several shallow water structures should be established to serve as nursery habitat. These structures should be designed to provide cover for fry and juveniles and substrate for periphyton, and would be placed near the spawning areas and in depths of water ranging from 6 -10 feet at MRL. The goal would be to establish a minimum of 2-3 “nursery areas” associated with each spawning area, each consisting of a minimum of 12 habitat units (8 feet by 8 feet) spread over an 800 -1000 square foot area. Some vertical profile is important (2-4 feet tall) for this habitat type, as is the need for numerous small interstitial spaces that exclude fish larger than 6 inches. Enhancement areas would be marked with appropriate signage and/or noted with downloadable GPS data.

Enhancement materials for nursery habitat could include:

- rock jetties 3-4 feet tall;
- stump fields;
- a combination of rock jetties and stump fields;
- concrete or corrugated culverts no greater than 24 inches in diameter;
- homemade pvc attractors;

- commercial artificial structures such as the Mossback safehaven or 9-post safehaven structures; and
- low-profile horizontal bamboo bream nursery mats.

Open water habitat - open water habitat enhancement (fish attractors) will be established at suitable locations, and would generally be located in the proximity of the spawning/nursery area enhancements but could also be located in other areas as determined by the TWC. The purpose of these areas is to enhance structure and habitat to provide cover, feeding areas and attraction for larger fish, and they would be placed in water depths between 12 and 20 feet at MRL. Vertical profile is very important for attraction habitat. The goal would be to establish at least one attractor per cove, and each attractor should cover at least 2,000 square feet (1/10 of a surface acre) and provide vertical profile (50% of water depth). All open water enhancement areas would be marked with "Coast Guard" yellow fish attractor buoys.

Enhancement materials for open water attractors could include:

- homemade PVC;
- small and large diameter corrugated and/or concrete pipe;
- concrete products or clean construction debris;
- bamboo, recycled coniferous trees and other large woody debris with concrete block anchors;
- commercially available products such as the larger Mossback safehaven structures.

Staging areas - Designated staging areas will need to be developed at Lake Monticello. These could be at existing lake access areas, or could be in areas previously used by SCDNR for Canada Geese restoration activities. Best Management Practices will be incorporated throughout the use of these areas as temporary staging for loading of materials. The proposed materials may be transported by boat or barge to a site from the designated staging areas and placed. Because of the high fluctuations in water levels, it will be necessary to use heavy materials to insure they remain where they are deployed. A mini-excavator and a skid-loader (or similar equipment) will be needed to load and off-load the material to and from the barge.

Excavation may be required in order for habitat barges to reach staging areas for load of material. Excavation is limited to the minimum necessary for access to temporary staging areas, and excavated material must be properly disposed of on an upland site. All disposed material shall be properly stabilized or contained so as to preclude entry into any surface waters, wetlands, streams or any other waters of the United States, or public property. The disposed material shall not affect cultural or historic resources or threatened or endangered species. All disposal sites must be authorized by the lake manager.

Material outlined above (ex. large rock, logs, gravel) may be used to form a temporary ramp or nosing area to load material onto boat or barge from the staging area. Stabilization of the shoreline using a rock loading ramp will prevent gouging and shoreline erosion during construction. Temporary matting may also be used where applicable. When appropriate the materials in the loading/nosing areas will be

removed, though some residual material may be left in place as bank stabilization and/or habitat enhancement (i.e. gravel beds) where applicable.

Approach – SCE&G would ultimately be responsible for conducting this work. DNR will consult with SCE&G to identify the specific areas for enhancement, to develop cove-specific descriptions of the enhancement activities, and to provide other guidance as needed for the selection of enhancement materials and deployment. We recommend that the project be phased over the term of the new license by the establishment of 10-year work periods. Annual meetings would be held to discuss the progress and accomplishments of the program and to conduct planning and coordination for annual activities. A 10-year meeting would be conducted in the last year of the work period to discuss and formulate the next 10-year work plan.

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY Recreation TWC Meeting

May 10, 2016

Final KMK 06-03-16

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Steve Summer (SCANA)
Brandon Stutts (SCANA)
Caleb Gaston (SCANA)
Beth Trump (SCE&G)
Randy Mahan (SCE&G)
Bill Marshall (SCDNR)
Dick Christie (SCDNR)

Fritz Rohde (NOAA) via conference call
Gerrit Jobsis (American Rivers)
Bill Stangler (Congaree Riverkeeper)
Charlene Coleman (American Whitewater)
Stuart Greeter
Henry Mealing (Kleinschmidt)
Alison Jakupca (Kleinschmidt)
Shane Boring (Kleinschmidt)
Kelly Kirven (Kleinschmidt)

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

Alison opened the meeting with introductions and then reviewed the two objectives of the meeting: (1) to discuss the final Downstream Navigational Flows Assessment Report and determine if any additional follow-up is needed; and (2) to discuss the Downstream Recreation Flow User Survey Memo and identify recreation flow recommendations for the operations model. Alison reminded the group that the TWCs and RCGs will need to work together to balance the flow recommendations for the various resources (e.g., aquatic, recreation, navigation).

Downstream Navigational Flows Assessment Report

Shane reviewed the Downstream Navigational Flows Assessment Study Plan with the group, and discussed the two ledges that were identified as potential areas where navigation could be an issue. He explained that Ledge 1 was originally identified during scoping of the IFIM study plan and Ledge 2 was added to the Navigational Flows study plan during the mesohabitat assessment. The criteria for one-way navigation is defined as a “minimum depth of one foot across a channel 10 feet wide or across 10 percent of the total stream width, whichever is greater. Minimum depth does not need to occur across a continuous 10 percent of the stream width, but each point of passage must be at least 10 feet wide.” One-way navigation criteria are based on the passage of a 14 foot Jon-boat without a motor in the downstream direction only.

An Acoustic Doppler Current Profiler (ADCP) was used to collect bathymetry data at the two ledges when flows were at approximately 6,000 cfs. Shane showed the group a series of images that were included in the report. These images are attached to the end of these notes. Shane explained that the black line drawn across the first image of Ledge 1 maps out the most restrictive

portion of the ledge. ADCP data shows that Ledge 1 provides navigation passage that meets the SCDNR recommended criteria for one-way navigation at flows as low as 500 cfs. Shane stated that a 500 cfs flow provided a passage point that was 32% of the stream width.

According to the navigation criteria, Ledge 2 is navigable at flows as low as 1000 cfs. However, Shane pointed out that the ledge comes very close to meeting the criteria at a flow of 700 cfs and even 500 cfs. Although the criteria isn't met for providing navigation across 10 percent of the stream width, there are passage points that provide enough width for a 14 foot Jon-boat to pass through. Gerrit asked if there was a minimum width as part of the criteria and Shane said that it's either 10 feet or 10 percent of the stream width. So in the case of Ledge 2, there is a notch at 500 cfs that is wider than 10 feet, but it's not 10 percent of the stream width. Shane stated that at 1000 cfs the passage width is 82 ft (10% of the stream width); at 700 cfs the passage width is 67 ft (8% of the stream width); and at 500 cfs the passage width is 30 ft wide (4% of the stream width)

Bill Marshall mentioned that the Bookman Shoals complex is another area in the river where navigation can be difficult for paddlers at lower flows. Shane said that Bookman Shoals was considered for inclusion when the Navigational Flows study plan was being developed. However, this area will be studied in much greater detail during the IFIM study, so additional information will be coming with that report. Shane also mentioned that since Bookman Shoals is a very braided area of the river, although it is rocky, there are more navigation points than might be obvious at first glance.

Gerrit mentioned that the study plan allows for the possibility of a field assessment to verify the report results. He is interested in completing that component of the study. Alison said that the one-way navigation criteria also mentions that it shouldn't be necessary to get out and drag your boat in order to navigate an area of the river, and a field verification exercise would demonstrate if this is necessary at the recommended flows. Henry suggested that the field verification be scheduled after IFIM results are out. We will likely perform field observations for IFIM results and navigation passage at the same time later in August/September.

Steve asked how flows will be balanced if 1,000 cfs is agreed on as necessary for navigation but the 7Q10 is different flow. He mentioned that Parr Reservoir is not a storage reservoir that might allow for greater flexibility in downstream flows. Henry said that we will use the Operations Model to assist in balancing between flows and water availability. The TWC will use the Operations Model results to develop a recommendation for consideration by SCE&G. Henry agreed that this project does not have a storage reservoir, which means that recreation flows will be extremely difficult to schedule, unlike at Lake Murray. We also will likely have a caveat for downstream flows being linked to inflows as well.

Charlene asked how many Jon-boats are actually on the Broad River downstream of the Project. She believes that mostly kayaks and canoes are used on this area of the river, since access is not great for Jon-boats. Gerrit said there are actually quite a few Jon-boats that get out there, utilizing private access. Charlene said she would be interested in knowing navigation issues from people who actually use this area of the river versus what the navigational flows assessment showed. Alison said this is another reason for doing a field verification. The information collected during the field verification will be included in an addendum to the navigation study report.

Bill S. said that after talking with Steve de Kozlowski, he was concerned that in the report, a straight line of navigation was used, thus excluding the most restrictive navigation points in the ledges. Shane said that a straight line was not modeled, instead the ADCP was run back and forth over each ledge approximately 10-20 times. This captured a 3D image of each entire ledge. The one-way navigation criteria was then applied to the ledge, which is a linear criteria. The idea was to pick the most restrictive area within each ledge. The black line depicted in the 3D figures included in the report are then used as the bed profile in the second set of report figures and compared to the linear criteria.

Gerrit said that using this ADCP technology, in addition to finding the most restrictive point, you could also map out the best course for navigation at each ledge. Shane agreed, and said that a grid showing the entire ledge can be exported from the data collected and the navigation course could be depicted there. This would give a good representation of what the shoal actually looks like. The group agreed that it would be helpful to have maps of this information for the two ledges and for the Bookman Shoals complex (if possible) to use during the field verification.

The report will be modified to mention that a field verification will be completed. Comments received on the report from SCDNR, American Rivers and Congaree Riverkeeper will be added to the report in an appendix. Once the field verification is completed, an addendum will also be added to the report discussing the results.

Downstream Recreation Flow User Survey Memo

Alison began the discussion by giving some background information on the memo. The Downstream Recreation Flows Study Plan was developed and a Focus Group meeting was held in 2014 to discuss what experiences recreators were having on the river downstream of the Project and to identify preferred flows for various activities. During that meeting, flows were narrowed down to a few preferred ranges. The Operations Model needs more specific flows at a specific time for input, so the ranges need to be narrowed down.

A second Focus Group meeting was originally planned for 2015 to again gather information on recreation experiences, however a survey was developed and distributed as a way to capture additional information instead. Alison mentioned that only four people responded to the survey, with only three respondents indicating that they had recreated in the study area the previous recreation season. However, the results of the survey were similar to the Focus Group discussion from 2014. Flow recommendations coming out of the survey were 2,000-5,000 cfs during May and/or June for canoeing, kayaking and higher flow boat fishing, and 500-999 cfs during May, June and July for lower flow boat fishing, hunting, wade fishing and swimming. Alison asked the TWC if they agreed with these recommendations and said the goal is to narrow down the ranges to specific flows for the Operations Model. Henry mentioned that the lower flow recommendation of 500-999 cfs is very close to what the Navigational Flow Assessment recommended. He suggested the group focus on picking flows from the higher range to run through the Operations Model.

Ray mentioned that the flow duration curves in the PAD show historically what flows are available at specific times. For example, a flow of 5,000 cfs may only be available for 30 percent of the time in May. Bill A. also mentioned that the wording of the settlement agreement will need to have flexibility since these flows will only be available when inflows allow. Gerrit said the goal is to include something that allows for a specific flow on weekends during the recreation season during a

specific timeframe, such as 8 AM until 1 PM. Gerrit said the benefit of recreation flows is to have something that people can depend on and schedule around. Gerrit indicated that he would like to see an attempt by SCE&G to provide a scheduled recreation flow if the water is available. Bill A. said that having a window of 6 hours would be much more doable than a 12 hour window, or an entire weekend, if the water is available.

Henry suggested to the group that flows of 2,000, 3,500, and 5,000 cfs during a 6 hour window on the weekends of May, June and July be run through the model. After some discussion, the group excluded 5,000 cfs since this high flow is also unlikely to occur often and expanded the timeframe to include the recreation season (May through September). The group agreed on the following recommendation for recreation flows to be run through the Operations Model:

- Flows of 2,000 cfs and 3,500 cfs
- Focus on weekends and holidays during the recreation season (May through September)
- 6 hour window (approximately 8 AM until 2 PM)

The group agreed that IFIM recommendations will likely cover the lower ranges of flows which would be ideal for activities such as wade fishing.

The meeting adjourned and action items are listed below.

ACTION ITEMS:

- Kleinschmidt will make maps for navigation through the two ledges and Bookman Shoals (if possible with the current data)
- SCE&G will schedule a field verification for navigation and fish habitat after the IFIM results are presented to the TWC for review.
- Kleinschmidt will add an appendix to the navigational flow report which will include the comments from SCDNR, American Rivers and Congaree Riverkeeper.
- Kleinschmidt will add an addendum to the Navigational Flows report which will include a report discussing the field verification results.

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Water Quality TWC Meeting

March 23, 2016

Final KMK 5-12-16

ATTENDEES:

Bill Argentieri (SCE&G)	Rusty Wenerick (SCDHEC)
Ray Ammarell (SCE&G)	Chuck Hightower (SCDHEC)
Randy Mahan (SCE&G)	Bill Marshall (SCDNR)
Amy Bresnahan (SCE&G)	Ron Ahle (SCDNR)
Steve Summer (SCANA)	Gerrit Jobsis (American Rivers)
Brandon Stutts (SCANA)	Bill Stangler (Congaree Riverkeeper)
Caleb Gaston (SCANA)	Henry Mealing (Kleinschmidt)
Tom McCoy (USFWS)	Kelly Kirven (Kleinschmidt)
Fritz Rohde (NOAA) via conf. call	

These notes are 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 stated that the purpose of the meeting was to discuss the Water Quality in Downstream West Channel Study Report and the Parr Shoals Dam Turbine Venting Report. A PowerPoint presentation was put together with summaries of the two reports; this presentation is included at the end of these notes.

Parr Shoals Dam Turbine Venting Report

Henry explained that during the summer of 2015, SCE&G tested the turbines at Parr for venting capabilities. Five of the six turbines will vent. Results of the venting showed an increase in DO in the tailrace ranging from 0.16 mg/L to 0.45 mg/L. Based on this information a turbine venting plan was put together, where turbine vents will be opened from June 15th through July 31st each year. The plan will be tested during the summer of 2016 and results of the test will be shared with the TWC.

Caleb mentioned that having the vents open does affect generation efficiency of the units, so the venting window should be as short as possible. Tom asked how much efficiency is lost and Ray said he wasn't sure since he hasn't run the numbers. Henry stated that generation efficiency losses are usually around 5% at other projects with turbine venting.

Gerrit said the plan looked good and asked how benefits of the plan will be measured. Henry said we will just open the vents and make sure the operators can actually follow the plan. SCE&G will also monitor the Jenkinsville gage to determine if there is an excursion outside of the venting

window. If this happens, the vents will be turned on and DO will be monitored to see if there is an improvement.

Water Quality in Downstream West Channel Study Report

Henry gave an overview of the study that was performed during 2015, and explained that the HOB0 meters used to collect data were subject to a lot of fouling over the summer and that data collected showed extreme diel fluctuations. The data did confirm that DO levels can be very low in the west channel immediately downstream of the dam during summer months. Ron agreed that further down the west channel, flows are influenced by backflow from the east channel side, however the upper section of the west channel is impacted by lack of flow.

Henry said that SCE&G met with DHEC in February to discuss the Parr Shoals Dam Turbine Venting Report and the Water Quality in Downstream West Channel Study Report. SCE&G agreed to collect one additional week of data in August 2016 to verify the information collected in 2015. HOB0 meters will be deployed at the three west channel sites for one week. Temperature and DO data will also be collected using a separate DO meter when the HOB0s are deployed and retrieved.

The group discussed ways to increase flow in the west channel as a way to increase DO. Henry explained that the west side of the river is naturally higher than the east side. There is a natural crest immediately downstream of the dam that separates the two channels. This crest is the upper tip of Henderson Island. The dam was built through the northern tip of Henderson Island, so all turbine releases move down the east channel. Spillway releases through gates 1 through 6 send water down the west channel and releases through gates 7 through 10 flow towards the east channel. The group reviewed the DEM data collected as part of the IFIM study to observe the changes in elevation downstream of the dam. Additionally, original USGS maps from before the dam was built and 1912 construction blueprints show that the west channel area is higher in elevation and was a secondary channel of the original river.

Henry mentioned that any flows that are diverted from the east channel to the west channel could have a negative effect on the east channel habitat. There is only so much water that is available, and any flows that are redirected to the west channel will result in a loss of flows to the “species diverse” east channel. Gerrit said that the TWC will have to weigh the benefits of how to partition the water. Ron said he believes that the west channel needs to be restored to a point that it meets state standards. He doesn’t believe that there will be a significant impact on the east channel if a portion of flow is diverted to the west channel.

The group agreed that the challenge will be figuring out how to get flows over to the west channel. Several ideas were discussed, including installing a siphon system, using spillway pulse flows at night when DO levels are lowest, and creating a channel through Henderson Island to allow for flows to naturally flow from the east channel to the west during turbine operations. The group also discussed several factors including the volume of water needed in the west channel, how to show compliance to FERC, and whether continuous flow or pulsing flows would be best.

Ray mentioned that using a siphon system might not work because of the elevation of the dam, so a pump may need to be installed as part of a continuous flow system.

The group discussed the idea of nighttime pulse flows during the summer months. The pulse of water released by lowering spillway gates on the west side of the dam would flush and refresh the west channel. The spill would occur approximately in late afternoon or early evening and would last for a few hours until Fairfield begins pumping at around 11 pm. This can be tested during the summer of 2016 to see if it's possible and makes a measurable difference in DO levels.

The group then discussed the idea of pumping water into the west channel. Henry said the pump would need to be placed in the corner or further down the west channel to ensure the water flows into the right area. A piping system could be blown out during a high flow or flood scenario. Ray said there would be design issues with this option. The pump and pipe would need to be sited for a specific flow and we might not know what that flow would be. Also a very large pump would be needed just to move 50 cfs.

Ron then brought up the idea of cutting a channel through the current tip of Henderson Island and the rocky area just upstream of the island to allow flows to naturally run from east to west. Bill A. asked Brandon if the U.S. Army Corps of Engineers would permit this work. Brandon said it might be permitted, even though the work would be done in a non-navigable area. Blasting was discussed as a method to create this channel. This raises concerns from a dam safety perspective.

Henry brought the conversation back to the idea of pulse flows. Ron asked if there was any examples of where this has been done before. Henry said at Logan Martin Dam, part of the Coosa River Project in Alabama, generation pulses at night are used to improve DO. Pulse flows may also help to flush out the filamentous algae that grows in the area and contributes to the low DO. Ron said that water temperature needs to be controlled as well. He is also concerned that habitat that would be refreshed at night would dry out each day.

Bill M. brought up the idea of using leakage to increase flows in the west channel. Is there a way to increase leakage on that side of the dam, such as removing the seals from the gates? Bill A. said this isn't a good option, and you normally don't want to create leakage at a dam. Ray said you wouldn't want to remove the entire seal, but there could possibly be an engineering design that could allow for increased leakage. Leakage would also shut off during period of low flows and when the lake level drops below about 261' msl.

DHEC and USFWS said that the goal for the west channel is to try and pass enough flows to improve water quality to the extent possible. Ron added that he personally wants the west channel water quality to be improved to a point where the channel is revived and species diversity increases.

The group agreed that the easiest option would be to test pulsing flows this summer. SCE&G will test this approach during several nights during one week in August. Ray suggested that an observation test be completed during the day to get a visual and decide on which gates to use and estimate a target volume of water that would be needed. Brandon asked if the releases would be minor enough so as not to affect the habitat around the Parr Reservoir shoreline. Henry said that while it might have some affect, it would be minor, and the pulse flows would occur at a different time of the year than when spring spawning occurs.

Ron said that pulse flows should be triggered by inflow instead of a calendar date, and that a drought contingency should be considered. Ray asked what the window would be for releasing

flows in the west channel. The group agreed that June through September would be the ideal window.

Gerrit said that he believes the best scenario would be the release of continuous flows on the west channel. Ron agreed and said that it's good to evaluate pulse flows but would like additional investigation into the option of continuous flows. Henry said that with the option of continuous flows, the volume of flow would also need to be examined.

The group agreed that a site visit in June or July 2016 should be scheduled prior to testing in August. Maps of the area will be prepared and the site visit will be planned to coincide with low flows, so the rocky areas are easily visible. Then in August, after the week of baseline DO data collection in the west channel, pulse flows will be tested for approximately three or four days.

The meeting adjourned. Action items are listed below.

ACTION ITEMS:

- Follow up items for various flow options:
 - Determine if the USACE will allow excavation below the dam – Initial discussion with the USACE indicates this would require a 404 permit as well as a 401 (State Navigable Waters) permit through SCDHEC (SCE&G)
 - Determine who owns the land downstream of the dam. (SCE&G)
 - Determine the flow at which the DEM data was collected. (Kleinschmidt)
 - Investigate the option of increased leakage from the seals on the gates. (SCE&G)
 - Investigate what would be needed to allow for continuous flow – pipe, pump, siphon? (SCE&G)
 - Test pulse flows during August 2016. (SCE&G)
- Schedule a site visit for TWC in June/July timeframe to plan for pulse flow testing. (Kleinschmidt)
- Test Turbine Venting Plan from June 15th through July 31st. (SCE&G)

Water Quality TWC Meeting

March 23, 2016

Parr Shoals Dam Turbine Venting Report

Water Quality in Downstream West Channel Study Report

Parr Shoals Dam Turbine Venting Report

- Methods for Turbine Venting
 - Determined in 2014 that 5 of the 6 turbines can self-vent (#6 can't self-vent)
 - DO, temperature and percent saturation were taken immediately downstream of each turbine prior to and after each vent was opened
 - Repeated testing in the summer of 2015 during period of low DO



Parr Shoals Dam Turbine Venting Report

- Results of Turbine Venting
 - Unit 3 venting had most significant increase in DO, followed by units 1, 5, and 2.

TABLE 4-1 DISSOLVED OXYGEN MEASUREMENTS (MG/L)

Unit No.	Vent Closed	Vent Open	Increase in DO
1	4.65	5.04	0.39
2	4.60	4.80	0.20
3	4.70	5.15	0.45
4*	5.66	5.82	0.16
5	4.84	5.20	0.36
6**	5.10	N/A	N/A

*test data from 2014

**Unit 6 is not equipped with a vacuum breaker.



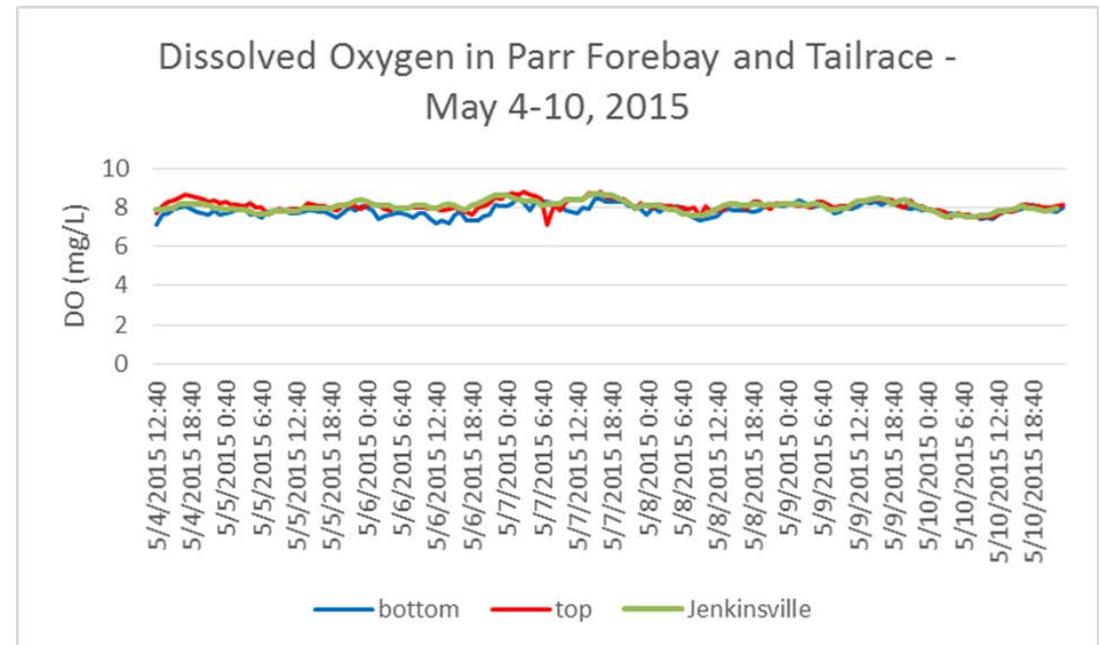
Parr Shoals Dam Turbine Venting Report

- Methods for Forebay DO Sampling
 - DO and temperature were collected in the forebay of Parr Shoals Dam using HOBO data loggers
 - Data was logged on an hourly basis from May 4, 2015 through October 16, 2015
 - Hourly data was also collected from USGS gage at Jenkinsville (02160991)

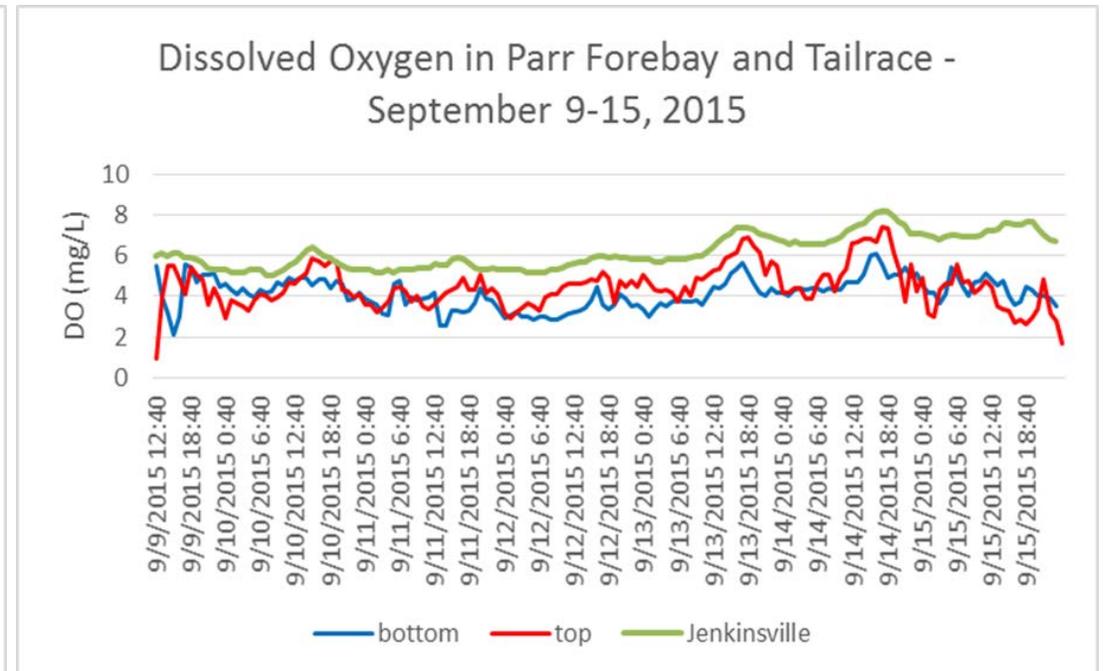
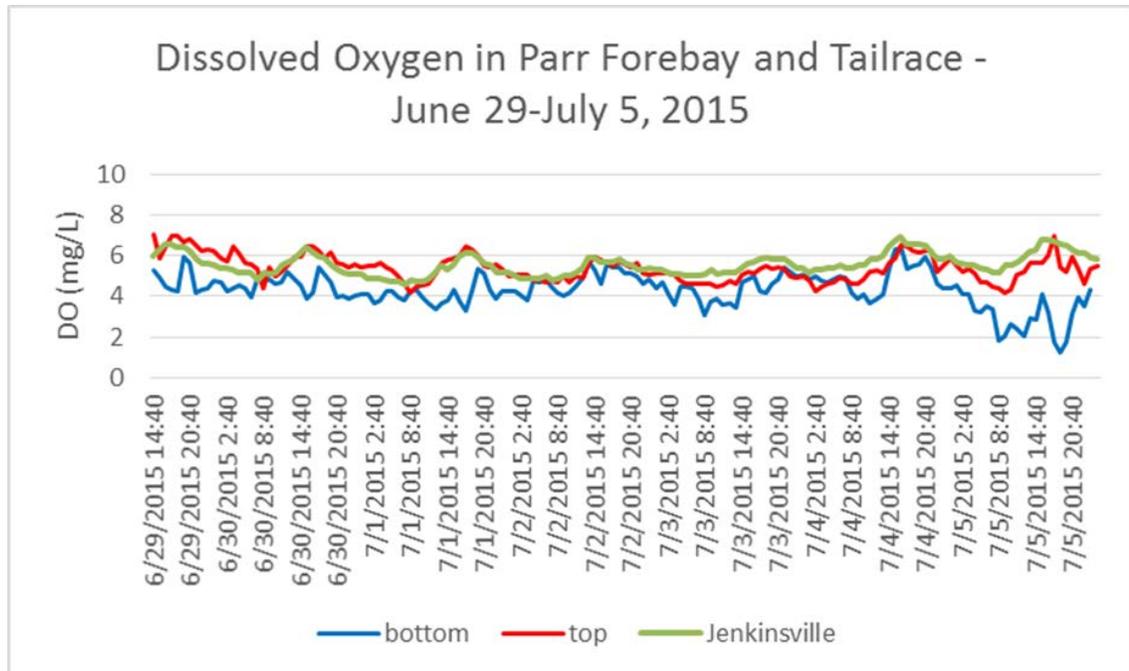


Parr Shoals Dam Turbine Venting Report

- Results of Forebay Sampling
 - Loggers were compromised due to fouling after one week of deployment
 - Not a reliable representation of DO in the Parr forebay
 - Lower DO levels and a diel shift in DO levels from end of June through end of September



Parr Shoals Dam Turbine Venting Report



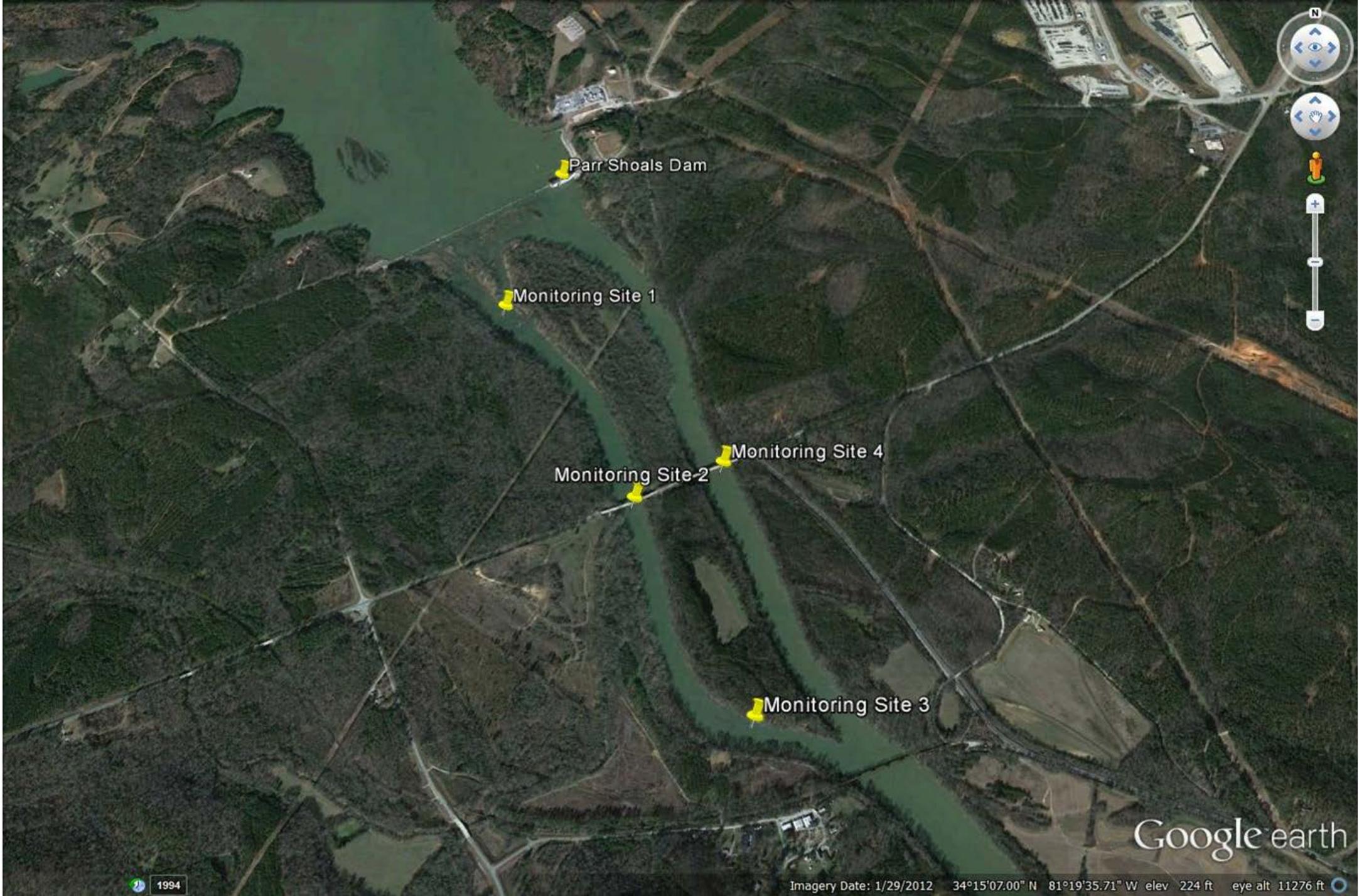
Turbine Venting Plan

- Venting Plan
 - Open turbine vents each year between June 15 – July 31
 - Order of turbine operation - first-on/last-off order: 3, 1, 5, 2, 4, and 6
 - The “venting window” may be expanded based on results
- Documentation / Compliance
 - SCE&G will provide a list of DO excursions below the standard (based on the Jenkinsville USGS gage) within 10 days of occurrence
 - SCE&G will maintain a log of operation records and maintenance activities

Water Quality in Downstream West Channel Report

- Methods
 - Temperature and DO monitored in west channel of Broad River using HOBO U26 Dissolved Oxygen Loggers
 - March 31, 2015 through October 15, 2015
 - DO data collected from USGS gage at Jenkinsville (02160991)
 - Loggers were subject to extreme fouling from algae, sediments and occasional de-watering





Parr Shoals Dam

Monitoring Site 1

Monitoring Site 2

Monitoring Site 4

Monitoring Site 3

Google earth

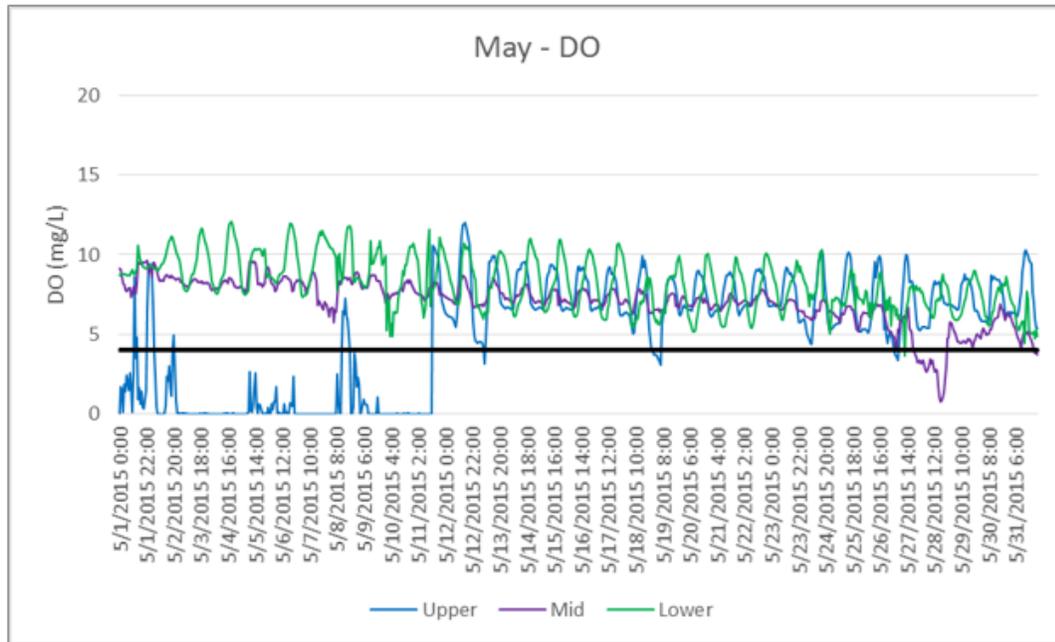
1994

Imagery Date: 1/29/2012 34°15'07.00" N 81°19'35.71" W elev. 224 ft eye alt. 11276 ft

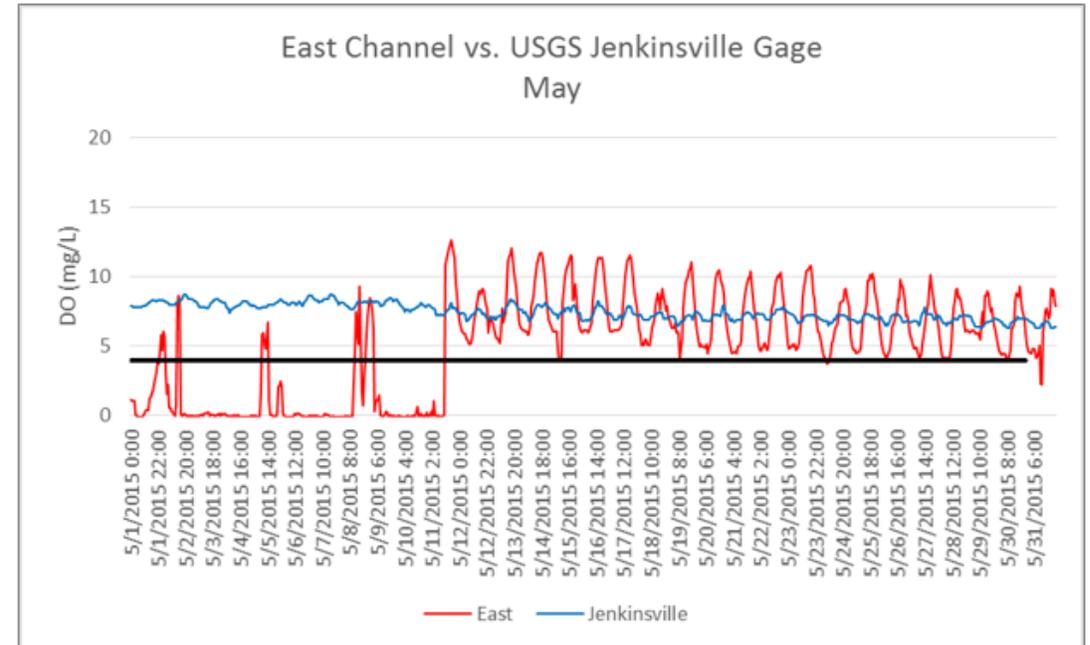
Water Quality in Downstream West Channel Report

- Results
 - DO levels in west channel were periodically below the DHEC standard of 4.0mg/L
 - DO levels in the upper west channel downstream of Parr Dam were consistently lower than those further down the west channel and the east channel
 - Fouling of the HOBO loggers was a constant issue
 - DO levels were lowest in the west channel directly downstream of the dam during the summer months

Water Quality in Downstream West Channel Report

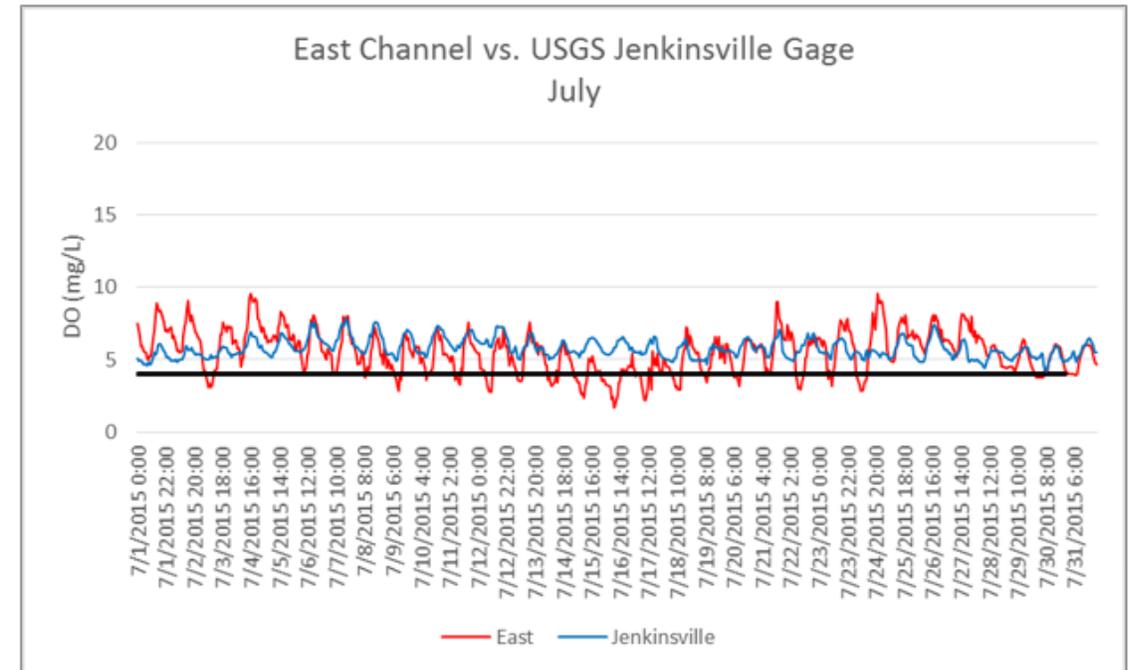
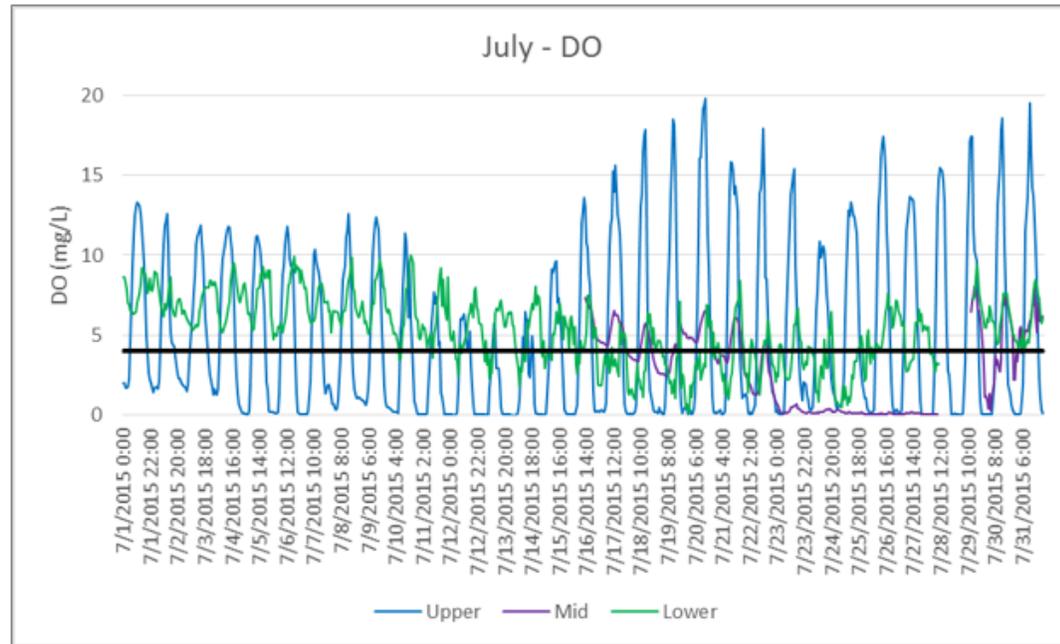


*Upper west channel was relocated on May 11, 2015 during a routine data download. Previous to the relocation, the logger was subject to fouling and de-watering.



*East channel was relocated on May 11, 2015 during a routine data download. Previous to the relocation, the logger was subject to fouling and de-watering.

Water Quality in Downstream West Channel Report



*The middle west channel logger was at the manufacturer for repair through July 16, 2015. The lower west channel logger was also removed from the river for repair in the Kleinschmidt office for one day in late July.

SCE&G/SCDHEC/KA Meeting – 2/9/2016

Parr Shoals Dam Turbine Venting Report

- Agreed to extend the venting window – June 15-July 30
- Revise report to clearly mark bad forebay data
- SCE&G will test the Turbine Venting Plan this summer (2016)

Water Quality in Downstream West Channel Report

- Site visit of West Channel area immediately downstream of Parr Shoals Dam during late summer
- Provide information of how dam construction could have affected diversion of water
- Collect additional DO samples for one week this summer (August of 2016)

2016 Next Steps

- Turbine Venting during 2016 – will provide results to TWC in a memo
- Site visit of West Channel with SCDHEC late summer 2016
- Collect a week of additional DO/Temp data in the West Channel during August 2016 – provide results as an Addendum to the report
- Begin discussion of PM&E Measures

Potential Mitigation Measures

- What is the goal for the West Channel?
 - Spawning
 - Fishing
 - ???
- What are potential SCE&G operations that may be available?
 - Spillway flows
 - Continuous flow
 - Seasonal flow
- How do we show compliance?
 - Off license agreement
 - 401 requirements

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Fisheries TWC Meeting**

May 23, 2016

Final ACJ 07-29-16

ATTENDEES:

Bill Argentieri (SCE&G)

Scott Collins (SCE&G)

Tommy Boozer (SCE&G)

Ray Ammarell (SCE&G)

Brandon Stutts (SCANA)

Caleb Gaston (SCANA)

Henry Mealing (Kleinschmidt)

Bill Marshall (SCDNR)

Dick Christie (SCDNR)

Robert Stroud (SCDNR)

Ron Ahle (SCDNR)

Alex Pellett (SCDNR)

Jordan Johnson (Kleinschmidt)

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.

The group met at the SCE&G “99” Boat Ramp to perform a review of potential sites on Monticello Reservoir for habitat enhancement. Based on previous meetings, the group reviewed each site for spawning enhancement – nursery/juvenile enhancements – and adult fish deep water enhancements. The group also discussed the use of felling trees into the lake and cabling them to the shoreline. This type of enhancement would create a variety of fish habitat along the shoreline areas. SCDNR noted that this was a good enhancement but would likely need to be repeated during the license as the wood would deteriorate. The group also noted that hardwoods would be better for this type of enhancement than using pines.

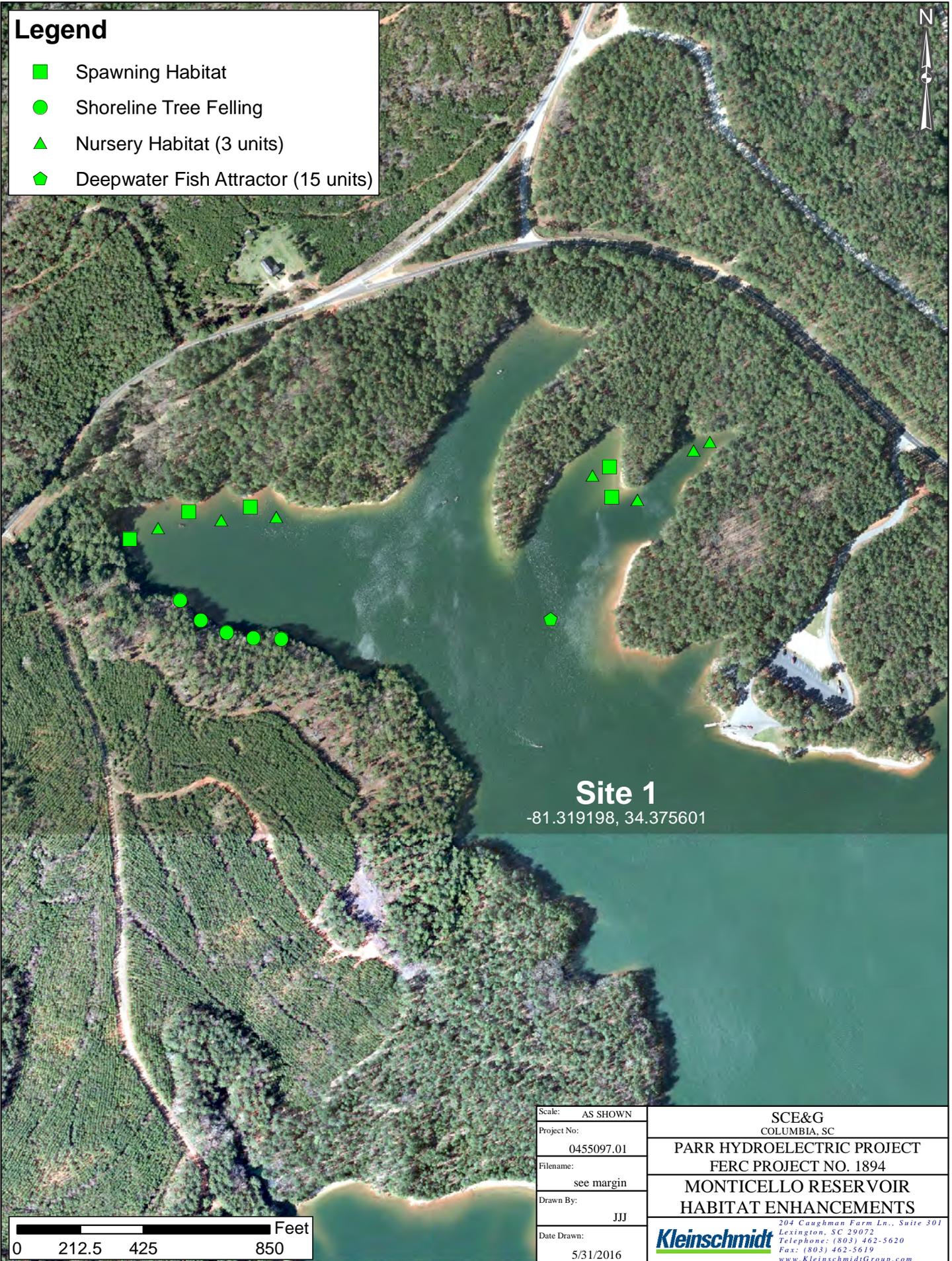
The group reviewed 13 areas and made notes on the potential for each of the four enhancements at each area. Kleinschmidt has prepared updated project maps to depict each site, the general type and number of enhancement, and the general location of each type of habitat enhancement. See attached PDF file. The maps also indicate the number of enhancements for deep water (15 structures) and nursery (3 structures) at each site. The number of spawning and felled trees is not specified at this point.

ACTION ITEMS:

- Kleinschmidt will finalize the habitat enhancement maps based on TWC input.
- Kleinschmidt will summarize the cost for placement of proposed habitat enhancements in Monticello Reservoir.
- SCE&G Management will review this information and develop a potential enhancement measure for the TWC to review and discuss.

Legend

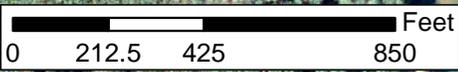
- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 1

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Filename:	see margin	PARR HYDROELECTRIC PROJECT FERC PROJECT NO. 1894
Drawn By:	JJJ	MONTICELLO RESERVOIR HABITAT ENHANCEMENTS
Date Drawn:	5/31/2016	<i>204 Caughman Farm Ln., Suite 301 Lexington, SC 29072 Telephone: (803) 462-5620 Fax: (803) 462-5619 www.KleinschmidtGroup.com</i>



- Legend**
- Spawning Habitat
 - Shoreline Tree Felling
 - ▲ Nursery Habitat (3 units)
 - ◆ Deepwater Fish Attractor (15 units)

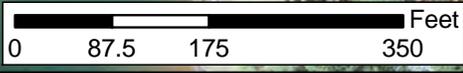
Deepwater enhancements will supplement existing fish attractor.

Site 2

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Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 3

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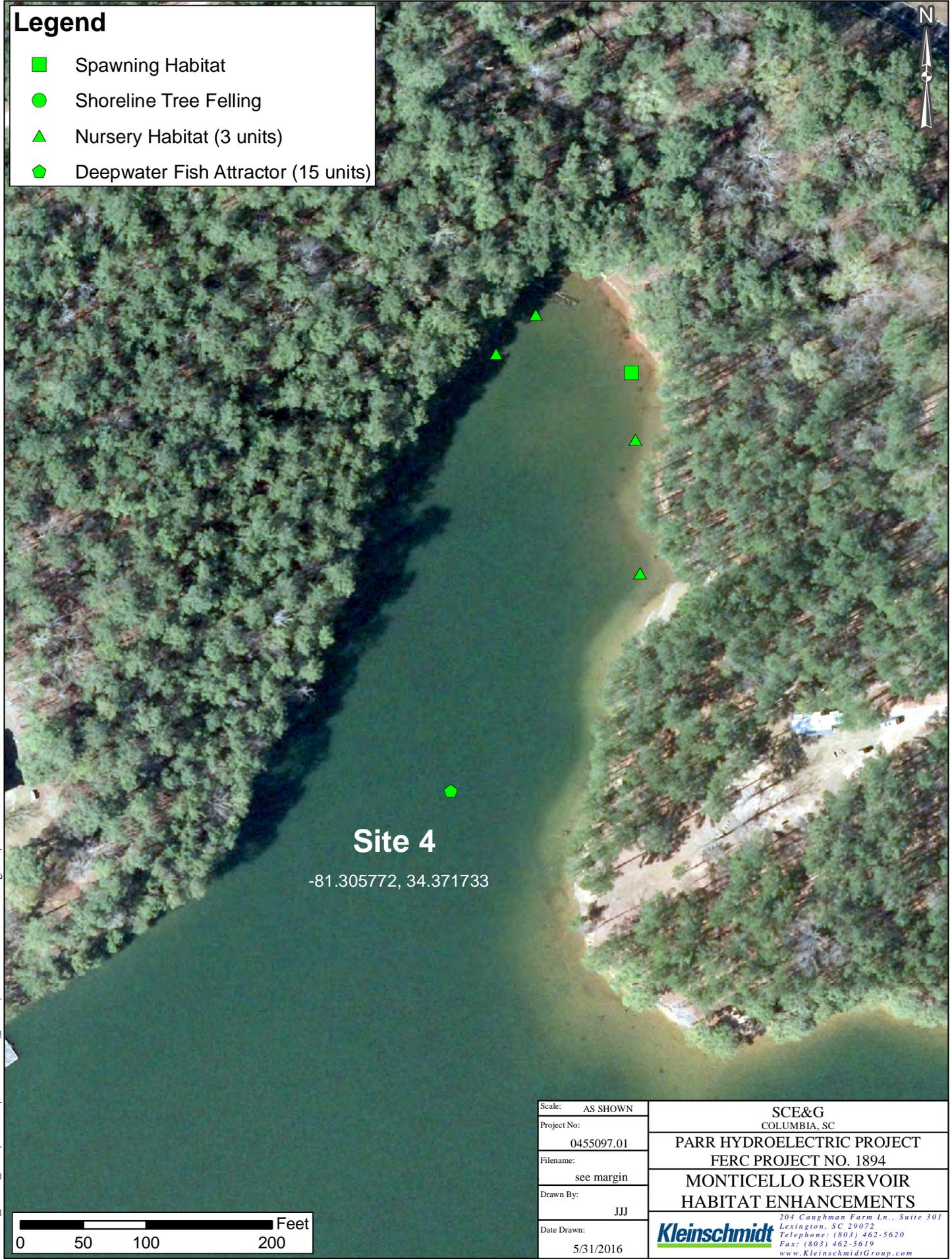


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Drawn By:	JJJ	204 Caughman Farm Ln., Suite 301 Lexington, SC 29072 Telephone: (803) 462-5620 Fax: (803) 462-5619 www.KleinschmidtGroup.com
Date Drawn:	5/31/2016	Kleinschmidt

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Legend

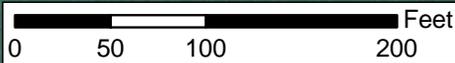
- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 4

-81.305772, 34.371733

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Source: Kleinschmidt, Orbis, SCE&G

Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 5

-81.327358, 34.36236



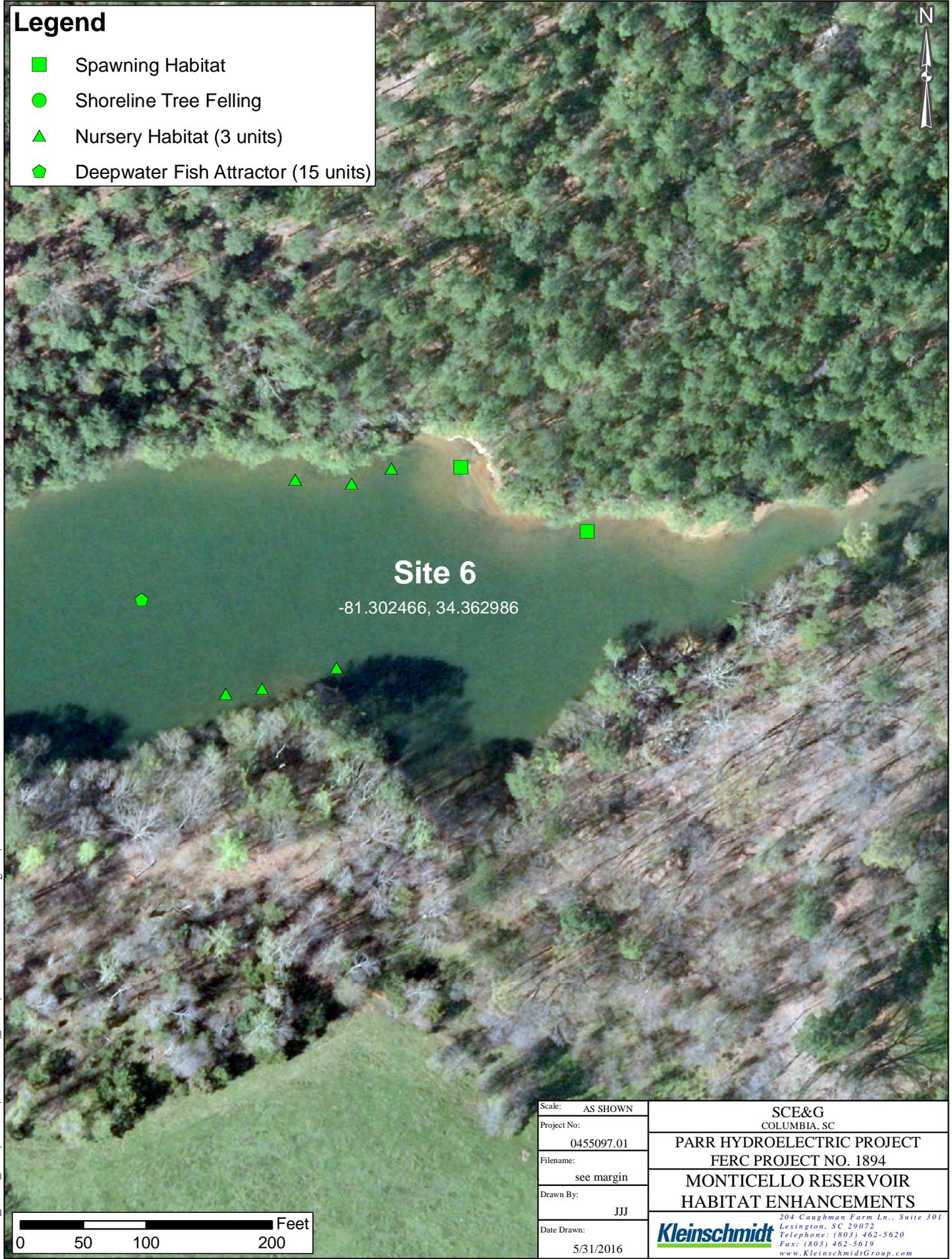
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Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 6

-81.302466, 34.362986

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Date Drawn:	5/31/2016	Kleinschmidt <small>204 Caughman Farm Ln., Suite 301 Lexington, SC 29072 Telephone: (803) 462-5620 Fax: (803) 462-5619 www.KleinschmidtGroup.com</small>

Source: Kleinschmidt, Orbis, SCE&G

Legend

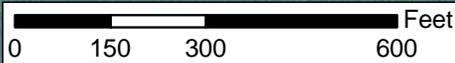
- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 7

-81.299807, 34.329525

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Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)

Deepwater enhancements will supplement existing fish attractor.

Site 8

-81.287834, 34.325097



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Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor(15 units)



Site 9

-81.291424, 34.299092

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Date Drawn:	5/31/2016	 <small>204 Caughman Farm Ln., Suite 301 Lexington, SC 29072 Telephone: (803) 462-5620 Fax: (803) 462-5619 www.KleinschmidtGroup.com</small>

Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 9

Site 10

-81.29618, 34.297807

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Date Drawn:	5/31/2016	Kleinschmidt <small>204 Caughman Farm Ln., Suite 301 Lexington, SC 29072 Telephone: (803) 462-5620 Fax: (803) 462-5619 www.KleinschmidtGroup.com</small>

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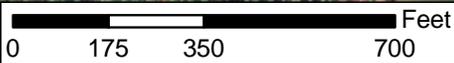
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- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)



Site 11

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Filename:	see margin
Drawn By:	JJJ
Date Drawn:	5/31/2016

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204 Caughman Farm Ln., Suite 301 Lexington, SC 29072 Telephone: (803) 462-5620 Fax: (803) 462-5619 www.KleinschmidtGroup.com



Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)

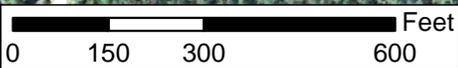
Deepwater enhancements will supplement existing fish attractor.

Site 12

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Drawn By:	JJJ	MONTICELLO RESERVOIR HABITAT ENHANCEMENTS
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Legend

- Spawning Habitat
- Shoreline Tree Felling
- ▲ Nursery Habitat (3 units)
- ◆ Deepwater Fish Attractor (15 units)

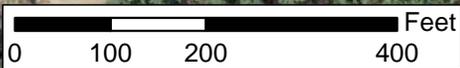


Site 13

-81.28837, 34.313446



Path: G:_Client_Data\SCE&G\ParrFairfield_MXD\Reservoir Fluctuation Figures\Monticello Area 13 Enhancements.mxd



Scale:	AS SHOWN	SCE&G COLUMBIA, SC
Project No:	0455097.01	
Filename:	see margin	PARR HYDROELECTRIC PROJECT FERC PROJECT NO. 1894
Drawn By:	JJJ	MONTICELLO RESERVOIR HABITAT ENHANCEMENTS
Date Drawn:	5/31/2016	<i>204 Caughman Farm Ln., Suite 301 Lexington, SC 29072 Telephone: (803) 462-5620 Fax: (803) 462-5619 www.KleinschmidtGroup.com</i>



MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Water Quality TWC Meeting

June 23, 2016

final acj 8-15-2016

ATTENDEES:

Bill Argentieri (SCE&G)	Bill Marshall (SCDNR)
Ray Ammarell (SCE&G)	Alex Pellett (SCDNR)
Steve Summer (SCANA)	Ron Ahle (SCDNR)
Brandon Stutts (SCANA)	Gerrit Jobsis (American Rivers)
Caleb Gaston (SCANA)	Rusty Wenerick (SCDHEC)
Shane Boring (Kleinschmidt)	Alison Jakupca (Kleinschmidt)
Henry Mealing (Kleinschmidt)	

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

At the last TWC meeting, the group discussed various ways to improve west channel water quality. These included:

- Creating a channel from the powerhouse tailrace to the west channel. SCE&G determined that this was not realistic due to dam safety issue with blasting and this method will not deliver water to the upper west channel due to elevation differences.
- Pump water from the forebay – this method would be unreliable (dependent on mechanical pumps) and would not deliver much flow – less than 25 cfs.
- Siphon system from the forebay – this method would also be unreliable because the reservoir level changes and not deliver much flow.
- Operation changes will be the best way to improve WQ in the west channel – during the summer, use controlled periodic spills to the west channel and prioritize any reservoir operation spills be released through gates 1-6.

Based on this information, SCE&G proposed to perform a west channel test spill demonstration for the TWC members to observe. These notes provide a summary of the test flow. Prior to the test, the attendees met at the Parr Dam and reviewed the agenda (attached) and discussed safety tips for the day.

The purpose of the flow demonstration was to observe conditions in the west channel area of the Broad River downstream of Parr Dam before, during, and after a relatively small amount of water was discharged into the channel using Parr Hydro spillway crest gates 1 and 2, which operate together as a pair. Performing periodic releases such as this is a potential operational measure for improving the water quality in the west channel during the term of the new license when it is issued.

Test Description

The attendees met at the west end of Parr Dam between 8:00 and 8:30 AM. The group conducted a safety briefing and reviewed maps of the west channel area and several pools and shoals which are located just downstream of the dam (handout attached), and then walked along the canoe portage path to the riverbank and waded to a small sandbar which was used as an observation area during the demonstration. At 8:57 AM, the hydro staff were requested by phone to lower gates 1 and 2 to about 0.2 feet below the current reservoir elevation. By 9:00 AM, a spill flow had begun and after some minor gate adjustments to the gate position by the plant, a steady spill over the gates was occurring. The group waded upstream to observe the pools near the base of the dam beginning to fill and overflow into the upper portion of the west channel. As the water rose, the group made their way back downstream to observe the effects of the increasing flow in the small channels around the sandbar. The spill continued until about 10:19 AM, when the group was in agreement that approximately steady state stage and flow conditions existed in the upper reaches of the west channel. The plant staff was requested by phone to raise gates 1 and 2 back to their full up position. The group stayed at the sandbar until about 10:50 AM to observe the flow recession.

Recorded Data

The group recorded depths in one of the pools of the west channel via a temporary staff gage established prior to the spill demonstration. The recorded data is presented in Table 1 and Figure 1.

Table 1. Staff Gage Height in West Channel

Time (EDT)	Staff Gage Height (Inches)
0841	2.50
0915	5.50
0921	11.00
0936	15.5
0946	17.00
0956	17.25
1000	17.50
1005	18.00
1010	18.25
1019	18.75
1025	17.75
1026	16.75
1028	15.00
1029	14.50
1033	12.25
1037	10.50
1040	9.50
1044	8.50
1047	7.75
1049	7.50
1050	7.25
1056	6.75
1100	6.00

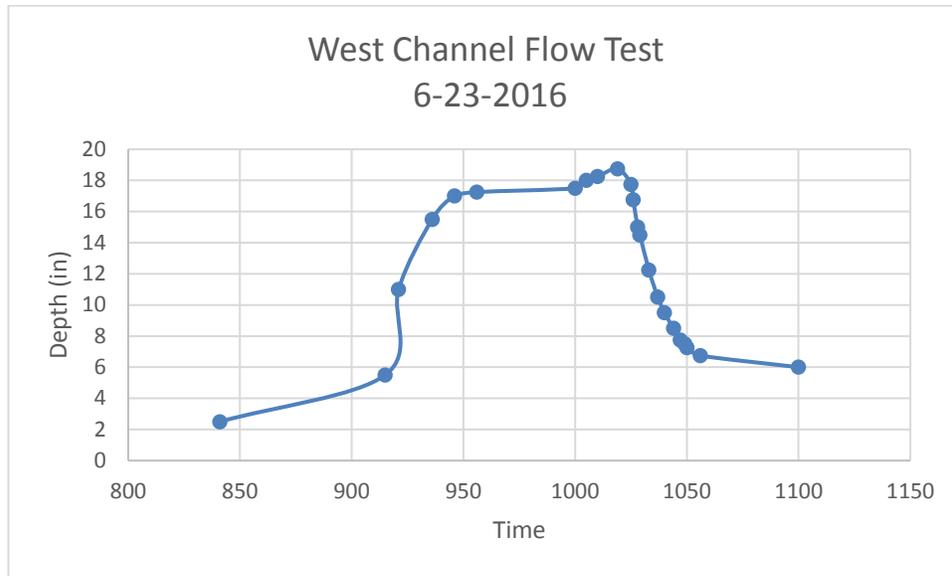


Figure 1. Staff Gage Height in West Channel

The plant staff also logged reservoir elevation and gate position at 30 minutes intervals during the demonstration, using the plant headwater gauge and gate position indicators (Table 2).

Table 2. Parr Reservoir Elevation and Gate Position During Spill Test

Time (EDT)	Plant Res. El.	Gate Tip El.
8:30	n/a	266.00
9:00	257.60	257.40
9:30	257.74	257.15
10:00	257.80	257.12
10:30	n/a	266.00

Using the data recorded in Table 2, discharge over gates 1 and 2 were computed using the sharp crested weir formula (Figure 2):

$$Q = C L H^{3/2}$$

Where

Q = discharge in cubic feet per second (CFS);

C = the weir coefficient of 2.50 from the gate design data for the gate tip elevation and headwater during the release (see chart on page 5);

L = the weir crest length in feet, in this case 400 feet.

H is the total head in feet (including velocity head) on the weir crest. Velocity head was negligible and head was computed as (Reservoir El. – Gate Tip El.).

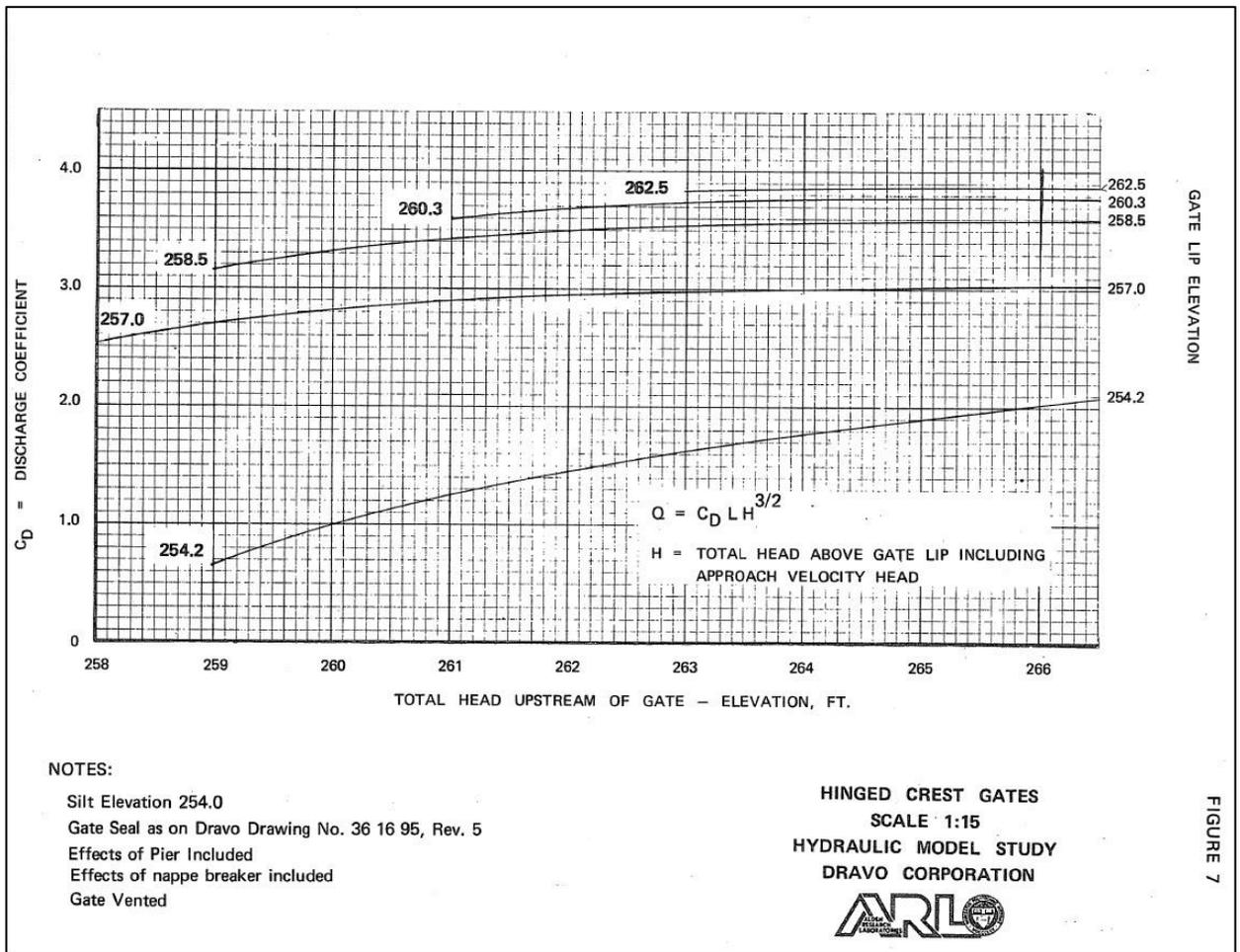


Figure 2. Sharp Crested Weir Formula

The calculated discharge during the demonstration is provided in Table 3 below.

Table 3. Calculated Discharge During Flow Test

Time (EDT)	Calculated Gate Discharge (CFS)
8:30	0
9:00	89
9:30	453
10:00	561
10:30	0

After the demonstration was completed, provisional data from the USGS streamflow gage at Alston, SC was downloaded to see if the release from gates 1 and 2 was evident at the gage location about 1 mile downstream of the dam. An increase in flow was recorded at the Alston gage beginning about 90 minutes after the flow release began. Figure 3 shows the calculated flow over the gates and the flow recorded at the Alston gage site during and after the demonstration.

Figure 3 indicates that prior to the release, the discharge from Parr Hydro was about 730 to 740 CFS. The maximum flow recorded at the Alston gage during the release was 888 CFS at 11:30 AM, an increase of about 150 CFS above the pre-release flow. By 3:30 PM, the flow at Alston had receded to a steady value of 752 CFS. The peak flow increase measured at the Alston gage site was quite a bit less than the maximum flow released over gates 1 and 2, due to the storage routing effects of the pools and channel section in the west channel. The increased flow at the Alston site was also evident in the gage data for several hours after the gate had been raised and the flow release stopped, as the west channel reach released some of the stored water.

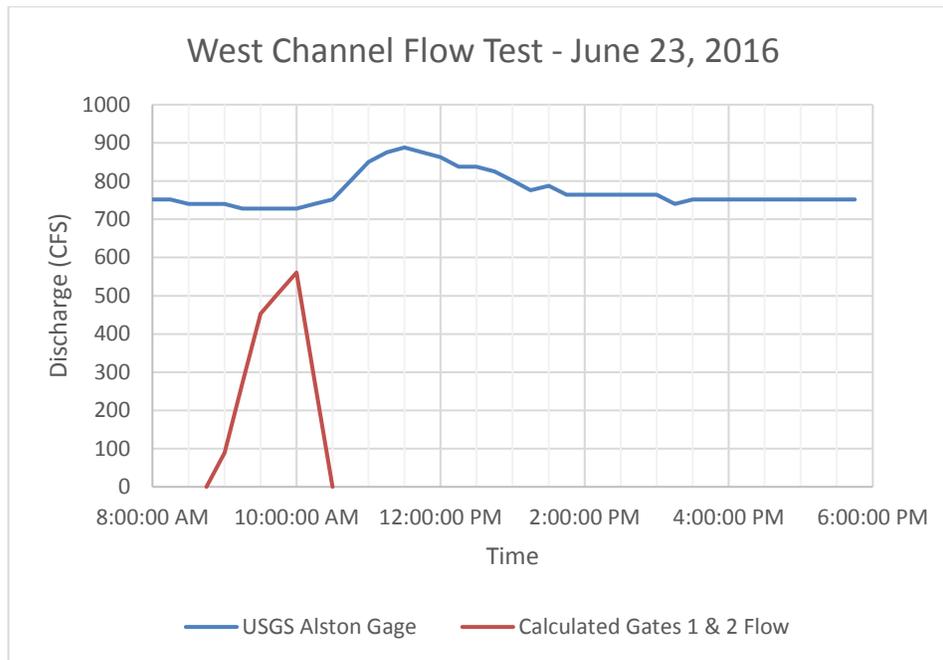


Figure 3. Alston Gage Versus Calculated Releases from Gates 1 & 2

Volume of Water Released

The estimated volume in acre-feet of water released using gates 1 and 2 was calculated from the flow data in Table 3 and is provided in Table 4. A total of about 46 acre feet is estimated to have been released during the demonstration.

Table 4. Volume Computation from Calculated Gate Flow

Time (EDT)	Gates 1 and 2 Flow (CFS)	Volume Released (Ac-Ft)
8:30	0	0
9:00	89	1.9
9:30	453	11.2
10:00	561	20.9
10:30	0	11.6
	Total:	45.6

A similar volume computation was performed on the Alston gage flow data for the period 10:30 AM to 3:15 PM. The tabulated flow and volume computed are provided in Table 5.

Table 5. Volume Computation at Alston Gage Site

Time EDT	Flow (CFS)	Increase Above Baseflow (CFS)	Volume of Increased Flow (Ac-Ft.)
10:15	740	0	0
10:30	752	12.00	0.25
10:45	801	61.00	0.75
11:00	850	110.00	1.77
11:15	875	135.00	2.53
11:30	888	148.00	2.92
11:45	875	135.00	2.92
12:00	863	123.00	2.66
12:15	838	98.00	2.28
12:30	838	98.00	2.02
12:45	825	85.00	1.89
13:00	801	61.00	1.51
13:15	776	36.00	1.00
13:30	788	48.00	0.87
13:45	764	24.00	0.74
14:00	764	24.00	0.50
14:15	764	24.00	0.50
14:30	764	24.00	0.50
14:45	764	24.00	0.50
15:00	764	24.00	0.50
15:15	740	0.00	0.25
		Total Volume:	26.85

The data in Table 5 indicate that not all the water released over the gates made it to the Alston gage site. This is possibly due to some water being retained in the pool areas in the west channel, since these pools were relatively empty at the start of the demonstration and were filled by the release.

August Spillway Water Quality Testing

SCE&G proposes to pass a spillway flow of approximately 25 acre ft. over a several hour period during the August 2016 Water Quality testing. During the first week of monitoring the water quality HOBOS will be deployed with no planned spill - only gate leakage. The first day of monitoring during the second and third weeks, the HOBOS will be cleaned, data retrieved, replaced in the channel, and a crest gate spill will be released. During the subsequent days of monitoring each week, the HOBOS will document how quickly the temp and DO deteriorate in the West Channel. This should provide us with a reference point to discuss the frequency of spills potentially needed to create water quality improvements in the West Channel.

ACTION ITEMS:

- SCE&G and Kleinschmidt will prepare and implement the west channel water quality testing in August 2016 over a three-week period.
- Kleinschmidt will summarize the data and submit it to the TWC for review and comment. This information will be added to the West Channel Water Quality Report as an addendum.

Attachments

West Channel Spill Demonstration – June 23, 2016

At the March 23, 2016 TWC meeting, the TWC discussed several options to deliver flow to the West Channel area. SCE&G evaluated each of those options for reliability, cost, and safety.

Flow Delivery Evaluation

- Create a channel from the tailrace to the West Channel. Not realistic – dam safety issue with blasting – expensive – will not deliver water to the upper West Channel due to elevations.
- Pumping will be expensive – unreliable – and not deliver much flow
- Siphon system will also be unreliable because the reservoir level changes
- Operation changes will be the best way to improve WQ in the West Channel

Operation Changes

- SCE&G will prioritize operation of the spillway gates to 1 - 6 – June through September. If there is excess water that will require a spill, it will be passed through gates 1-6 unless there is a mechanical/project need to use gates 7 - 10.
- SCE&G will provide a periodic spillway release to refresh the West Channel.

August Testing Plan

- During August 2016, we will reset the HOBO monitors in the West Channel for three weeks to address two topics:
- During the first week, we will collect data for one week with clean calibrated HOBO monitors to verify the temperature (temp) and dissolved oxygen (DO) values observed during the August 2015 collections.
- During the second and third weeks, we will collect HOBO data with a test spillway release to determine the temp and DO response.
- After testing, we will provide an update to the TWC on the results of the additional collections.

Parr West Channel Pool Storage Estimate

To improve water quality in the West Channel, we assume that there should be some regular exchange of water within the West Channel. The overall area can be broken into two major portions – the smaller and shallower upstream pools and the large deeper downstream pool. Using available data for these areas, the volume of the upstream pools and the downstream pool were estimated.

Upstream Pools

There are approximately five primary smaller pools in the upstream portion of the West Channel (Figure 1). Based on the data collected in these areas, we estimated a pool volume at a flow of approximately 50 cfs, which is the approximate leakage through gates 1-6. The estimates of pool

volume range in size from 0.2 to 4.9 acre-ft (Table 1). Therefore a spillway release of at least 10.3 acre-ft should provide some substantial water exchange in these upstream pools.

Table 1. Estimated Volume of Five Major Pools in the Upstream Portion of the West Channel

Pool #	Area (sq ft)	Depth at 50 cfs (ft)	Pool Volume (cubic ft)	Pool Volume (acre ft)
1	29,394	3.1	91,121	2.1
2	3,760	2.3	8,648	0.2
3	39,255	1.5	58,882	1.4
4	35,952	3.1	75,499	1.7
5	119,771	1.8	215,588	4.9
Total				10.3

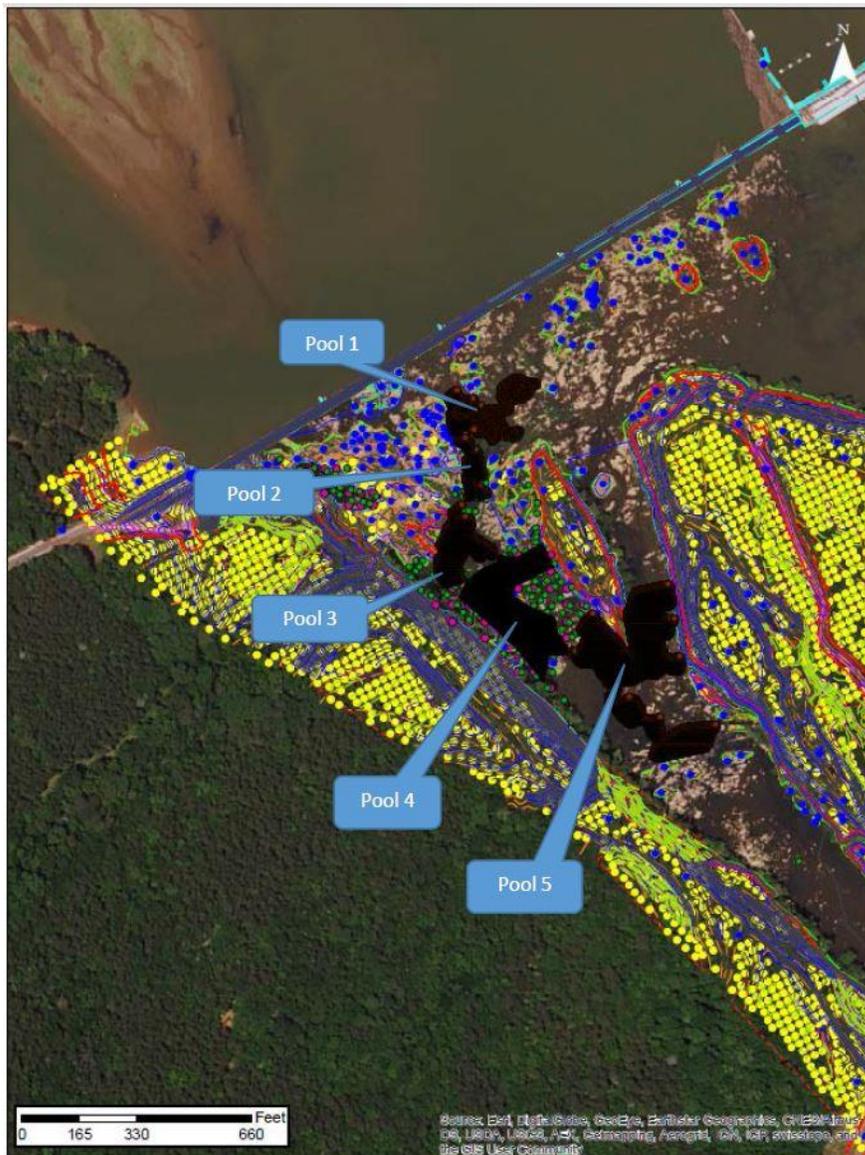


Figure 1. West Channel upstream pools.

Downstream Pool

The downstream section of the West Channel is comprised of one large pool that is much larger and deeper than the upstream pools. Using Google Earth Pro, we created a polygon of this pool and estimated that the surface area is 26.4 acres (Figure 2). A Sontek River M9 Acoustic Doppler Current Profiler (ADCP) was used to collect depth soundings along the thalweg of this pool at leakage flow. Based on the ADCP profile, we estimate that the average depth is approximately 4 feet, which yields a volume of 105.6 acre ft. Therefore it would require a spillway release of at least 100 acre ft to provide some exchange of water in this downstream pool.

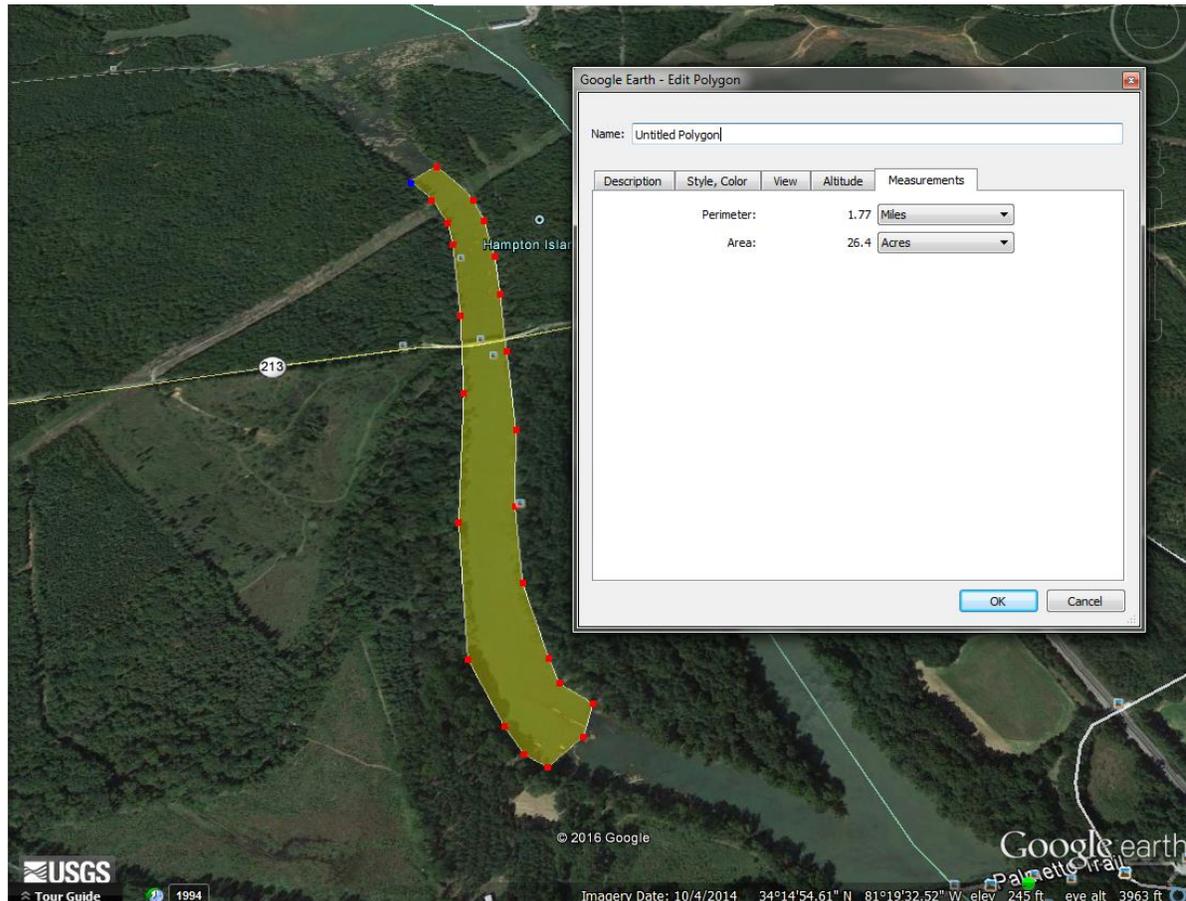


Figure 2: West Channel Downstream Pool Estimated Area Measurement

August Spillway Test Flow

Based on the pool volume information presented in this memo, SC&EG proposes to pass a spillway flow of approximately 25 acre ft. over a three hour period during the August 2016 testing. During the first week of monitoring the HOBOS will be deployed with no planned spill - only gate leakage. The first day of monitoring during the second and third weeks, the HOBOS will be cleaned, data retrieved, replaced in the channel, and a crest gate spill will be released. During the subsequent days of monitoring each week, the HOBOS will document how quickly the temp and DO deteriorate in the West Channel. This should provide us with a reference point to discuss the frequency of spills potentially needed to create water quality improvements in the West Channel.

MEETING NOTES

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

August 17, 2016

Final HGM 09-16-16

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Randy Mahan (SCE&G)
Caleb Gaston (SCANA)
Brandon Stutts (SCANA)
Tom McCoy (USFWS)
Bill Marshall (SCDNR)
Dick Christie (SCDNR)
Alex Pellett (SCDNR) via phone

Rusty Wenerick (SCDHEC)
Bill Stangler (Congaree Riverkeeper)
Fritz Rohde (NOAA) via phone
Gerrit Jobsis (American Rivers)
Henry Mealing (Kleinschmidt)
Bret Hoffman (Kleinschmidt)
Jordan Johnson (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 explained that the purpose of the meeting was to discuss the revised Downstream Flow Evaluation Memo. At the WQFW RCG meeting on January 21, 2016, the RCG discussed the initial Downstream Flow Fluctuations Memo. An action item stemming from that meeting was that Kleinschmidt and SCE&G would develop a better routing model for inflows to the Parr Reservoir; compare those inflows to actual project releases as measured by the Alston gage; and use the downstream hydraulic model to examine the differences between a “run-of-river” scenario versus the actual project operational flows, and include the river downstream of the project to the Congaree River gage near the Congaree National Park. The model was reviewed for its ability to produce accurate representations of the flows moving downstream from the Carlisle, Enoree and Tyger gage locations to the Congaree gage location and from the Alston gaged flows down to the Congaree gage. The results were summarized in the revised Downstream Flow Evaluation Memo, which was distributed to the RCG for review on June 9, 2016.

Bret began the discussion by briefly recapping the original analysis and the action items from the prior RCG meeting. He moved into the methodologies used for the flow routing analysis. The methodologies included four tasks broken down as follows.

1. Develop flow data sets for the routing simulations being compared at the USGS gage on the Congaree River at Columbia:
 - Develop a run-of-river inflow data set for the Parr Reservoir node, using a hydrologic routing model (HEC-HMS) based on the three upstream gages.
 - Develop a model input flow data set for the actual Parr flow releases, which are assumed to be identical to the USGS flow data from the Alston gage #02161000.

- Develop a model input flow data set for the ungaged flows between the Alston gage site and the Congaree gage site. This was added independently to the run-of-river inflow and actual Parr flow release data sets.
 - Develop a model input flow data set for the Saluda River flows, which are assumed to be identical to the USGS gage #02169000.
2. Extend the river routing (HEC-RAS) model from the previous terminus at the Columbia dam, down to the USGS Congaree gage at Columbia.
 3. Perform model (HEC-RAS) validation for the existing conditions, by simulating a period and comparing peak values and the timing of flow peaks and comparing with the Congaree gage data.
 4. Performing simulations with the Parr run-of-river data, and comparing with existing conditions.

After reviewing the methodologies used, the group reviewed figures illustrating the modeled Parr inflow and observed flows in the Tyger, Enoree, and Broad River upstream of Parr Reservoir. The figures illustrated that the models respond correctly to different inflow events. The group then reviewed a figure illustrating the models ability to route flows correctly as compared to the observed conditions at the Alston gage and the Congaree gage. Bret noted the difference in flow estimated by the model and the observed Congaree flow. He explained that this is related to contributions from the ungaged tributaries present below the Alston gage. These ungaged inflows were accounted for in the modeling as a pro-rated amount. The ungaged inflow was incorporated into both the run-of-river model simulation and the existing model simulation as to not introduce any bias during comparisons.

The group reviewed comparisons of the run-of-river and existing conditions model simulations. The first showed a situation where a high inflow event occurred at Parr Reservoir and how that affected the conditions in the Congaree. Ray noted that the “pulses” observed on the hydrograph when compared to run-of-river conditions are related to Fairfield operations. He explained that Parr can pass roughly 4,800 cfs through the powerhouse and that flows greater than that result in gate operations. He also noted that Fairfield doesn’t operate when inflows are greater than 40,000 cfs. The group also discussed an event influenced by Saluda operations. Bret pointed out that the comparison in this figure is between simulated run-of-river conditions at the Congaree gage and simulated existing conditions at the Congaree gage to account for the ungaged inflows entering below the Alston gage. This allows for a comparison of the two without introducing any bias created by the ungaged inflows.

Bret continued the presentation of various flow fluctuation events to include an event with influence from both Saluda and Parr. Ray pointed out that the “sawtooth” affect noted in the Congaree existing conditions simulation that wasn’t present in the Congaree run-of-river simulation was related to Fairfield operations. Parr mimics inflows until they are greater than plant capacity (4,800 cfs) or Fairfield operates. These events trigger gate operations at Parr. Bret noted that operations at Parr are very complex. Ray added that SCE&G would like stakeholder input on the importance of limiting fluctuations during high inflow events versus during more normal or stable inflows. Gerrit commented that they would like to see less fluctuations at the end of high inflow events as they could affect sturgeon in the Congaree. Gerrit cited a study that showed sturgeon spawn on the tail end of a high flow event during the spring. Henry asked if Gerrit could provide that report so we could bring that information into the analysis. Bret also reminded that Parr has to lower gates

because it is not a storage project and they have “backwatering” restrictions due to an article in their license.

The group discusses an event related to a Parr release. Ray explained that the spike shown at Alston, and as a result the Congaree, was related to what the operators refer to as an “inventory” spill. Inflows at Parr were slightly higher than plant capacity, so storage in the reservoir was gradually increasing. Eventually, the reservoir was completely filled and the operators had to lower the gates which resulted in the spike in flows downstream. Gerrit pointed out that events like these could have effects on downstream striped bass during their spawning period. The group also reviewed simulations during a prolonged high inflow event. They noted the sawtooth created by Parr gate operations as compared to run-of-river conditions.

Bret concluded the presentation by explaining to the stakeholders that SCE&G wanted the group to be comfortable with the simulations produced by the model which compare run-of-river conditions at Parr with existing conditions at Parr and the differences in flows observed at the Congaree gage site. He added that the model will be made available to the group.

The group shifted discussions to another action item from the prior meeting. SCE&G presented their findings from their discussions with operators about what operational changes could be made to mitigate downstream flow fluctuations. Ray noted that their first finding was that operators are constrained by two parts of their license. Article 39 limits downstream flows to less than 40,000 cfs unless they are exceeded naturally. Section 13 limits the amount they can allow the reservoir to backwater, as this will result in flooding of a railroad line near the project. Ray continued on to note that the crest gate operation is also limited by when plant operators are on site. Gates are generally only operated during the normal business hours on weekdays. There are brief checks on the weekend, but the plant is unmanned. Safety concerns do not allow for remote gate operations. Ray’s final comment was that the addition of the crest gates increased the project head. This resulted in the plant no longer being equipped to run at full hydraulic capacity. Plant hydraulic capacity was effectively lowered from 6,000 cfs to 4,800 cfs. Ray also added that this is also impacted by the number of units available for operation – not under repair. Fewer operational units results in even less ability for the powerhouse to pass flow downstream and results in increased gate operations.

Ray moved the discussion to potential operational modifications. He noted that operators could try to release their inventory spills over a longer period of time by using multiple gate sets. This would reduce the amplitude and increase the wavelength illustrated on the hydrograph. He added that they could install cameras that observe gates 1 and 2 in addition to providing the System Controllers with control of these two gates operations. This would allow for the operation of those two gates remotely when the plant is unmanned. This would allow for the gates to be operated at night and over weekends, reducing spikes downstream created by Fairfield operations. Ray then showed the group a hydrograph illustrating a period where inflows were within the plant capacity. He noted that the hydrograph lacks the “sawtooth”. Gerrit asked if this example accounts for flow attenuation. Ray says that it does not, however inflows from the Tyger and Enoree are minimal in the time period illustrated.

Ray also described potential upgrades to the powerhouse that would increase the plant capacity closer to its original 6,000 cfs. This would increase the amount of time where flows could be routed through the powerhouse, reducing occurrences of the sawtooth created by gate operations. These upgrades are still being evaluated for feasibility.

Ray added that while these proposed changes sound easy, changes to gate operation procedures are very difficult due to the complexity of the system. Gerrit asked what the timeline would be for these improvements post license issuance. Henry commented that the cameras and any changes to gate operations would be started quickly after issuance of the license. Plant upgrades would be more long term covering multiple years into the license. Ray reiterated that they will continue to work with operators on their methods of gate operations. Bill Marshall asked if the model could simulate conditions post-upgrades and what are they exactly. Henry noted that you would no longer have inventory spills when inflows are below 6,000 cfs. Ray added that the group could look at the flow duration curves and quantify how often conditions would be improved. Gerrit added that the group has emphasized improvements during the spawning period, but noted that the benefits could be year around. Ray commented that the upgrades are only being considered because of the increased control over environmental impacts. He added that the pay-back on plant upgrades is long-term and that the upgrades would be a no-go otherwise.

The group decided to pull up flow duration curves for the project. They noted that the proposed powerhouse upgrades would decrease the amount of time where inflows are greater than plant capacity by about 10% annually. They also noted that the most improvement would be during earlier months of the year. The group decided that SCE&G and Kleinschmidt will produce a table with percentages from the flow duration curves at potential plant capacities. Alex added that flow duration curves from the modeled Parr inflow dataset should be used in the analysis. Henry reiterated that the proposed gate operation changes will also reduce the amplitude of spikes in the hydrograph. Bill Stangler asked if the changes in gate operations will affect proposed gate operations to improve water quality in the west channel below Parr Dam. Ray commented that it will not and that they will prioritize the use of gates 1 and 2 when spills are necessary.

After Ray's discussion of SCE&G's findings, Henry asked the group for any questions. Alex P. asked how cross sections and channel slope were calculated in the model for the stretch of river added below Columbia Dam. Bret stated that he will provide Alex with the methods. Gerrit asked if it would be possible to estimate how much the proposed changes will affect spikes at higher flow ranges. Ray commented that the powerhouse upgrades will provide the largest effect, however it's difficult to quantify. He added that the upgrades could be introduced to the model. Bret noted that with more water routed through the powerhouse, there will be steadier releases downstream. Gerrit adds that Figure 9 from Bret's presentation illustrates the event he is most concerned with. Would it be possible to quantify the frequency of these events and how much they could be reduced? How much would the spikes in flow be attenuated? Ray noted that powerhouse upgrades will result in slower inventory accumulation in the reservoir which will result in few spill events. He added that they will decrease amplitude of these spills with the proposed gate operations changes. Gerrit added that he would like to see the benefits quantified with examples of reductions. Rusty asked if the model could be used to add a line to existing graphs showing conditions post upgrades and management operations changes. Bret commented that this request would likely be a very large effort. Gerrit added that he would like to see benefits during spawning periods via lower flow fluctuations in flows during high inflow events. Henry commented that SCE&G does not want to change Fairfield operations to help with fluctuations. He noted that SCE&G and Kleinschmidt will continue to research ways to quantify and report anticipated improvements.

Meeting adjourned. Action items from this meeting are listed below.

ACTION ITEMS:

- Kleinschmidt will provide meeting notes to the group.
- Kleinschmidt will provide methodologies for the additional reach added to HEC-RAS model.
- Kleinschmidt will produce a table of flow duration curve percentages for upgraded capacities using curves produced from the modeled Parr inflow data set.
- Kleinschmidt will provide the model data to Alex P. of SCDNR.
- Kleinschmidt and SCE&G will explore ways to quantify and estimate improvements to downstream fluctuations through the proposed plant upgrades and gate operational changes.
- Gerrit will provide study that shows sturgeon spawning on the tail end of a high flow event during the spring.

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Fisheries TWC Meeting**

September 1, 2016

Final JJJ 09-01-16

ATTENDEES:

Bill Argentieri (SCE&G)	Dick Christie (SCDNR)
Ray Ammarell (SCE&G)	Bill Marshall (SCDNR)
Brandon Stutts (SCANA)	Ron Ahle (SCDNR)
Caleb Gaston (SCANA)	Fritz Rohde (NOAA) via conf. call
Henry Mealing (Kleinschmidt)	Tom McCoy (USFWS) via conf. call
Jordan Johnson (Kleinschmidt)	

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.

Henry opened the meeting with introductions and stated the purpose of the meeting was to review the Monticello Reservoir Habitat Enhancement Report and to finalize any Protection, Mitigation, and Enhancement (PM&E) measures associated with fluctuations of Monticello reservoir. Henry briefly reviewed the information presented in the Monticello Habitat Enhancement report and the origin of the proposed methodologies. Henry commented that SCE&G is no longer considering tree-felling as an enhancement type. Their primary concerns are: boater safety in the event a felled tree breaks away from the shoreline, numbers of trees available for felling in areas marked for enhancements, costs of continued maintenance over the course of the license.

Ron commented that he is concerned with the methodologies presented for spawning enhancements. His primary concerns are related to the durability and longevity of the proposed "kiddie pools." Ron asked if there were any documented reports of success using this methodology. Henry noted that there isn't any documentation and that different ideas and materials for spawning enhancements are open for discussion. Dick voiced his approval of the deep water and nursery enhancement methodologies. He added that SCDNR could investigate tree felling, noting that he thinks that with DNR consultation, it could still be a feasible enhancement. The group returned discussions to the spawning enhancements. Ron suggested that test plots should be tried within the reservoir before full implementation. He noted that SCE&G should monitor the success of the test plots and report back to the TWC.

Henry moved conversations over to the locations and types of structures proposed in the report. The group agreed with the proposed locations, with the caveat that SCDNR might want to fell trees in nursery areas. The group also approved the proposed structures for nursery and deepwater enhancements. Henry asked the group what they wanted in terms of timing of enhancement implementations. The group agreed that SCE&G should plan to install the proposed enhancements within 3 to 5 years after license issuance. Bill A. asked the group how to determine the success of

the structures. Henry recommended the use of underwater cameras. Dick added that you will see evidence of spawning in the spawning structures.

Henry asked the group to discuss spawning enhancements in more detail to try and determine a plan. The group agreed that the spawning enhancements might not be completed in the 5 years after license issuance. Henry commented that the report recommended installing 120 of the proposed 360 structures in the first year of the license and then monitoring for use. Henry suggested that the SCE&G should wait 2 years before revisiting the 120 structures and monitoring for use. Ron added that the structures should be monitored for structural integrity. There were concerns that the pools would not last the life of the license. Ray suggested that the group research manufacturers that produce materials intended for industrial use. The manufacturer could provide a materials list, allowing the group to estimate how long the pool will last. The group also concluded that the types of pools and mixtures of substrates used in the test plot should be varied in order to find the best combination and improve the chances for success. This can be addressed in revisions to the report.

Henry asked the group what would be done if the spawning structures don't work. Ron commented that the group should develop a contingency plan. Ray noted that if the 120 structure test plot fails, that will leave two-thirds of the budget to develop an alternative. Henry commented that the spawning enhancement portion of the PM&E will require an Adaptive Management Plan. Dick noted that the current approach is based on proven methods for spawning habitat enhancements used at the SCDNR hatcheries. The nursery and deepwater enhancements are both proven methods used across the US. Bill A. asked the group if the report should be amended to not suggest that every cove chosen for habitat enhancement should be included in the test plot. Dick noted that the adaptive management plan should state that the technical committee should determine which coves will be included in the test, allowing for flexibility in how the enhancements are implemented.

Caleb and Brandon asked the group if alternative structures that are aluminum could be used as a replacement for the pools. This would remove concerns of structural integrity over time. They also asked if there was a critical depth of pea gravel required in the spawning structures. Dick replied that he will ask hatchery workers for their recommendations. Bill M. asked if the spawning habitat markers in the maps presented in the report correspond to the number shown in the enhancement locations column of the enhancements costing table. Jordan replied that they did not. The report notes that 8 coves around Monticello are being considered for spawning enhancements. The locations denoted in the maps are potential specific locations within those coves defined as spawning habitat during the TWC site visit in May. Ron suggested that the spawning structures be arranged differently in each cove, depending on the target fish species. Ron also suggested that the spawning structures include varying substrate size and types to correspond with the preferences of a target species. Caleb and Henry note that the group could develop a matrix of materials to help with varying spawning structure types and substrate types around the reservoir. This will help the group determine the most effective combination that can be used in the initial test phase and final installation of all of the spawning structures. The group decided that the primary agency involved in the technical committee for enhancement implementation post license will be SCDNR. The group suggested that these points be added in the draft AMP.

The group briefly discussed potential permitting issues that may arise with the USACOE. Bill A. noted that any required permitting will be written into the PM&E measure.

The meeting adjourned. Action items from this meeting are listed below.

ACTION ITEMS:

- Kleinschmidt will edit the report to include comments made during the meeting and will redistribute to the group for approval. – mid October
- Kleinschmidt will edit the map figures included in the report to clarify spawning enhancement areas, as well as add an overview of the coves eligible for enhancements around Monticello Reservoir. – mid October
- Kleinschmidt will develop a draft AMP for the PM&E Measure. - November
- Dick will consult with hatchery workers on critical gravel depths and gravel size – mid October
- Caleb and Brandon will develop a multi-year installation schedule for the proposed enhancements. – end of September
- Ron will research references that support the proposed enhancement methodologies – mid October

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Instream Flows TWC Meeting

September 27, 2016

Final KMK 10-26-16

ATTENDEES:

Bill Argentieri (SCE&G)

Ray Ammarell (SCE&G)

Caleb Gaston (SCANA)

Mike Mosley (SCANA)

Brandon Stutts (SCANA)

Randy Mahan (SCANA)

Shane Boring (Kleinschmidt)

Henry Mealing (Kleinschmidt)

Jordan Johnson (Kleinschmidt)

Bill Marshall (SCDNR)

Dick Christie (SCDNR)

Ron Ahle (SCDNR)

Tom McCoy (USFWS)

Gerrit Jobsis (American Rivers)

Bill Stangler (Congaree Riverkeeper)

Alex Pellet (SCDNR) via conf. call

Fritz Rhode (NOAA) via conf. call

Brandon Kulik (Kleinschmidt) via conf. call

These notes are 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 a brief overview of the agenda and meeting goals. The goal of the meeting was to review the Parr Downstream Flow IFIM Study results, seek agreement on the results, and begin discussions of the potential minimum flow range that should be considered. The group was given handouts of the Wetted Usable Area (WUA) results from PHABSIM and 2D model runs to review.

Shane noted that, with the exception of Study Site 2 (west channel), the WUA tables had been revised to include the additional flow increments requested by SCDNR. Shane reminded all attendees that the goal of the IFIM study is to balance hydropower operations and aquatic habitat. He recommended that the group initially focus on putting boundaries around a flow range for minimum flow discussions. Ron commented that the group should carefully consider the study results before considering what is practical in relation to project operations. Caleb commented that the group should always keep project limitations in consideration when discussing the results as to not discuss flows/scenarios that aren't possible. Gerrit stated that he was expecting a habitat duration and/or dual flow analyses but did not see these items in the report. Shane said that the group should discuss and approve the raw WUA vs flow relationships contained in the PHABSIM model runs prior to discussions about next steps, which then could include the habitat duration and/or dual flow analyses. Gerrit noted that habitat duration is a very important aspect in making a minimum flow recommendation. Gerrit also provided the group with a brief explanation, noting that habitat duration allows the WUA data to be analyzed based on how often different flows occur at the Project. Brandon K. commented that the group should discuss and specify timeframes addressed in any duration analysis; annual/monthly vs. seasonal vs. periods of low flow. Shane added that due to the large of WUA output for the various species and lifestages, the group also

needs to discuss “driver” species or study sites as to narrow down the dataset for any additional analysis.

Shane opened a PowerPoint presentation outlining the IFIM study. Reach 1 of the study is located from Parr Dam to the downstream end of Hampton Island. Reach 2 of the study is located from the downstream end of Hampton Island to the downstream end of the Bookman Island complex. These study reaches are primarily influenced by the Project with little inflow from tributaries. The only tributary of note is Little River, located just upstream of Bookman Island. Shane gave a brief overview of each study site, including their locations and characteristics. Shane made a special note of study site 9, located at Huffman Island, as it was originally slated for 2-D modeling. He explained that the TWC decided 2-D modelling of study site 10 (Bookman Island) would be sufficient and any flow recommendations would be verified by a site visit to study site 9.

Shane moved on to explain how the east and west channels below the dam, separated by Hampton Island, were analyzed. The west channel had its own calibration flows and was analyzed separately from the rest of the reach. The east channel, which encompasses all flow passed through the powerhouse, followed the 400, 2000, 6000 cfs calibration flows conveyed throughout the rest of the study area. Shane also gave a brief overview of the fish passage analysis completed as part of the IFIM study. Shane wrapped up his overview of the study by providing a table illustrating the target species, lifestage, Habitat Suitability Curve (HSC) sources, and guilds assigned during study scoping. He noted that recent comments from SCDNR were incorporated into the table. Brassy jumprock and robust redhorse were changed to the “deep fast; shallow fast” guild. Shane also explained one change made to HSC source data for smallmouth bass included data from a study in Deerfield River in MA.

Shane moved discussions over to the study results for each study site.

West Channel (study sites 1,2 and 4). The group started with discussions of site 1 in the upper West Channel. Shane explained the elevation data used to analyze pool volumes in study site 1; including DEM data collected by Glenn Associates, ADCP data collected by Watercube, and point elevations collected by Kleinschmidt and Glenn Associates. Henry also provided a brief discussion of methods and data collected during the 2016 West Channel Water Quality. He explained how those data will be used in ongoing discussions of conditions at Study Site 1. Shane wrapped up the West Channel IFIM results with a review of study site 4. He explained that the site was a “wetted perimeter” transect that is backwatered somewhat buy flow from the east channel, and showed the group the results of the analysis.

Shane then moved the group into discussions of the east channel and Reach 2 study sites.

East Channel

Study Site 3 is located immediately downstream of the Parr powerhouse. Shane noted the site has higher velocities and therefore the “slow” guilds and species returned poor results. Ron noted that the WUA table for study site 3 contained multiple flows that had 100% of available habitat. Shane explained that this was simply rounding by Microsoft Excel and that edits would be made to the tables. The group briefly discussed why the site was given the moniker “sucker city”. Ron explained that this is a result of observations made during electrofishing efforts in the area for robust redhorse spawning grounds.

Study Site 5. Shane gave a brief overview of the results, explaining that this site was deeper. Gerrit asked if it is known how water partitions into the east and west channels. Henry said that most of the flows from the powerhouse move down the east channel and that water released through the spillway gates moves to both channels (especially dependent upon which gates are releasing). The 2016 West Channel Water Quality Study should provide additional understanding of this relationship. Study site 6 results showed that optimal WUA ranges between 1,000-1,500 cfs for most of the species/guilds. Shane explained that the small “bumps” seen in the WUA curves at 5,000 cfs are artifacts of the hydraulic model. The group noted a few errors in the WUA tables that will be corrected. Dick noted that he would like to review the report again with any edits resulting from the meeting. Henry replied that the report and WUA tables would be redistributed to the group for review.

Downstream study sites

Shane returned discussions to **study site 6** by asking Ron to give a brief review of why the site was chosen for analysis. Ron commented that the site is a slate belt run with deeper pockets that is very important to the smallmouth bass fishery as it offers some of the best smallmouth bass fishing habitat in the river. He noted that the site also provides cover and habitat for juveniles in the shallower areas. Shane added that this site represents a situation where smallmouth bass could be a “driver” species when evaluating a minimum flow.

Study site 7 WUA peaks around 600-1,200 cfs. Shane also briefly mentioned that this site contained two passage points that were analyzed for fish and navigational passage.

Study site 8 (Haltiwanger Island) peak WUA values occur between 500-1,500 cfs. Shane explained that there was one transect located in each channel around the island; each one was independently modeled. Shane pointed out “fluctuations” in the WUA curves, explaining that this resulted from combining the PHABSIM results for each transect into one graph for analysis. He mentioned that higher flows were likely needed to provide the most habitat at this site. This is a result of the very wide and shallow nature of the western channel. **Study site 8** was the final site analyzed using PHABSIM. Gerrit commented that this site could be good for assessing seasonal and interannual flows, explaining that the project lends itself to providing more water during high flow years. Henry commented that while this is true, SCE&G will need an “or inflow” component with any minimum flow recommendation. Ray A. added that this should already be happening as Parr does not store any water. High flow years should be reflected in the flow record. Ron commented that if seasonal flows might be considered for a minimum flow recommendation, the group needs to be sure and consider all the different species if spawning seasons will be used.

Study site 10 (the Bookman Island complex). Shane explained that it was modeled with the program River2D due to the complexity of the reach including multiple channel bifurcations and patches of habitat. He explained that elevations throughout the reach were collected using a combination of methods. Elevation data were first collected during a flyover of the area using georeferenced aerial photogrammetry methods during low flows (400-600 cfs) in December 2014. These data were supplemented with additional field data collections with survey grade GPS. These elevation data were the basis for the River2D analysis. Shane broke down the WUA results, noting that the peaks tend to be around 1,000 cfs, with smallmouth bass peaking around 3,000 cfs.

Gerrit asked the group how the study sites should be weighted based on the varying analysis methods (1D/PHABSIM vs. River2D). Shane and Brandon K. explained that results could be weighted according to river linear length or they could not be weighted at all (these are the representative reach vs. critical habitat approaches). Shane added that results presented for each study site are standardized at WUA per 1,000 linear feet of stream, so study sites can be compared regardless of their length differences. The group noted that the WUA results could be also be weighted utilizing the results of the Mesohabitat mapping assessment, if the representative reach approach is chosen.

Zone of Passage

Shane reminded the group of the fish passage portion of the IFIM analysis. He gave the group an overview of the results noting the flows required to meet the passage criteria. The ledge at study site 7 meets fish passage criteria at 500 cfs. The ledge upstream of Bookman Island meets the criteria at 700 cfs. Shane summarized that most sites experience optimum WUA between 800 and 1,200 cfs.

Discussion of further analysis

Shane explained to the group that he would like to take the results presented to the group and discuss driver species and sites individually. Gerrit asked if the sites could be prioritized by suitability for species. He explained that he would like to see WUA comparisons by species across multiple sites, in addition to WUA comparisons by site across multiple species. Ray displayed flow duration curves (FDC) to the group that were developed utilizing a prorated inflow dataset used by the Project Operations Model. The group reviewed monthly flow duration curves, noting the 90% and 50% exceedance flows. Henry explained that he wanted the group to see these in response to Gerrit's comment about analyzing the WUA data in light of what flows are available in the river. The group broke for lunch, planning to have a workshop session in the afternoon to narrow down driver species and flow ranges to be addressed in any further analysis.

Workshop session

The group opened up the "workshop" session after lunch by constructing a calendar with the flows from the FDC review (Appendix A). They added bio-periods to the calendar based on species/guilds of importance. During the "workshop" session, Gerrit offered up a suggestion for how to analyze the WUA data by species rather than study site. He created an example table using the American Shad WUA from each study site (Appendix A). The group approved of Gerrit's suggestions, and created similar tables for adult smallmouth bass and robust redhorse/deep-fast guild. The tables allowed the group to rank/prioritize the study sites based on the available WUA.

After the workshop session, the group returned to the tables for discussion. Henry and Shane asked the group if there were priority species or study sites that the group is considering. Ron and Gerrit identified American shad, robust redhorse, and adult smallmouth bass as priority species. Ron added that smallmouth bass continues to be an important fishery for the SCDNR. Ron also pointed out that while study site 3 offers unique habitat for suckers not found in other parts of the river, it shouldn't take precedence over downstream study sites when evaluating for minimum flow. Since it is close to the powerhouse, conditions there remain relatively stable no matter the flow.

Henry provided a recap of what the TWC discussed in the meeting. He noted that the WUA tables will be presented by species rather than by study site. He noted that the group will need to continue to narrow the flow ranges discussed in order to start establishing minimum flow recommendations. He also noted that SCE&G would like to have 3 or less seasonal minimum flows in a year.

Seasonal Flow Targets

Caleb G. asked the group if they could identify periods of time where they would like to see certain minimum flows (i.e. bio-periods). He noted that this doesn't require a particular flow recommendation, just a general description such as low, medium, and high. The group referred back to the calendar produced during the "workshop" session. The group considered the exceedance flows provided by the inflow flow duration curves and the time periods identified that are of importance to the various species and guilds. They identified a period of "high" minimum flows starting February 15th and extending until May 15th or 30th depending on river conditions. The minimum flow would then drop back to a "medium" flow through June 30th. The "low" minimum flow period would extend until November 30th and then returning to "medium" flows until the following February 15th. The flow periods are illustrated in the attached tables. Henry asked the group if they could identify potential flows they would like to apply to the "low, medium, and high" flow periods. After clearly explaining that additional information (i.e. habitat duration) and analysis (i.e. dual flow) were needed before final recommendations could be made, Gerrit recommended for discussion purposes 2,500 cfs for the "high" period, 1,800 for the "medium" period, and 1,200 for the "low" period. SCE&G identified 2,000 cfs for the "high" flow, 1,300 cfs for the "medium" flow, and 700 cfs for the "low" flow period. Henry encouraged the other stakeholders and agencies to provide specific flows as this issue is resolved.

Habitat Duration

The group turned discussions back to the habitat duration analysis. Gerrit reiterated that applying the flow duration data to the WUA data would allow the group to make a flow recommendation that best benefits aquatic habitat. He noted that the analysis will also provide the group with more information to identify time periods that should be grouped into the low, medium, and high minimum flow periods. Brandon commented that completing the flow duration analysis can be accomplished utilizing existing data presented during the meeting.

Ray and Bill A. reiterated to the group that it's important to consider plant operations when recommending minimum flows. Ray explained that SCE&G currently calculates minimum flow as inflow minus evaporative loss. He added that current maximum evaporative loss is 118 cfs; however, this will increase to 180 cfs when the new nuclear units begin operating. SCE&G needs enough room between inflows and minimum flow requirement to account for these variables. SCE&G will review how inflows are currently calculated to ensure they are not overestimating. They will also review their compliance records to identify times where they struggled with maintaining minimum flows and see if the suggested flow ranges fit with their capabilities.

Brandon K. asked the group if there were species or guilds currently being analyzed that can be removed from future analyses. Ron recommended that the shallow-slow guild be removed. Gerrit added that the group most discussed robust redhorse, American shad, smallmouth bass, and the deep-fast guild during the "workshop" discussions.

Dual Flow analysis

Bill A. asked the group if the dual flow analysis still needed to be considered. Shane asked if, with the emphasis put on the habitat duration analysis, the dual flow analysis was still the best tool. Henry noted that the findings from the Downstream Flow Fluctuation Group could replace the dual flow analysis. He added that the TWC could incorporate the IFIM data into recommendations to SCE&G on an operational band for them to try and stay between while operating the project. He

noted that this could be included in an adaptive management plan and would provide a way for SCE&G to evaluate how they are managing downstream fluctuation flows while benefitting aquatic habitat. Gerrit replied that he is willing to suspend a dual flow analysis until after the results of the habitat duration analysis is presented. He explained that the dual flow analysis may provide a means of quantifying the effects of large spill events and offers a way to mitigate later.

The group discussed an operational band for Parr. Gerrit and Henry explained that there would be a target release for the project with an upper and lower band. There wouldn't be any penalty for operating below or above the target flow, as long as the project operated within the band. This could provide a means to mitigate instances where there are peaks and valleys created within the hydrograph by Project operations. Henry reiterated that this would be a means for the group to evaluate the success of SCE&G's operational changes to address project influenced flow fluctuations. Henry also reminded the group that they should consider low inflow protocols as part of their recommendations. Gerrit added that an operational band is about providing a buffer for project operations. He provided an example to the group. The minimum flow could be 1,200 cfs, if inflow were at or above 1,500 cfs. If inflows drop below 1,500 cfs, the minimum flow could, for example, drop to 1,000 cfs to allow for operational needs. Gerrit added that an operational band would allow for flexibility during low inflow periods, while also providing an opportunity for flows to be higher than a prescribed minimum flow requirement when there were higher inflows.

Gerrit asked if the group was still considering stabilization flows during spawning periods. Bill replied that it is still being considered, and will be addressed in the next Downstream Flow Fluctuations TWC meeting in October.

The meeting adjourned. Action items from this meeting are listed below.

ACTION ITEMS:

- Kleinschmidt - prepare meeting notes
- Kleinschmidt - increase detail of higher range of flows for Study Site 2
- Kleinschmidt - edit errors identified in the WUA table percentages
- Kleinschmidt - edit WUA tables and curves. Data by species/guild rather than study site.
- SCE&G - review how inflow is calculated by the operators, ensure not overestimating
- SCE&G - review compliance records to establish times where maintaining minimum flows were an issue. See if the TWC's suggested flow ranges match up with capabilities.
- Kleinschmidt - remove Shallow-Slow guild from list for further analyses
- All TWC Members - provide recommendations for upper and lower operational limits based on WUA tables
- Kleinschmidt - prioritize transects based on mesohabitat data
- Kleinschmidt - develop habitat duration curves

Workshop Attachments

American Shad			
Transect	75% WUA Flows (cfs)	WUA Units	Rank
SS3	750-7,000	238k-294k	5
SS5	200-2,500	61k-79k	6
SS6	700-6,000	244k-309k	4
SS7	700-10,000	283k-373k	3
SS8	1,750-10,840	618k-791k	1
SS10	800-20,000	398k-524k	2

Deep Fast/Robust Redhorse			
Transect	75% WUA Flows (cfs)	WUA Units	Rank
SS3	2,600-5,000	188k-244k	1
SS5	500-1,150	32-43k	4.5
SS6	3,000-4,000	146-163	2
SS7	1,200-3,000	34-42	5
SS8	5,000-10,800	67-90	3
SS10	1,500-4,000	32-42	5

Smallmouth Bass Adult			
Transect	75% WUA Flows (cfs)	WUA Units	Rank
SS3	1,200-4,500	96-128	5
SS5	400-3,500	67-89	6
SS6	1,200-6,000	220-293	3
SS7	600-3,000	196-261	4
SS8	2,500-7,180	341-455	2
SS10	2,500-7,000	387-516	1

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Recreation TWC Meeting**

October 6, 2016

Final ACJ 10-28-16

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Beth Trump (SCE&G)
Brandon Stutts (SCANA)
Caleb Gaston (SCANA)
Randy Mahan (SCE&G)
Dan Adams (SCE&G)
Brandon McCartha (SCE&G)

Bill Marshall (SCDNR)
Dick Christie (SCDNR)
Gerrit Jobsis (American Rivers)
Jeff Carter
Billy Hendrix
Alison Jakupca (Kleinschmidt)
Henry Mealing (Kleinschmidt)

These notes are a summary of the major points regarding the Recreation Use and Needs Study presented during the meeting and are not intended to be a transcript or analysis of the meeting.

Alison Jakupca opened the meeting and noted the following goals for the TWC meeting:

- Review the results of the 2015/2016 Recreation Use and Needs Study (RUNS) as presented in the draft RUNS report.
- Review any TWC comments necessary to finalize the RUNS report.
- Create a list of measures, supported by RUNS study results, the TWC feels that SCE&G should consider as PM&E measures for the Settlement Agreement.

Alison provided the group with a presentation reviewing the Parr and Monticello RUNS study results. The presentation has been attached to these meeting notes for reference. The group discussed each recreation area included in the study and the use and user opinions documented for each site. Dick Christie noted that the use numbers documented in the study report appear to be higher than what may actually be occurring at the Project. Alison noted that the recreation days reported in the RUNS report were likely over-estimates due to the FERC-accepted methodology used to estimate recreation days. Traffic counter data, which was used to estimate recreation days, counts every vehicle that enters a site, even if that vehicle is just passing through and the individual(s) is not staying to recreate at the facility. This has the potential to provide high “use” numbers, especially at the sites with easy road access or double entrances/exits. Dick also added that there was very little detail in the report regarding the ADA/barrier free status of the facilities. Barrier free access information will be added into the RUNS report prior to finalizing it (action item). Several other TWC members provided additional report edits that will be captured in the final report.

Although each recreation site was discussed and assessed for potential enhancement needs as presented below, there was extended discussion regarding the Enoree River Bridge Informal Access Area. This area is, in large part, located outside the Project boundary. TWC members emphasized the importance of this site for paddlers and the poor condition of this site as it currently exists. TWC members asked SCE&G to consider ways to support the effort to improve this site. SCE&G stated that development of this site would have to involve agreement by the U.S. Forest Service. Individual site recommendations by the TWC are further detailed below:

Monticello Reservoir:

Scenic Overlook:

- Lighting
- Additional Fishing Pier
- Additional Picnic Tables

Highway 215 Boat Ramp:

- Lighting on/near the dock and boat ramp
- Improve or repair existing boat dock

Highway 99 Informal Access Area:

- Fishing Pier
- Benches
- Picnic Tables
- Restroom (? - may not be possible due to access to utilities)
- Lighting (?)

Highway 99 Boat Ramp

- Improvement to boat ramp in cove – lower end of boat ramp drops off
- Year-round access to restrooms
- Lighting on ramp
- Fishing pier (SCDNR recommendation)

Recreation Lake:

- Regular maintenance and upkeep
- No new facilities or improvements recommended

Parr Reservoir:

Cannon's Creek:

- Boat ramp expansion and/or improvement
- Restroom improvements
- Fishing pier
- Courtesy dock
- Additional lighting

Heller's Creek:

- Boat ramp expansion or improvement to make more useful at low water
- Restroom improvements
- Fishing pier
- Courtesy dock
- Additional lighting

Highway 34 Primitive Ramp:

- Improve grading and boat launch
- Parking area improvements
- Remove large trees that hinder vehicle access to ramp

Enoree River Bridge Informal Access Area (non-Project):

- SCE&G to determine where Project boundary ends and work with the USFS to see if there are ways to improve access
- Non-motorized boat access - canoe/kayak step down facility
- Turn-around area
- Parking for 6 vehicles

Broad and Enoree River Waterfowl Areas:

- No new facilities or improvements recommended

Although not included in the RUNS study, the TWC discussed plans to bring the temporary downstream canoe portage around Parr Shoals Dam into the Project boundary as a formal facility. Bill noted that SCE&G plans to include the canoe portage in the Recreation Management Plan submitted to FERC as part of the new license.

SCE&G staff noted that they would review the list of PM&E measures developed for each recreation site to determine feasibility. Subsequent discussions on site improvements will take place with the TWC after SCE&G's review. Kleinschmidt will incorporate a "barrier free" assessment into the final RUNS report, along with other edits provided by the TWC. Once edits are incorporated a final report will be issued to the TWC and RCG.

The meeting adjourned and action items are listed below.

ACTION ITEMS:

- Kleinschmidt will prepare meeting notes for distribution to the TWC.
- SCE&G to review list of TWC recommended enhancement measures to determine feasibility.
- Kleinschmidt will include "barrier free" assessment in the final RUNS report.
- Kleinschmidt will incorporate edits provided by TWC members into RUNS report and finalize.

Parr Hydroelectric Project – Recreation Use and Needs Study

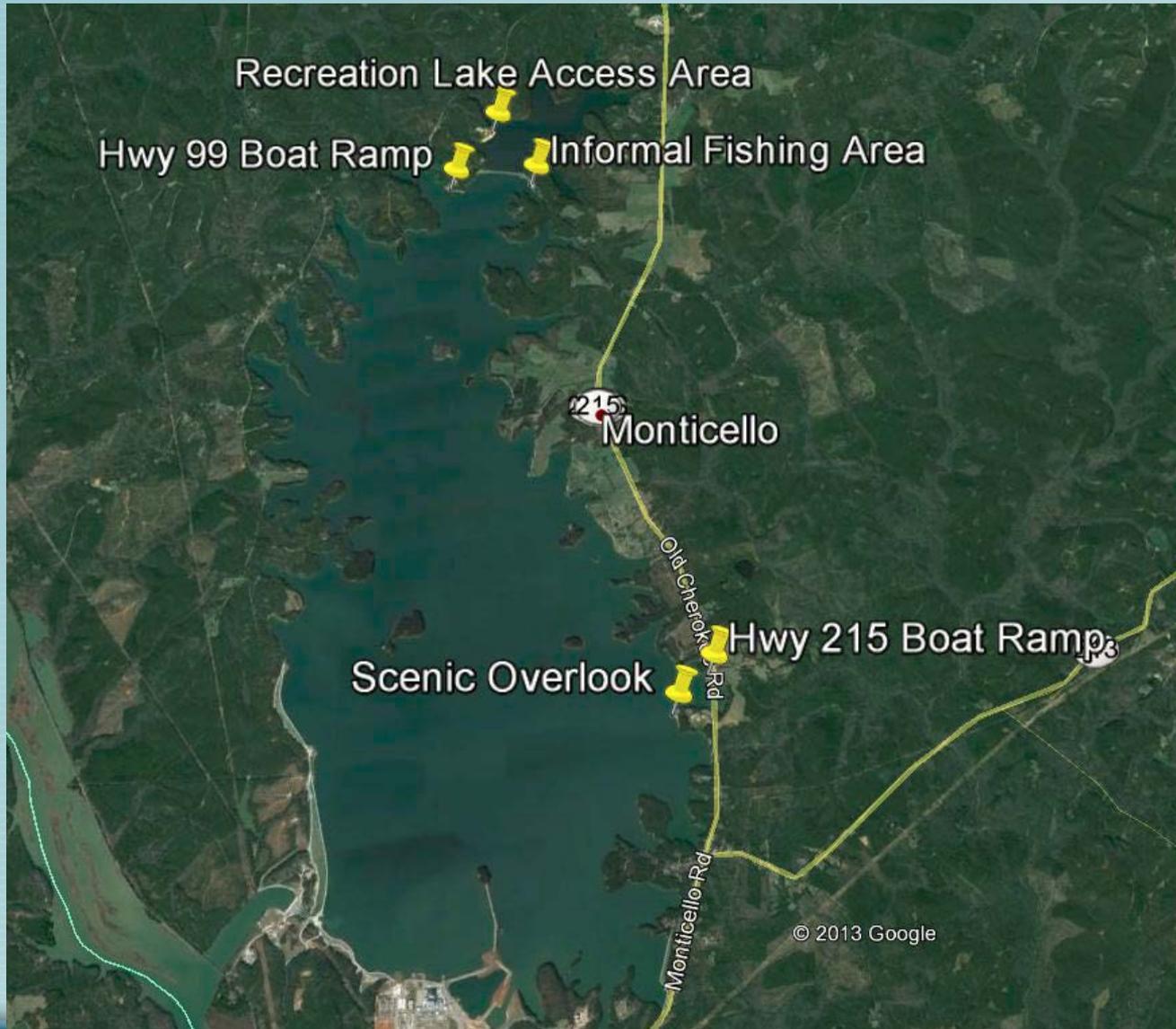
Draft Study Report Review Meeting

October 6, 2016

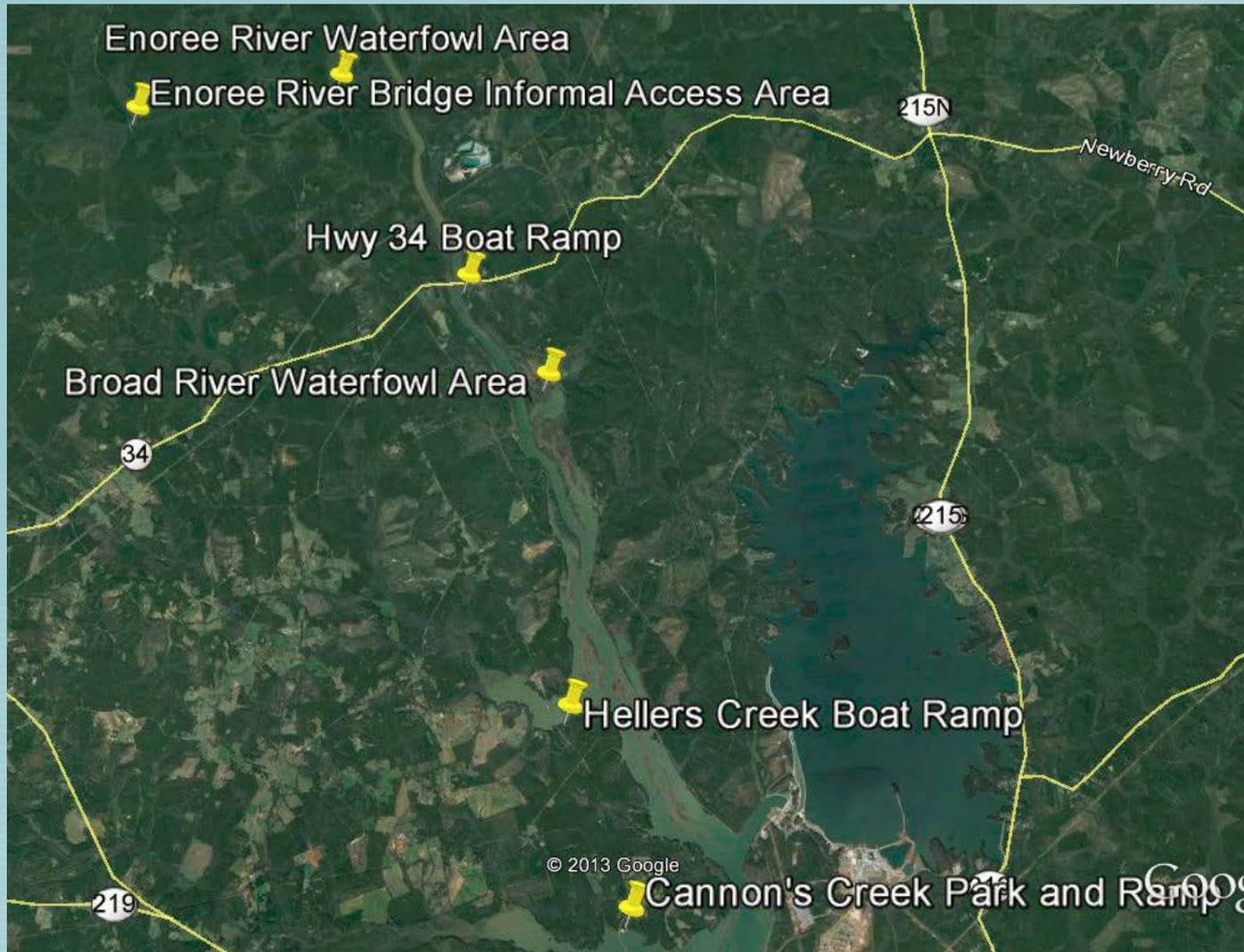
Study Objectives

- Characterize the existing recreation use of the Project recreation sites (type, volume, daily patterns).
- Characterize use of waterfowl areas and SCE&G recreation lands by hunters.
- Identify future recreation needs at the Project.

Study Area - Monticello



Study Area - Parr



Assessment Metrics

Recreation Sites and Informal Areas	Project Facility	Site Inventory	Vehicle Counts	Exit Interviews	Mail-in Surveys	Spot Counts
Monticello Reservoir						
Scenic Overlook (SCE&G-maintained portion)						
Highway 215 Boat Ramp						
Highway 99 Boat Ramp						
Recreation Lake Access Area						
Highway 99 Informal Fishing Area						
Parr Reservoir						
Cannon's Creek Public Access Area						
Heller's Creek Public Access Area						
Highway 34 Primitive Ramp						
Broad River Waterfowl Area						
Enoree River Waterfowl Area						
Enoree River Bridge Informal Access Area						

Study Season

	Monticello Reservoir	Parr Reservoir/Enoree Waterfowl
Primary Site User Interviews	April 1 - September 7, 2015	April 1 - September 7, 2015
Waterfowl Mail-in Survey Distribution: Early Teal Season and Goose	September 11 - September 26, 2015	September 11 - September 26, 2015
Waterfowl Mail-in Survey Distribution: Duck and Canada Geese Seasons	November 21 – 28, 2015, December 12, 2015 - January 31, 2016	November 21 – 28, 2015, December 12, 2015 - January 31, 2016
Waterfowl Mail-in Survey Distribution: Late Canada Geese Season	February 14- February 29, 2016	
Early Crappie Season Site User Interviews	February 1 - March 31, 2016	

Overview: Monticello

- Use by local residents (Fairfield, Lexington, Newberry, Richland).
- Reason for choosing Monticello:
 - Close to home
 - Good fishing
- Island Use (15% of water recreators): bank fishing and camping.
- Early crappie season – March weekdays.

Monticello: Scenic Overlook





Monticello Reservoir: Scenic Overlook

- Amenities: Swimming, Restrooms, Barrier-free dock fishing, Bank fishing, Picnicking.
- Primary Activities: Bank fishing and pier fishing.
- Condition Rating: 4.42
- Crowdedness Rating: 2.08
- Density Rating: 8%(wd); 17%(we)

Monticello Reservoir: Scenic Overlook



- Facility/Amenity and Improvement Requests:
 - Fishing pier/dock
 - Picnic tables/shelter
 - Grills
- Other findings:
 - Monticello site receiving greatest amount of use.
 - High use during early crappie season.

Monticello: Highway 215 Boat Ramp



Monticello Reservoir: Highway 215 Boat Ramp



- Amenities: Boat Ramps; Courtesy Dock; Picnic Shelter.
- Primary Activity: Boat fishing
- Condition Rating: 4.44
- Crowdedness Rating: 2.42
- Density Rating: 62%(wd); 138%(we)

Monticello Reservoir: Highway 215 Boat Ramp



- Facility/Amenity and Improvement Requests:
 - Restrooms
 - Lighting
 - Dock improvements
- Other findings:
 - Monticello site receiving highest condition rating.
 - Supports high level of bank fishing (17% of use).

Monticello: Highway 99 Access Area





Monticello Reservoir: Highway 99 Access Area

- Amenities: Boat ramps (3); Restrooms; Courtesy dock; Picnic shelters, Picnic tables; Grill.
- Primary Activity: Boat Fishing.
- Condition Rating: 4.17
- Crowdedness Rating: 2.70
- Density Rating: 28%(wd); 49%(we)



Monticello Reservoir: Highway 99 Access Area

- Facility/Amenity and Improvement Requests:
 - Lighting
 - Restroom improvements/year-round access
- Other findings:
 - Overall, respondents did not feel any additional facilities were needed.
 - Highest crowdedness rating of all sites.
 - Waterfowl hunter access area.

Monticello: Recreation Lake Access Area





Monticello Reservoir: Recreation Lake Access Area

- Amenities: Boat Launch; Beach Area; Picnic Shelters; Grills; Hiking Trail; Restrooms.
- Primary Activity: Swimming, Boat Fishing.
- Condition Rating: 4.0
- Crowdedness Rating: 2.05
- Density Rating: 12%(wd); 38%(we)



Monticello Reservoir: Recreation Lake Access Area

- Facility/Amenity and Improvement Requests:
 - Picnic tables/shelters, parking
 - Restroom improvements/year-round access
 - Ice/vending/concessions
- Other findings:
 - Overall, respondents did not feel any additional facilities were needed.

Monticello: Hwy 99 Informal Fishing Area





Monticello Reservoir: Hwy 99 Informal Fishing Area

- Amenities: Shoreline access and parking area
- Primary Activity: Bank fishing
- Condition Rating: 4.24
- Crowdedness Rating: 1.90
- Density Rating: 62%(wd); 81%(we)



Monticello Reservoir: Hwy 99 Informal Fishing Area

- Facility/Amenity and Improvement Requests:
 - Restrooms
 - Picnic tables/shelters, Trash cans, Water fountain
 - Fishing pier/dock
 - Benches/seating
 - Lighting
- Other findings: High use during early crappie season.

Overview: Parr

- Use by local residents (Newberry)
- Reason for choosing Parr:
 - Good fishing
- Water-based recreation activities (boat fishing and bank fishing)

Parr: Cannon's Creek Public Access Area





Parr Reservoir: Cannon's Creek Public Access Area

- Amenities: Boat launch; Picnic shelters; Grill; Restrooms.
- Primary Activity: Boat fishing
- Condition Rating: 3.95
- Crowdedness Rating: 1.93
- Density Rating: 28%(wd); 51%(we)



Parr Reservoir: Cannon's Creek Public Access Area

- Facility/Amenity and Improvement Requests:
 - Boat dock/Fishing pier, Boat launch
 - Lighting
 - Restroom improvements
 - Boat ramp improvements
- Other findings: Received highest use of Parr facilities.

Parr: Heller's Creek Public Access Area





Parr Reservoir: Heller's Creek Public Access Area

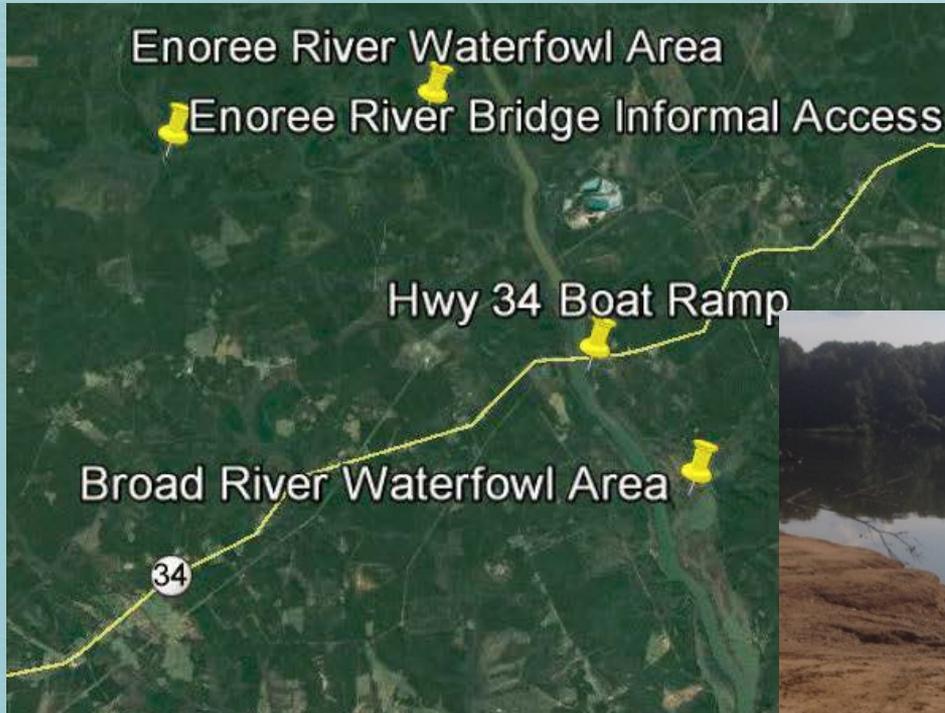
- Amenities: Boat launch; Picnic Shelters/tables; Restrooms.
- Primary Activity: Boat fishing
- Condition Rating: 3.81
- Crowdedness Rating: 2.31
- Density Rating: 18%(wd); 35%(we)



Parr Reservoir: Heller's Creek Public Access Area

- Facility/Amenity and Improvement Requests:
 - Boat dock/Fishing pier
 - Boat launch (44%)
 - Lighting
 - Restroom improvements
 - Boat ramp repairs
- Other findings:
 - Quite a few comments regarding access limitations (siltation).

Parr: Hwy 34 Primitive Ramp

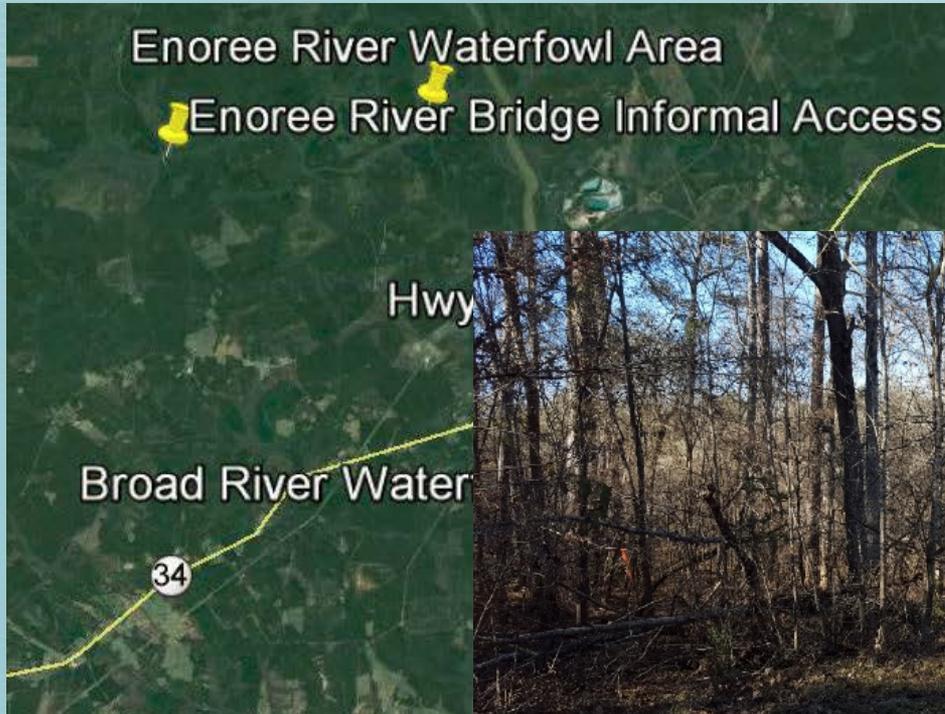




Parr Reservoir: Hwy 34 Primitive Ramp

- Amenities: Parking and gravel/earthen boat ramp.
- Received approximately 16% of total use at Parr development sites.
- Other findings: Highly utilized by waterfowl hunters. Focus group attendees noted that they would like for this site to remain primitive.

Non-Project: Enoree River Bridge



Non-Project: Enoree River Bridge



- Amenities: Primitive ramp on USFS property.
- Estimated 1,342 recreation days based on vehicle traffic and an estimated 2.15 people per vehicle.
- April was the highest use month.
- Other findings: One of the primary sites used by waterfowl hunters (focus group results).
- Received approximately 5% of use experienced at three SCE&G maintained access areas.

Waterfowl Management Areas

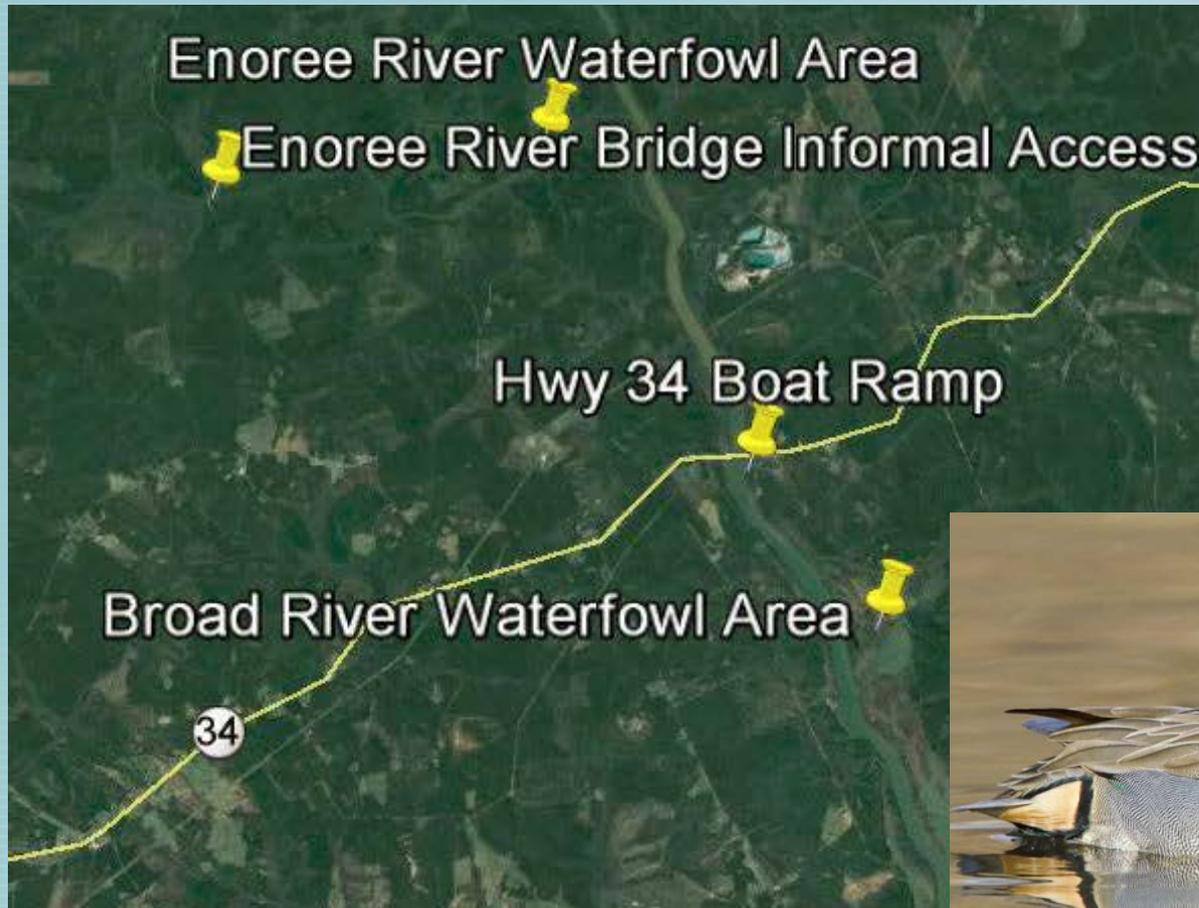


Photo credit: Audubon.org

Waterfowl Management Areas:

Monticello Reservoir

- Site Characteristics: Waters of Monticello Reservoir considered WMA; Available for hunting on Wednesdays and Saturdays.
- Use: Primarily Saturday use.
- Additional Findings: In general, no additional facilities or improvements were requested by Monticello Reservoir waterfowl hunters at focus group. Survey respondents requested additional lighting, bathrooms, deeper boat landing.

Waterfowl Management Areas:

Parr Reservoir

- Site Characteristics: Portions of Parr designated as WMA and available for hunting Monday through Saturday.
- Use: Primarily Saturday use; Highway 34 and Enoree River Bridge Informal Access (focus group attendees).
- Additional Findings: High reporting of crowding. Requests for days/times to be limited.

Waterfowl Management Areas: Enoree River Waterfowl Management Area

- Site Characteristics: Category II, Saturday AM only.
- Use: Estimated 263 recreation days during waterfowl season based on vehicle traffic and an estimated 2.15 people per vehicle.
- Additional Findings: DNR's estimated use was 131 people, which could indicate that people are traveling to the site individually.

Waterfowl Management Areas:

Broad River Waterfowl Management Area

- Site Characteristics: Category I WMA: draw-hunt site.
- Use: 7 lottery hunts and 1 youth hunt held in 2015/2016.
- Additional Findings: In general, users are pleased with this site. No additional facility/improvement needs noted.

Data Summary & Future Use

- Project is well used (152,709 recreation days).
- Populations projected to increase by 12.9 percent from 2015 to 2030 – Primary recreation activities anticipated to remain the same.
- Project recreation sites in good to very good condition (average Project rating of 4.17).
- Crowdedness ratings low to moderate.

Data Summary & Future Use

- Monticello:
 - Water-based recreation activities (boat fishing).
 - Island Use (15% of water recreators): bank fishing and camping.
 - Facility/Amenity requests: picnic tables, shelters, lighting, restroom improvements/access and fishing piers or docks.

Data Summary & Future Use

- Parr:
 - Water-based recreation activities (boat fishing and bank fishing).
 - Facility/Amenity requests: boat launching/docking facilities, additional lighting and restroom improvements.

Data Summary & Future Use

- Waterfowl Hunting Areas:
 - Project area well used by waterfowl hunters.
 - Primarily local residents (Monticello); residents of surrounding counties – Richland and Lexington (Parr).
 - Hunting pressure noted as the primary concern at Enoree Waterfowl Area and Parr Reservoir by waterfowl hunters.

PM&E Discussion

- What is requested?
- What is possible?
- What is appropriate?

MEETING NOTES

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

October 18, 2016

Final KMK 11-17-16

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Randy Mahan (SCE&G)
Caleb Gaston (SCANA)
Tom McCoy (USFWS) via phone
Fritz Rohde (NOAA) via phone
Bill Marshall (SCDNR)
Dick Christie (SCDNR)
Ron Ahle (SCDNR)

Rusty Wenerick (SCDHEC)
Gerrit Jobsis (American Rivers)
Charlene Coleman (American Whitewater)
Bill Stangler (Congaree Riverkeeper)
Henry Mealing (Kleinschmidt)
Kelly Kirven (Kleinschmidt)

These notes are 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 by reviewing the action items from the previous meeting. He then gave a recap of the proposed operational changes that SCE&G will explore to control downstream fluctuation flows, including installation of a camera on crest gates 1 and 2, improvements on reservoir inventory control, generator upgrades, and instantaneous minimum flow. SCE&G may evaluate inventory control improvements and generator upgrades by testing the inventory control first and generator upgrades when they are complete, approximately 10 years after the license is issued.

The group then began to discuss the “14-day stabilization flows” that were first brought up at the previous RCG meeting. Ray presented data showing inflow versus plant capacity from 2007 through 2016. Ray highlighted years where inflows were high and stabilization may not be possible. When inflow is higher than plant capacity (4,800 cfs), SCE&G cannot control downstream flows. Henry said that forecasting rain events is not always reliable, so it may be difficult to determine a block of time to target stabilization efforts. Gerrit agreed and suggested targeting several different time periods for different species. He also said that American Rivers envisions more of a naturalization instead of stabilization, where inflows equal outflows, instead of having a steady flow. He would like to see natural flows in the river that fish have adapted to over time. Ray pointed out that areas where inflow could equal outflow wouldn’t necessarily be naturalization, since projects located above Parr regulate flows as well.

Ray then shows a graph that compares inflow versus outflow for the years 2012 and 2015. In 2012, outflow varied some from inflow because of generation. Dick said that when flows change from 2,000 cfs inflow to 4,000 cfs outflow on a roughly weekly basis over the course of a month, this might be an opportunity to stabilize flows. He believes this would have a positive impact on fish.

Gerrit said daily inflows in Ray's graph don't show hourly affects, where high spikes in flow are more common. He said daily flows mute out hourly flows and hourly impacts of Fairfield should be considered. In the 2015 graph, flows are lower and closer to the hydraulic capacity of the plant, therefore you don't see the impacts of Fairfield as often. When flows are lower, outflows match up to inflows more frequently. The group looked at hourly flows from March 2012 and it was easy to discern when units were running, which show up as blocks of flow from generation. Gerrit said that uncontrolled Enoree River and Tyger River flows and controlled flows from the Lockhart Project upstream of Parr are all entering the Broad River and that inflow to Parr has a regulated signature and Parr further modifies outflows. Ray asked - with a regulated input and a regulated output, what is stabilization and what is realistic? Ray said he believes the opportunity comes in when there are spikes from inventory spills and SCE&G can try to smooth those spikes out.

Flow stabilization will only be practical and possible when inflow is between minimum flow and plant capacity. When inflow is less than minimum flow, SCE&G must pass inflow. When inflow is greater than plant capacity, spillage will occur. However, spillage might be able to be adjusted so that less water is released over a longer period, keeping in mind Parr has very limited storage available to smooth out inflow.

Henry said that through these meetings the goal is to develop a PME measure to put in the settlement agreement. It would be best to create an adaptive management plan that can be adjusted after the license is issued if necessary, instead of developing something that would be included as a license article, which leaves little to no room for adjustment. Henry said if SCE&G gets specific direction from the agencies, they may be able to test the stabilization during 2017.

Gerrit said that the group is missing a big part of the stabilization idea. It's great to stabilize flows between inflow and plant capacity, but Parr and Fairfield combined create more issues than just Parr on its own. The group looked at USGS data from the Carlisle, Alston, and Enoree gages. Caleb said that some of the spikes are due to flows from Enoree that increase combined flows above plant capacity. Gerrit said that operation of Fairfield causes spikes in flow which he believes impacts spawning. Bill A. said some of these spikes will be controlled by giving control of the gates to operators. When flows are above hydraulic capacity of Parr, there will be spikes in flow. When flows are below hydraulic capacity of Parr, operators can control the gates to better control reservoir inventory. They can also control gates to reduce the amount of water being spilled when Fairfield is operating. Operators will be able to control the gates overnight, which is not currently possible. Henry explained further, saying the workers at the plant now set the gates at 3:00 pm and go home for the night. Whatever happens, happens until they return the next morning and adjust the gates. If operators are given control overnight, they can potentially reduce spikes in flow that may happen during that time. After cameras are installed, this can be tested and an adaptive management plan can be developed. SCE&G wants to make any changes they can to Parr and not have restrictions on Fairfield operations, since flexibility at Fairfield is very important for meeting system demands and operation of the nuclear plant.

Gerrit said that during times of spawning, he would like to see Fairfield operated only for reserve, which would benefit the Broad River and the Congaree River. Dick asked if it would be more beneficial to have a larger number of days where stabilization efforts are in place or a smaller number of days where Fairfield is operated for reserve purposes only.

The group split briefly to allow the stakeholders to have an internal discussion about what they would like to propose to SCE&G regarding downstream fluctuation flows. The group came back with the following proposal for project operations to address Fairfield flow spikes:

- Shortnose sturgeon spawning – for 14 days during the last two weeks in March (March 15-March 31), SCE&G is being asked to greatly regulate or remove effects of FFPS operations (generating and pumping) from Parr Shoals dam discharge, however, FFPS may be used for reserve purposes and when project inflow is less than hydraulic capacity of Parr Shoals powerhouse. SCE&G will determine how to address Fairfield effects.
- Striped bass, American shad, and Robust redhorse (and other species) spawning – during April 1st-May 10th – establish two 7-day blocks, determined annually by a technical team. SCE&G is being asked to control discharge from Parr Shoals dam to match inflow. During this period, FFPS may operate normally (generate and pump) to meet daily demands and reserve purposes without restrictions.

The group agreed that fluctuations between 3,000 and 4,500 cfs are okay, since flows will attenuate as they move downstream. For striped bass and other species, it is best to have two windows of 7 days each where flows are controlled, with one window being early in the season and one being later in the season, to provide for a better chance of success. Fritz said he would do some more investigation to verify if the shortnose sturgeon request is in line with NOAA guidelines.

Caleb asked if this should be based on water temperature instead of calendar dates. The group agreed that this is why developing an adaptive management plan will be best, so that changes can be made as necessary. SCE&G will discuss this proposal internally and determine how and if they can possibly accomplish these requests.

The meeting adjourned. Action items from this meeting are listed below.

ACTION ITEMS:

- Kleinschmidt will provide meeting notes to the group.
- Kleinschmidt will summarize the stakeholder requests and distribute to the group for verification.
- SCE&G will discuss requests internally and let the RCG know what is possible.

DOWNSTREAM FLUCTUATION FLOWS WQFW TWC MEETING

OCTOBER 18, 2016

AGENDA

- Review Action Items from previous meeting (August 17, 2016)
- Review Proposed Operation Changes
- Discuss the “14 Day Stabilization Flow” – define expectations of the TWC for compliance



Action Items from Previous Meeting

Action Item	Status
Kleinschmidt will provide meeting notes to the group.	9/16/2016
Kleinschmidt will provide Alex P. with methodologies for the additional reach added to HEC-RAS model.	10/10/2016
Kleinschmidt will produce a table of FDC percentages for upgraded capacities using curves produced from the modeled Parr inflow dataset.	Delayed until Generator Upgrade Evaluation Results
Kleinschmidt will provide the model data to Alex Pellett.	10/10/2016
Kleinschmidt and SCE&G will explore ways to quantify and estimate improvements to downstream fluctuations through the proposed plant upgrades and gate operational changes.	Ongoing
Gerrit will provide study that shows sturgeon spawning on the tail end of a high flow event during the spring.	

Proposed Operational Changes

- Reservoir inventory control
- Camera on gates 1 and 2 to allow for better control of gates
- Potential generator upgrades
- Fisheries TWC developing an instantaneous minimum flow



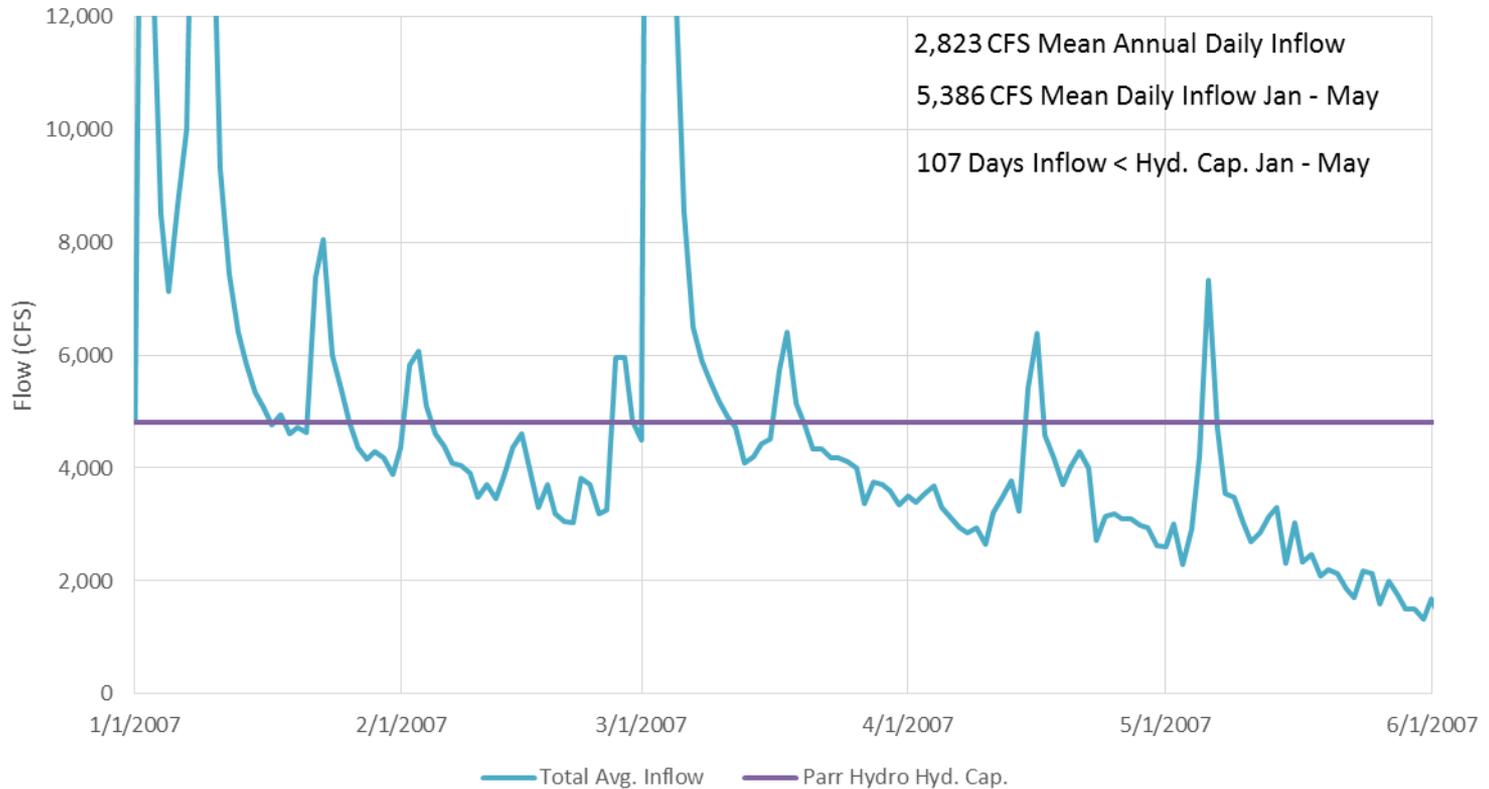
SCE&G Proposed Changes

- **Inventory Management**: Working with System Control operators now to learn issues and try to reduce fluctuations. Developing formal guidelines for operators may require a study period after license is issued.
- **Camera/Control of Crest Gates**: Could be implemented within one year of license issuance.
- **Generator Upgrades**: Can likely be completed within 10 years of license issuance – investigating scope of upgrades Fall of 2016
- **Testing**: Perform a multi-year test/study after license is issued to evaluate effect of changes:
 - Inventory Control Improvements
 - Generator Upgrade Improvements

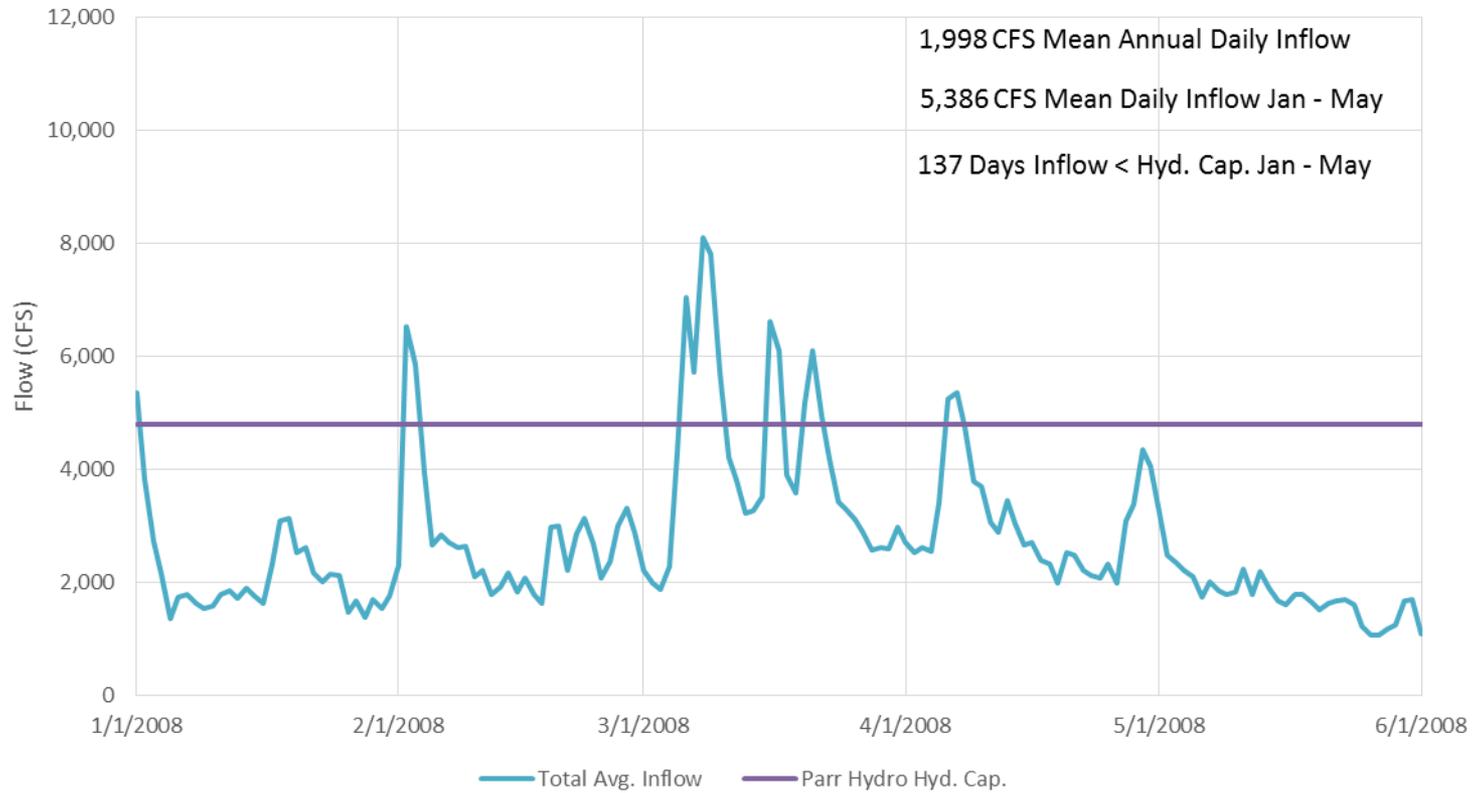
14 Day Stabilization Flow

- Additional information on “14 Day Stabilization Flows” from TWC
- What are TWC expectations for measuring compliance?
- Can it be broken up into segments?
 - What is the shortest time?
 - Three “5 day” flows
 - Two “7 day” flows
- Stabilization of flow based on a percentage, +/- inflow

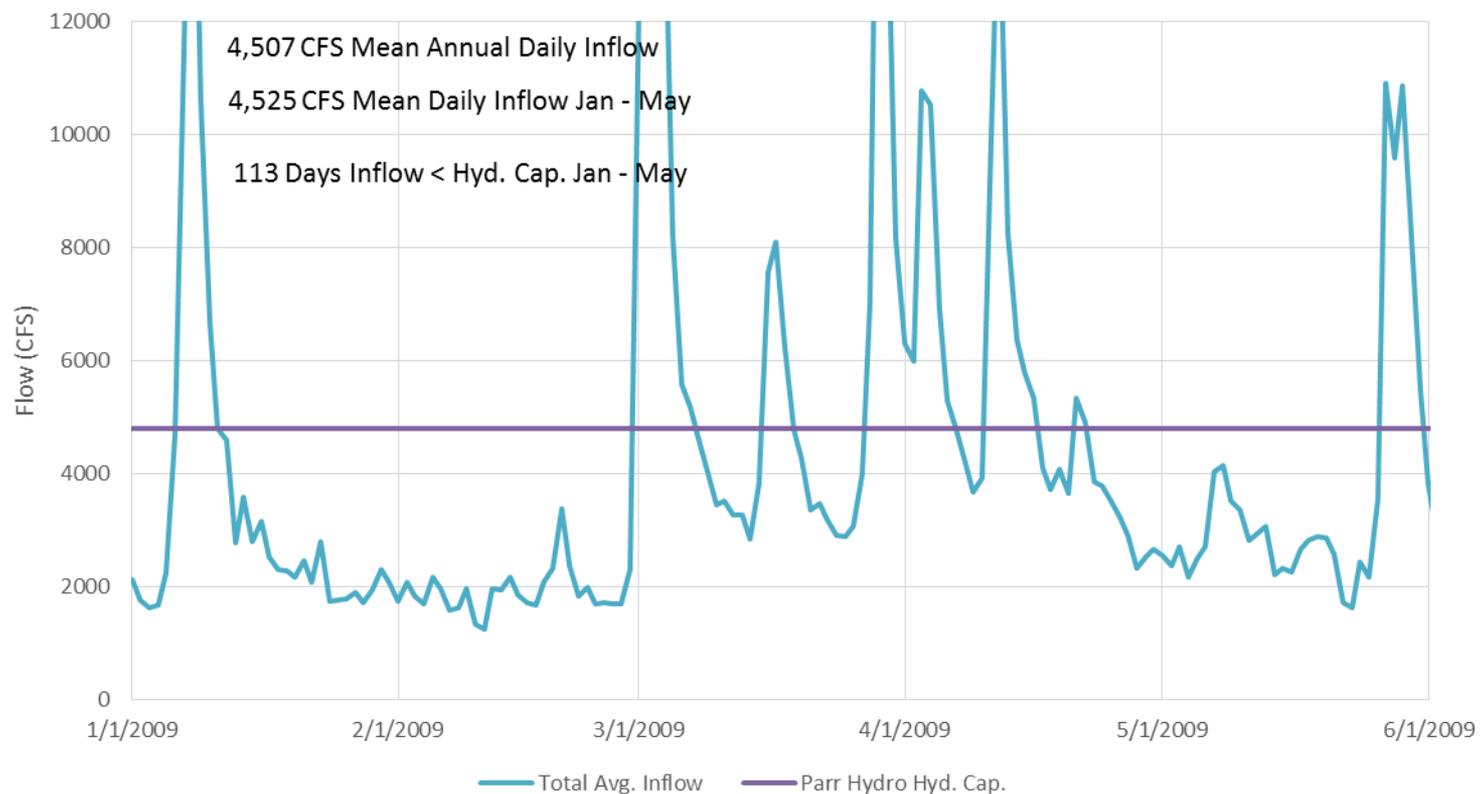
2007



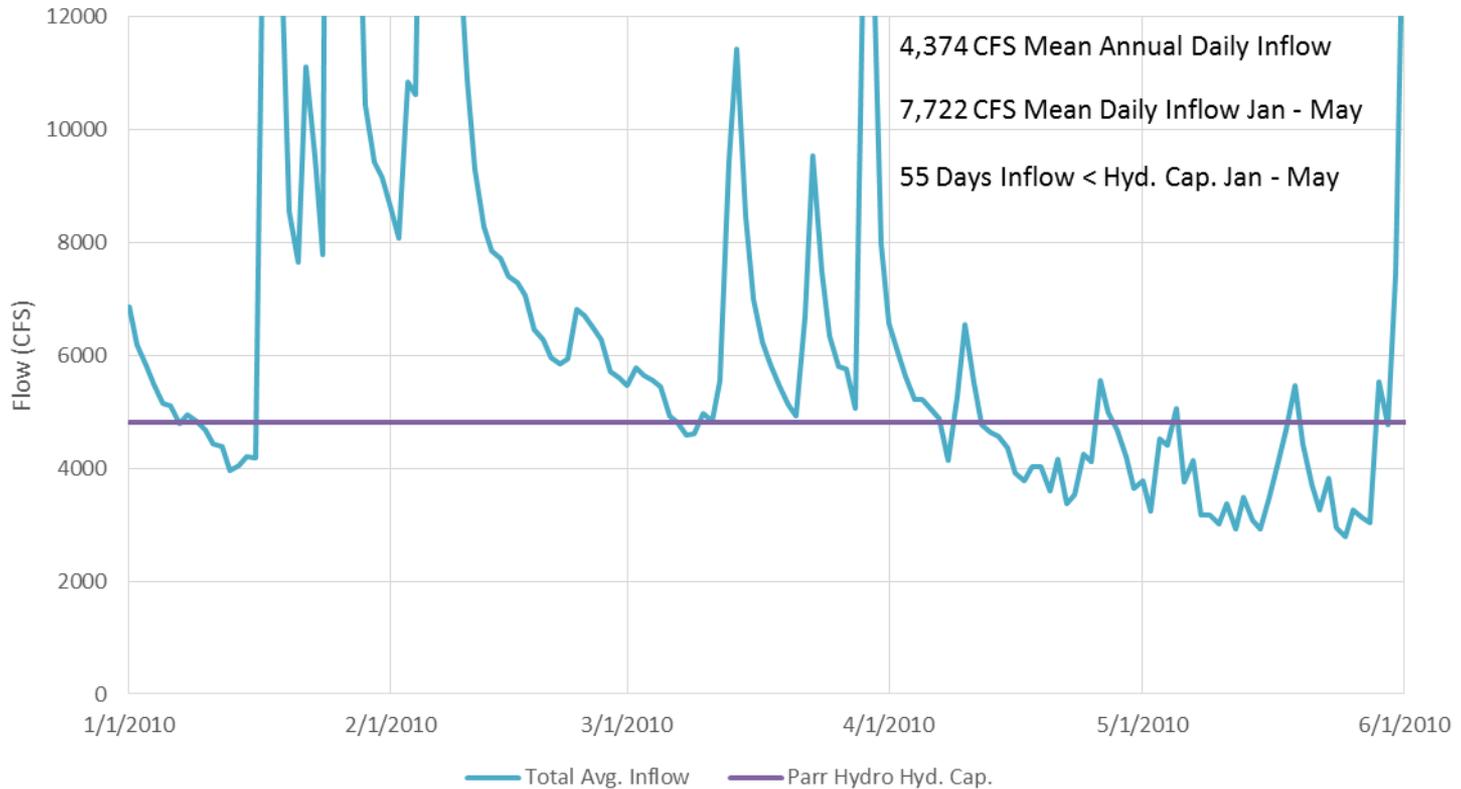
2008



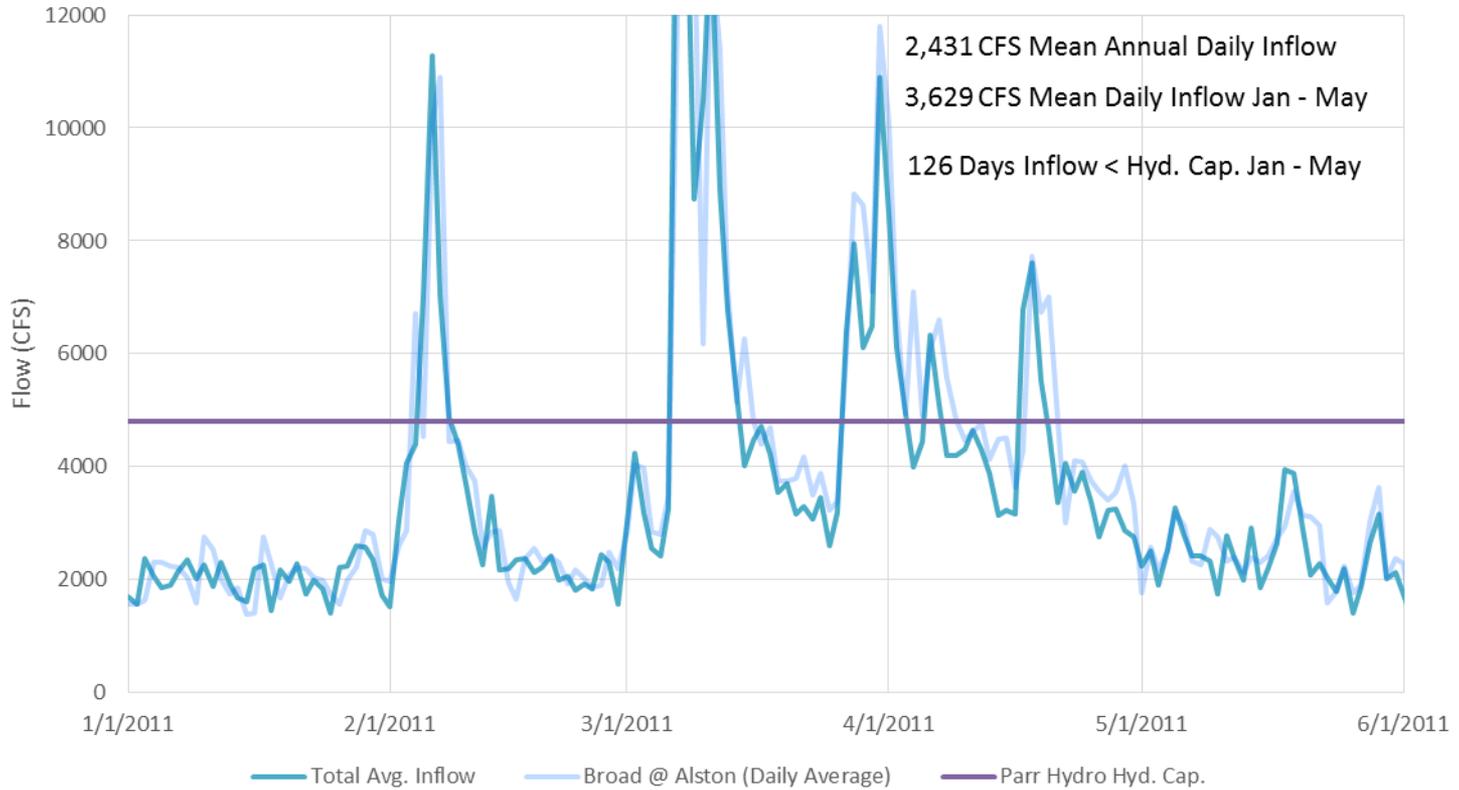
2009



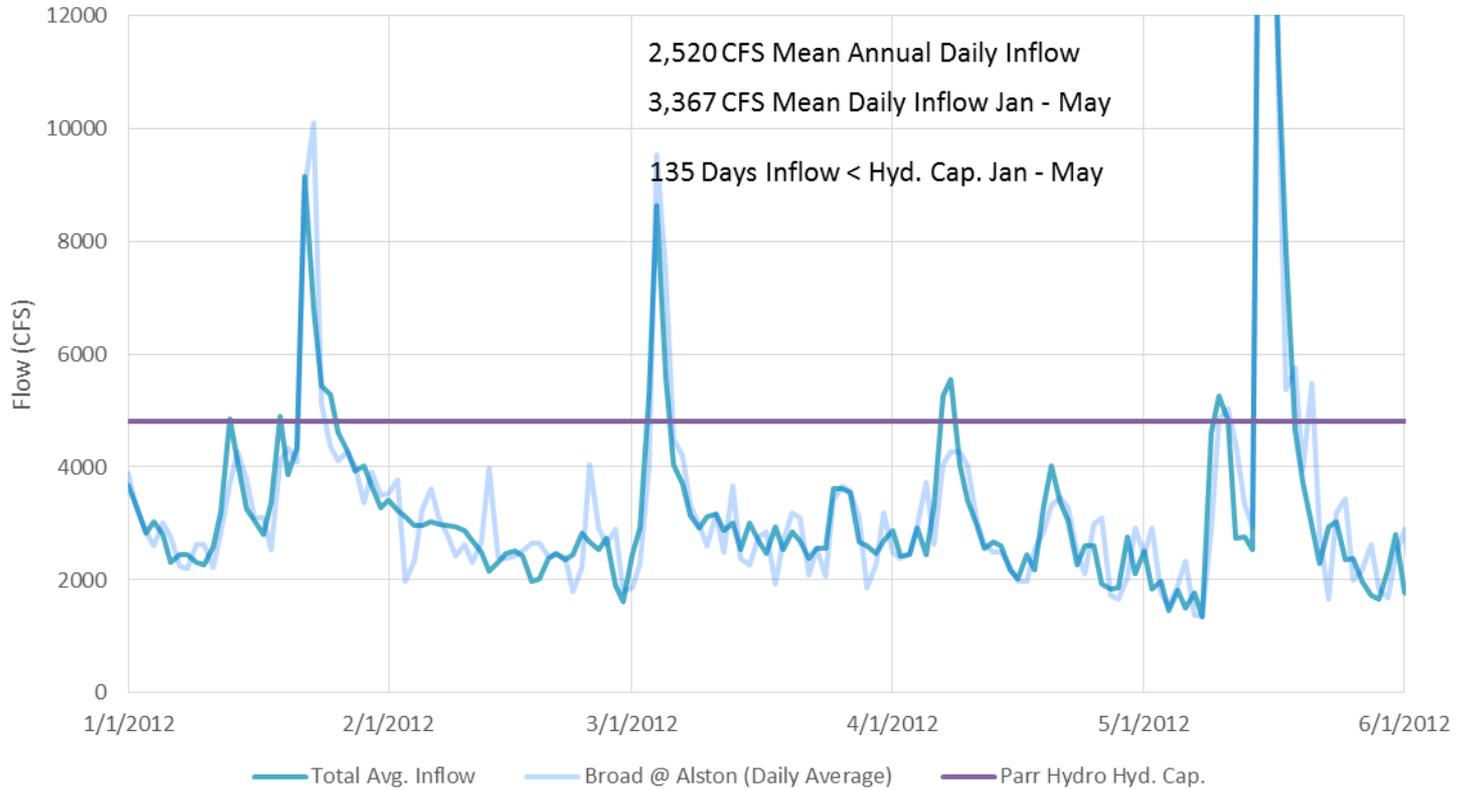
2010



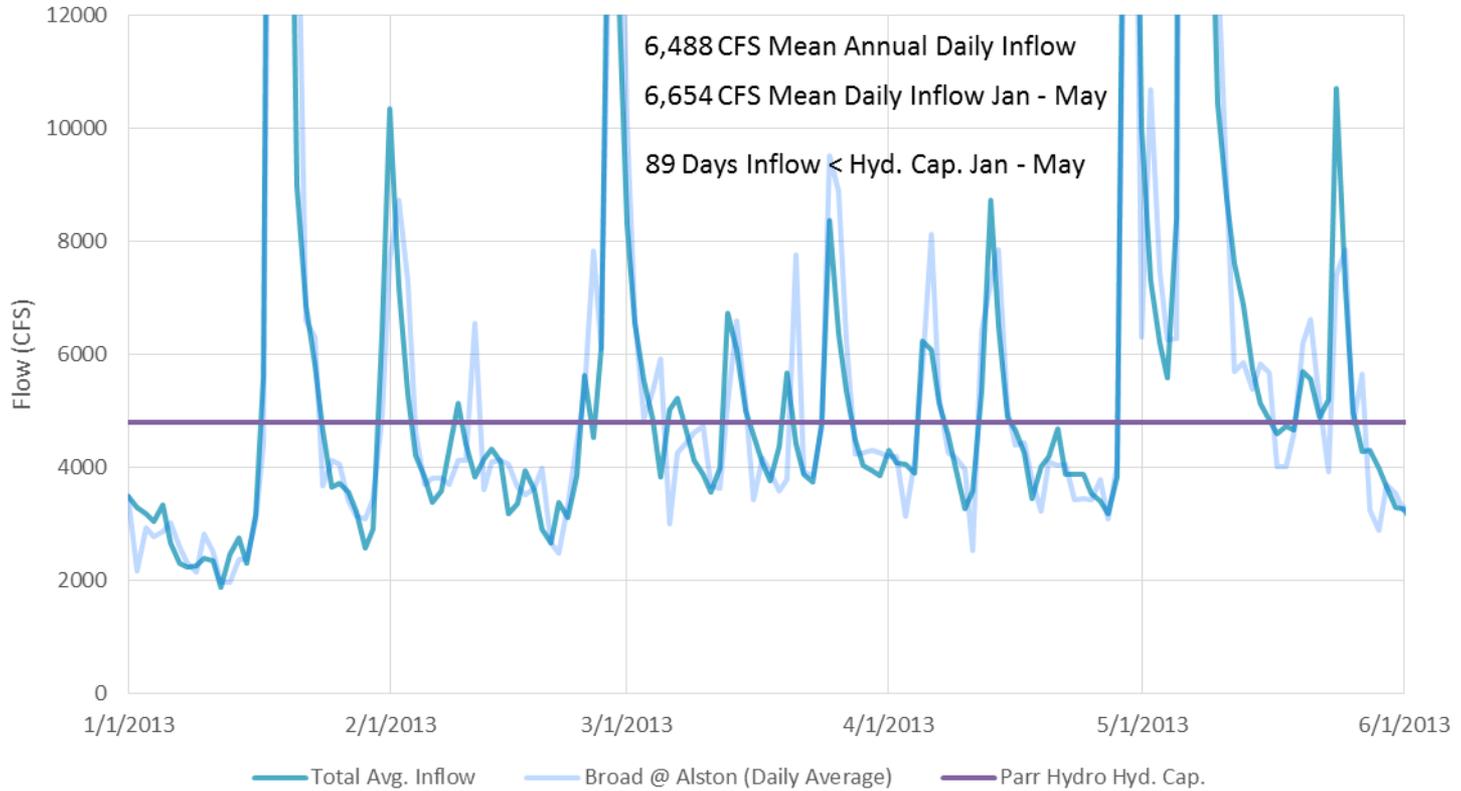
2011



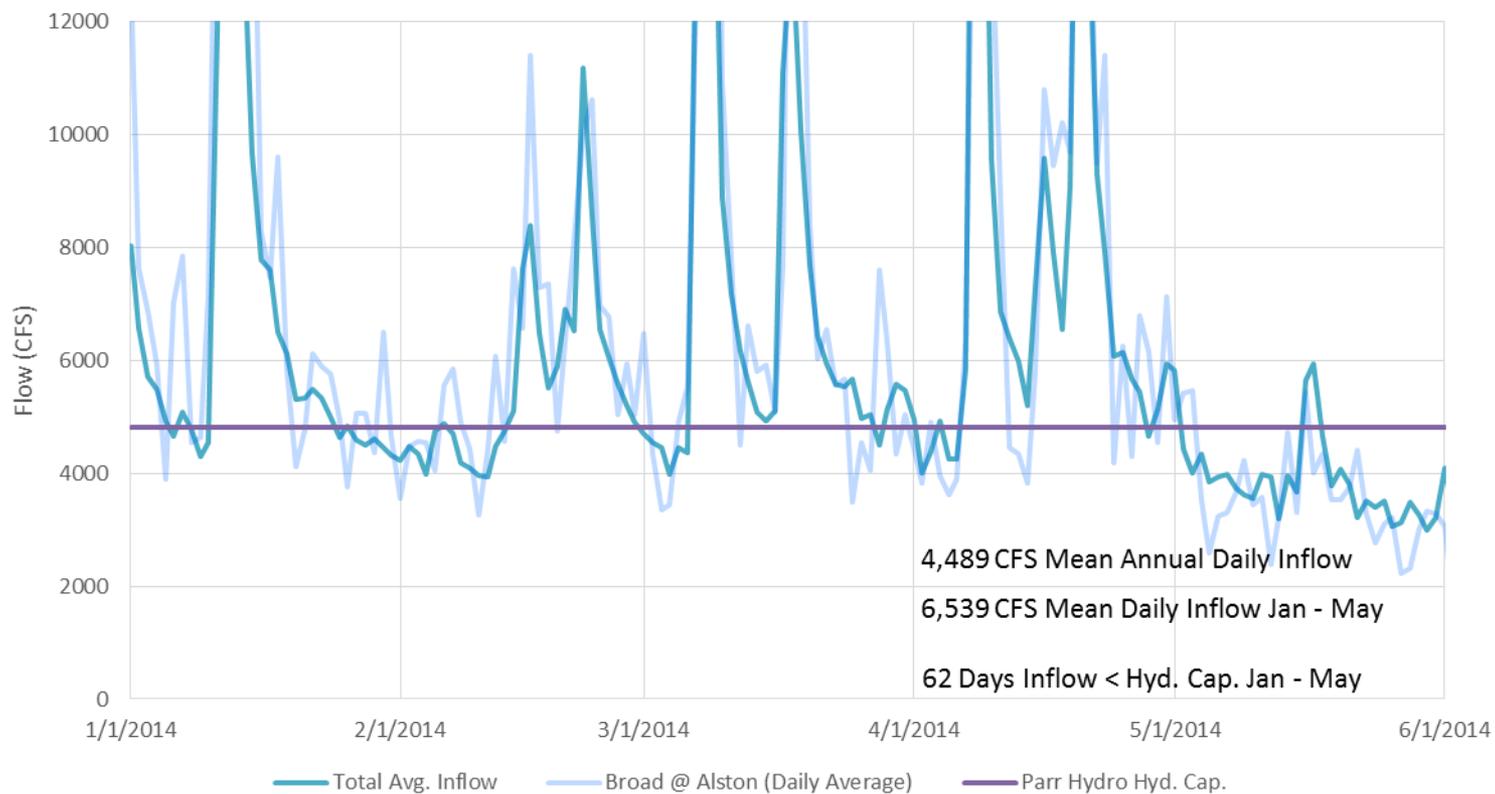
2012



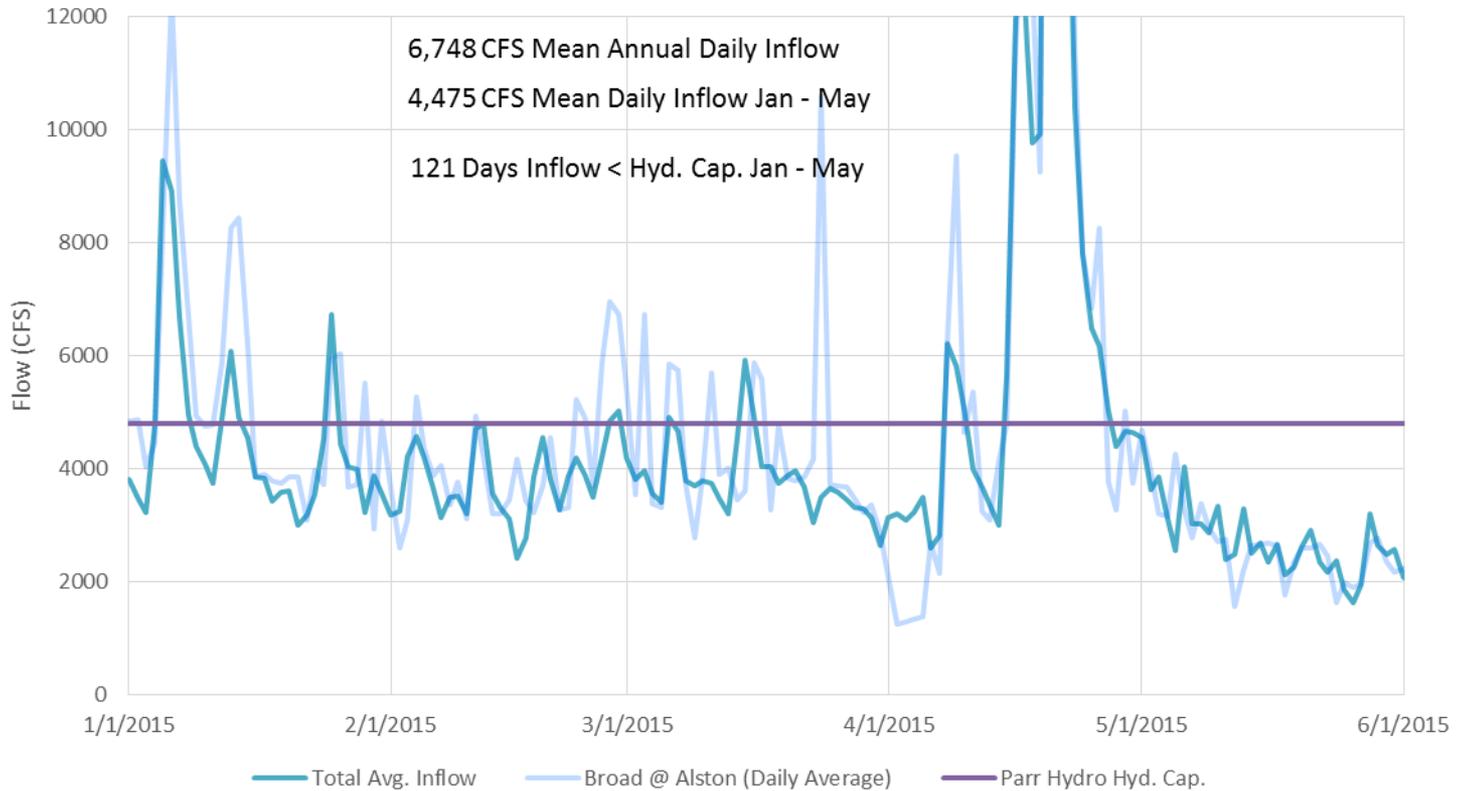
2013



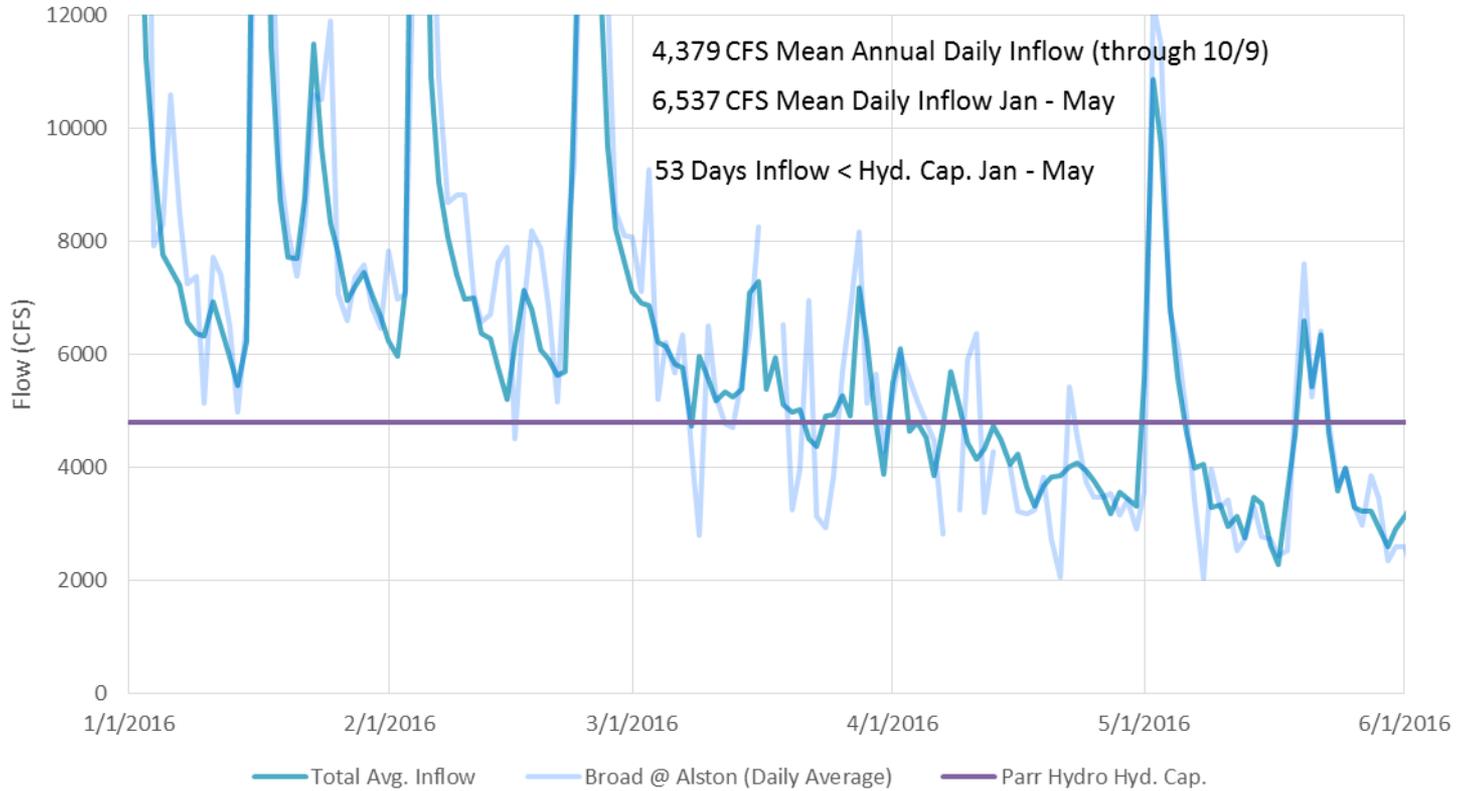
2014



2015



2016



Next Action Items

- Include in an MOU, Settlement Agreement, not a license article
- Adaptive Management Plan after the license is issued
 - How do we evaluate?
- Test in 2017

MEETING NOTES

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

January 21, 2016

Final KMK 02-29-16

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Randy Mahan (SCE&G)
Steve Summer (SCANA)
Byron Hamstead (USFWS)
Bill Marshall (SCDNR)
Dick Christie (SCDNR)
Ron Ahle (SCDNR)
Jim Bulak (SCDNR)
Alex Pellett (SCDNR)

Rusty Wenerick (SCDHEC)
Bill Stangler (Congaree Riverkeeper)
Malcolm Leaphart (Congaree Riverkeeper)
Gerrit Jobsis (American Rivers)
Henry Mealing (Kleinschmidt)
Bret Hoffman (Kleinschmidt)
Kelly Kirven (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 explained that the purpose of the meeting was to discuss the Downstream Flow Fluctuations Memo. At the WQFW RCG meeting on August 26, 2015, the RCG discussed a request received during the PAD review, regarding limiting downstream fluctuation flows. An action item stemming from that request and discussion was that Kleinschmidt and SCE&G would gather the flow records for 2010-2015 from gages at Carlisle, Tyger, Enoree, Alston, Saluda downstream of Lake Murray, and the Congaree River at Columbia and compare all flows from January through May. The data was reviewed for large fluctuations in flow that may have been caused by operation of the Parr Project (which includes the Parr and Fairfield Developments), and the results were summarized in the Downstream Flow Fluctuations Memo, which was distributed to the RCG for review on December 16, 2015.

Bret began the discussion of the flow analysis by explaining how hourly flows from the Carlisle, Tyger and Enoree gages (or “upstream flows”) were prorated and compared to the Alston gage flows. A time offset was applied to the dataset to aid in the visual display of peaks and valleys on the graphs. Gerrit asked how flows from Monticello were factored in and Bret said only flows from within the capacity of the project, up to 40,000 cfs, were examined. A separate analysis was completed where the flows from the Saluda gage were deducted from flows at the Congaree at Columbia gage and the resulting flow measurements were compared to the upstream flows. Bret then determined how often hourly variances occurred at different flows. He explained that this analysis was not an event-based categorization but a straight percent based categorization.

Henry said that the goal of the meeting was for the RCG to pinpoint events they would like to examine in further detail. The goal is not to show what the Project impact is, but instead to identify occurrences we would like to avoid and try to develop PM&E measures to make small changes. Gerrit said there are three different occurrences that seem to be happening: 1) there is a large peak occurring on inflow, but not on the outflow; 2) there is no peak on inflow, but a peak is occurring on outflow; and 3) inflow and outflow are in sync.

Ray pointed out that some of the peaks appear artificially high because they don't account for attenuations of flow. To do this, a hydraulic model with a routing exercise would need to be completed.

Bill A. explained that the crest gates are set at a certain level for 16 hours of the day when operators are not at the project. Crest gates can only be operated on site and not remotely, because of safety issues and to decrease the possibility of damage to the gates. An operator may need to be at the project 24 hours a day in order to make the changes needed to lessen fluctuations. Currently operators are working within the license requirements, to apportion water to Monticello and downstream. They may be able to lessen large spikes in flow during some periods of the year.

Alex said that in reference to Table 1 in the memo, the number of incidents that Project-induced flow variances occurred would be a good statistic, versus the straight percentages that are presented in the memo.

The group discussed various ways to reduce fluctuations including talking to operators about reservoir inventory and having dynamic gate operations. Gerrit said that the results of the IFIM study will play a big role in identifying the effects of flow fluctuations. The study may show that after flows reach a certain level, flow fluctuations impacts aren't as important. Jim mentioned that flows may not affect habitat, but they may affect the behavior of fish.

The group took a break and stakeholders met in a separate room to discuss recommendations for next steps.

When the group reconvened, the stakeholders had a list of five major points, which are included below.

1. The RCG is not able to reduce the current period of review (January through May) for the Downstream Fluctuation issue at this time. As additional information becomes available this window may be narrowed.
2. The RCG's goal is that the Parr Project operate so that hourly outflow is as near as reasonably possible to hourly inflow. The RCG requested that a more accurate inflow dataset be developed using flow routing to account for attenuation from the Carlisle gage to the headwaters of Parr Reservoir.
3. The RCG recognizes that the goal of outflow matching inflow is unrealistic. However there are several comparisons that should be made for both
 - a. revised inflow dataset (as described above in #2) VS outflow at the Alston gage

- b. Alston gage flows VS flows at the Congaree gage in Columbia (02169500 – Congaree River at Columbia, SC - gage currently being used in the analysis) with the removal of the Saluda effects.
 - c. revised inflow dataset VS flows at the Congaree gage without the effects of the Parr Project operations (i.e. Project inflow equals outflow) – shown with and without Saluda effects
4. The RCG wants to know if the project can be operated to reduce releases within 10% increments of inflow, knowing that this may vary for different flow ranges; can the project release be kept within 10%, 20%, 30%, and possibly 50% of inflows (during low flows)
5. The RCG emphasized how important the results of the IFIM study and dual flow analysis will be for resolving this issue. Any analysis done prior to the IFIM results may change. The true impacts of the project release variances may not be understood until the habitat data from IFIM study are considered.

Gerrit mentioned they are also interested in how different flow scenarios will affect reservoir fluctuations on Parr and Monticello. Ray said we should focus on Parr and the operation of the crest gates, then look at Monticello. The only change for Monticello would be if Fairfield couldn't be operated as it normally is for pumping and generating.

Dick asked if there was a possibility for Monticello to provide storage and help moderate flows as needed. Ray pointed out that the reservoir only holds 29,000 acre feet, so there isn't very much room for storage.

Meeting adjourned. Action items from this meeting are listed below.

ACTION ITEMS:

- Kleinschmidt and SCE&G will assemble the five major points that the stakeholders listed and send back out to the meeting attendees for verification.
- SCE&G will talk with operators to see what kinds of changes may be possible.
- Kleinschmidt and SCE&G will perform the analyses requested by the stakeholders as part of their 5 major points and reconvene the RCG to discuss results.

**Parr Hydroelectric Project – FERC No. 1894
Downstream Flow Fluctuations – Memorandum**

TO: Parr/Fairfield Relicensing Water Quality, Fish and Wildlife Resource Conservation Group (RCG)
FROM: Kelly Miller and Henry Mealing – Kleinschmidt Associates
DATE: December 16, 2015
RE: Downstream Flow Fluctuations – Initial Analysis

As part of the comments received on the Preliminary Application Document (PAD), several agencies requested additional information on the periodic flow fluctuations from the Parr Hydroelectric Project (Project). At the August 26, 2015 relicensing meeting, stakeholders presented concerns that flow fluctuations from the Project could impact the spawning of several species of fish in the Broad River downstream of the Project and extending downstream to where Highway 601 crosses the Congaree River. The target species identified in the meeting were shortnose sturgeon, American shad, striped bass, and robust redhorse. Target spawning months include January through May (RCG Meeting Notes 08-26-2015).

As the initial step in addressing these concerns, flow records for 2010-2015 were collected from USGS for the following gage locations: Carlisle (2156500), Tyger (2160105), Enoree (2160700), Alston (2161000), Saluda downstream of Lake Murray (2169000), and the Congaree River (2169500). Flows were compared from January through May on an annual basis, and were prorated based on drainage areas. All flow data will be provided on a CD upon request by RCG members.

Methods

Hourly inflows to the Project were prorated using data from the Carlisle, Tyger, and Enoree gages, which represent the contributing drainage area of the Parr Reservoir. A regional coefficient and exponent, which were determined by regression analysis as part of the Parr operations model inflow dataset development¹, were applied to the ratios for accuracy. These flows were graphically compared with the Project outflow data (from the Alston gage), and an offset applied to account for flow travel time; a shift of 9 hours was visually determined to best fit the datasets, based on inflow events exceeding 40,000 cfs, which are outside of the Project impact. The comparison of these datasets gave a depiction of the frequency and magnitude of how Project operations affect downstream flow. Shifts in streamflow greater than 2,000, 3,000, 5,000 and 10,000 cfs (on an hourly basis) were identified.

Flow records from Carlisle, Tyger and Enoree gages were summed and prorated to the drainage area of the Broad River, approximated by subtracting the drainage area of the Saluda gage from

¹ Kleinschmidt, "Inflow Dataset Development: Statistical Methodology," May 2014.

that of the Congaree gage. This dataset was added to flow records from the Saluda gage, then compared with the Congaree gage data. This provided an hourly estimate of downstream flows without the influence of the Parr Project operations. Flow records from the Alston gage were also prorated and added to flow records from the Saluda gage, and then compared with the Congaree gage data. This allowed for the observation of flow attenuation downstream, or the persistence of a peak wave down to the upper portion of the Congaree River. It also showed how the Saluda Hydro Project influenced flows in the Congaree River. Flows prorated down to the Congaree area were prorated using direct area only, as no regional coefficient or exponent has been determined for this additional drainage area. As with the inflow comparison with the Alston data, the upstream datasets were offset to account for flow travel time (18 hours for the three gages upstream of the Project, and 7 hours to the Alston data).

Discussion

Inflow, which was calculated by adding flows from the Carlisle, Tyger and Enoree gages, was compared to outflow, represented by the Alston gage flows (Appendix A - Figures 1 through 6).

Shifts in streamflow greater than 2,000, 3,000, 5,000, and 10,000 cfs on an hourly basis were identified for the entire period of study (January-May, 2010-2015). Because this evaluation accounts for hourly differences, the percent of time the difference occurs is provided, rather than the number of flow variance events. The average percent of time these variances occur is provided, not the number of flow variance events in any given month or year (which independently could last longer than one hour). The results of these magnitudes and frequency of occurrence are shown in Table 1 below. The frequency and magnitude of flow shifts varied with hydraulic year and operation demands.

Flow Variance	% of Occurrence
2000	20.0%
3000	11.5%
5000	4.7%
10000	0.9%

Table 1 – Project-Induced Flow Variance Magnitude and Frequency

Prorated flow datasets from Carlisle, Tyger and Enoree gages combined with flows records from Saluda, which represents Congaree River inflows without the influence of the Project operation, were graphically compared to flows as recorded by the Congaree River gage (Appendix A - Figures 7 through 12).

Finally, prorated Alston flows added to the flow records from Saluda to compare flows upstream of the Congaree River, which takes into account effects of the Parr Project operations were graphically compared to flows as recorded by the Congaree River gage (Appendix A - Figures 13 through 18).

Figures 19 through 24 in Appendix A depict flow releases from Alston with and without the addition of Saluda flow contributions. This demonstrates that some of the spikes in flow downstream at Congaree are attributed to contributions from the Saluda River, and not the Parr Project.

Next Steps

The RCG should review this information and provide their input to move to the next steps.

1. Does it look like there may be a potential impact on downstream fish spawning? If so, please provide reasons for that assumption.
2. Provide any potential RCG requests that may move towards diminishing the flow impact?

Based on RCG input, SCE&G will go to their Operations Group and determine if the suggested changes are feasible. If the RCG can provide timely input, SCE&G may be able to perform a few one-day tests at the Project to see if the operation changes can be implemented and whether they 1) diminish the peak; 2) cause inconsistencies with safety at the plant, or 3) increase the chances of upstream flooding issues.

APPENDIX A
FLOW DATA

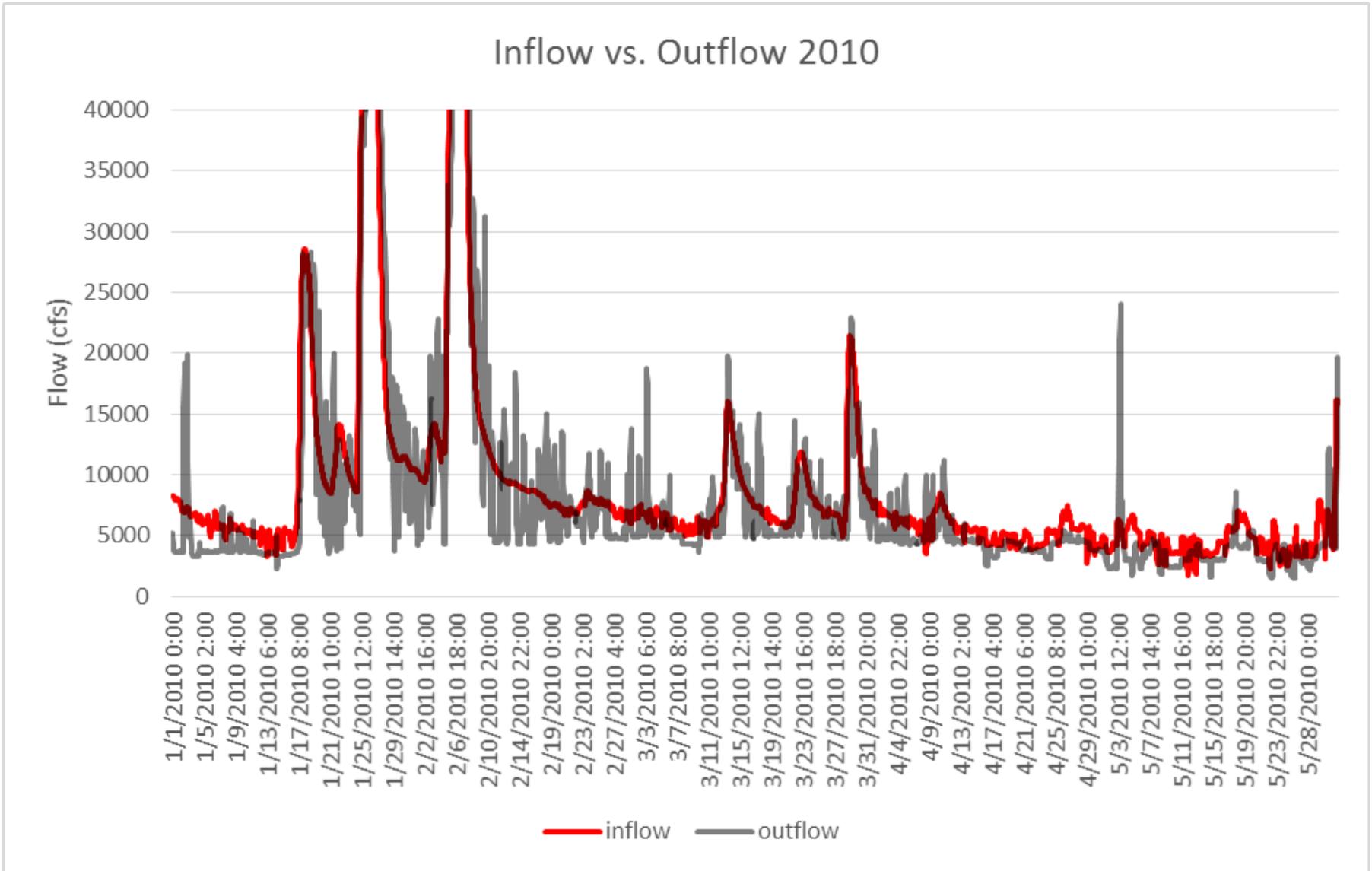


FIGURE 1 2010 PARR PROJECT INFLOW (CARLISLE, ENOREE, TYGER GAGES) VS. OUTFLOW (ALSTON GAGE)

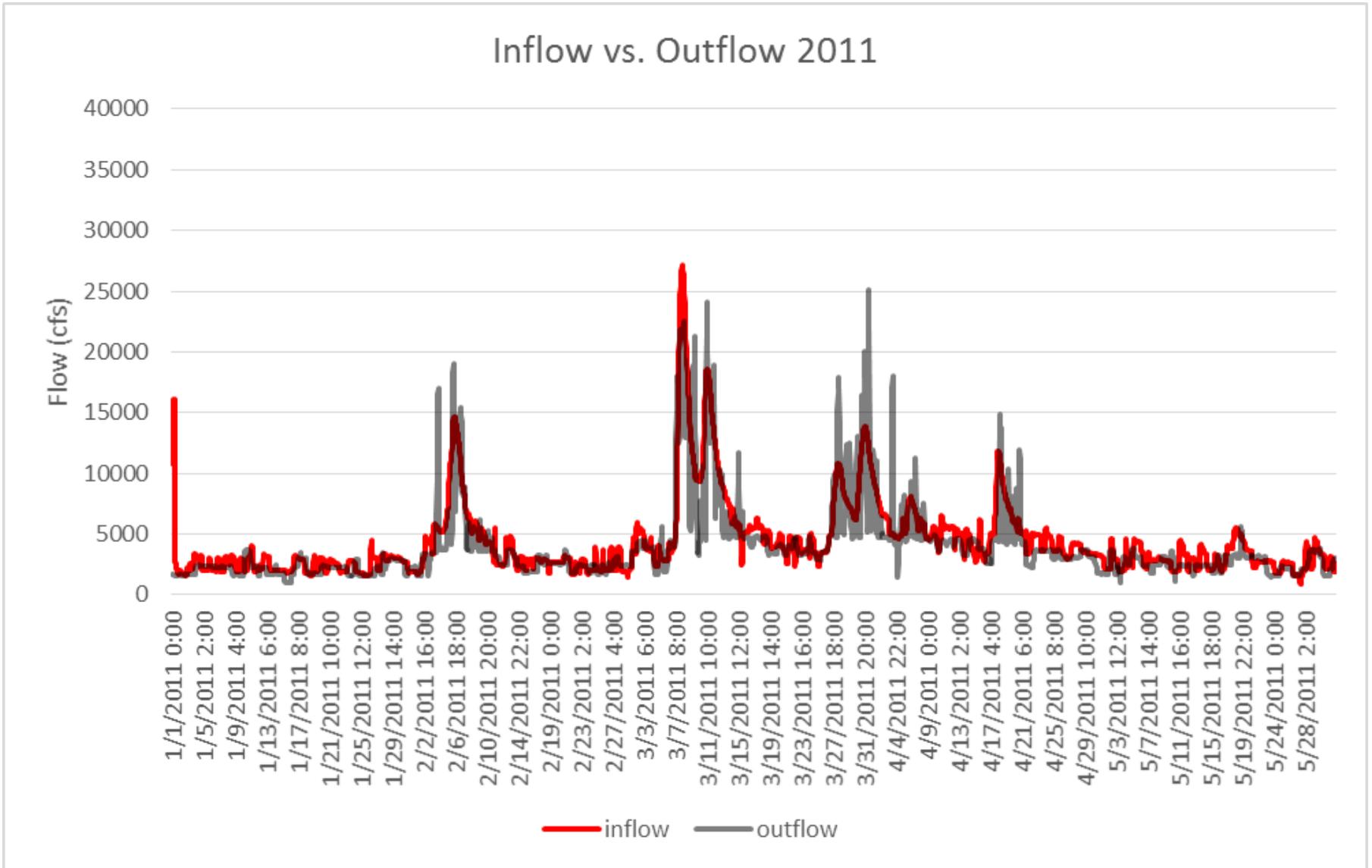


FIGURE 2 2011 PARR PROJECT INFLOW (CARLISLE, ENOREE, TYGER GAGES) VS. OUTFLOW (ALSTON GAGE)

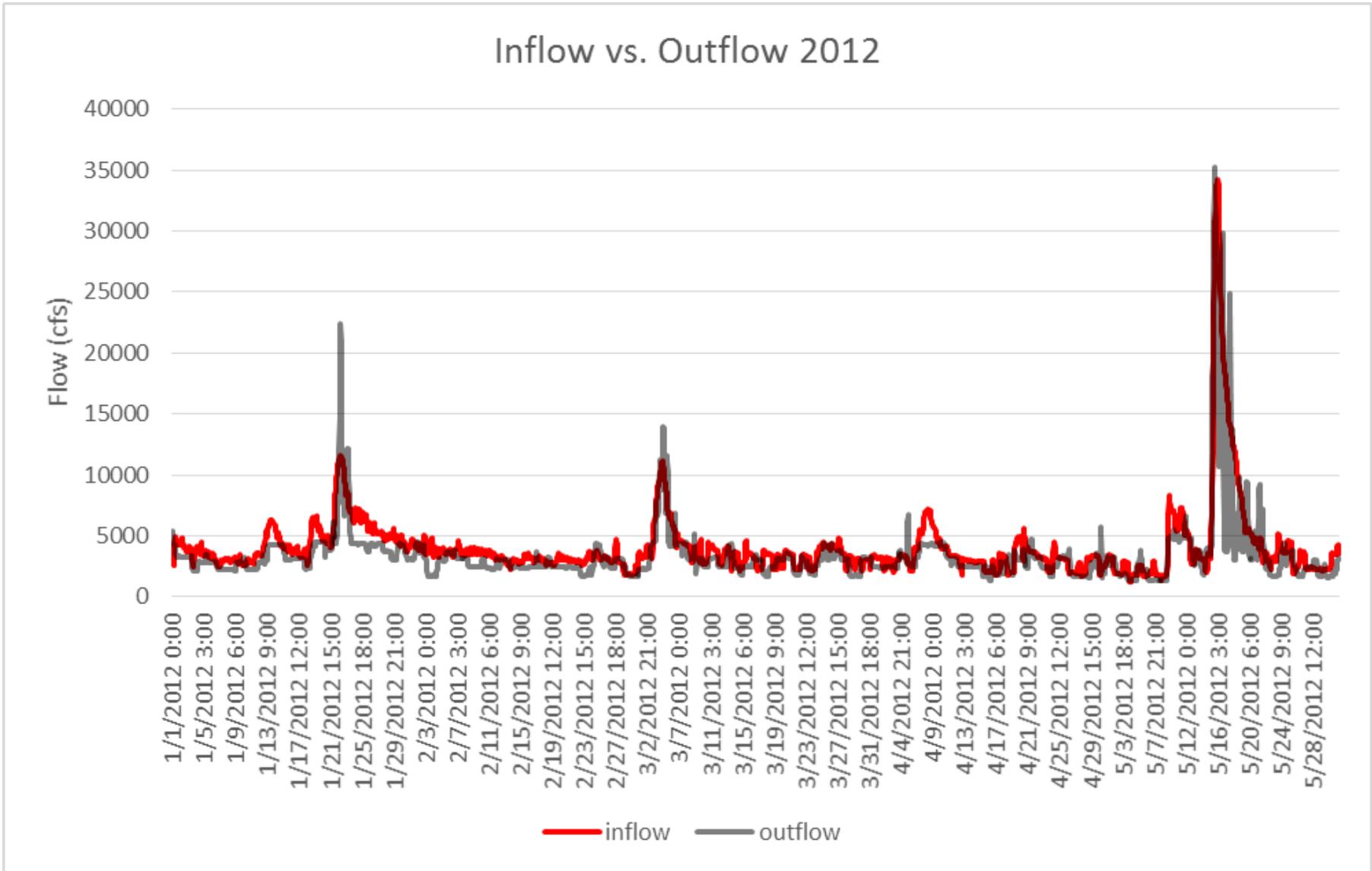


FIGURE 3 2012 PARR PROJECT INFLOW (CARLISLE, ENOREE, TYGER GAGES) VS. OUTFLOW (ALSTON GAGE)

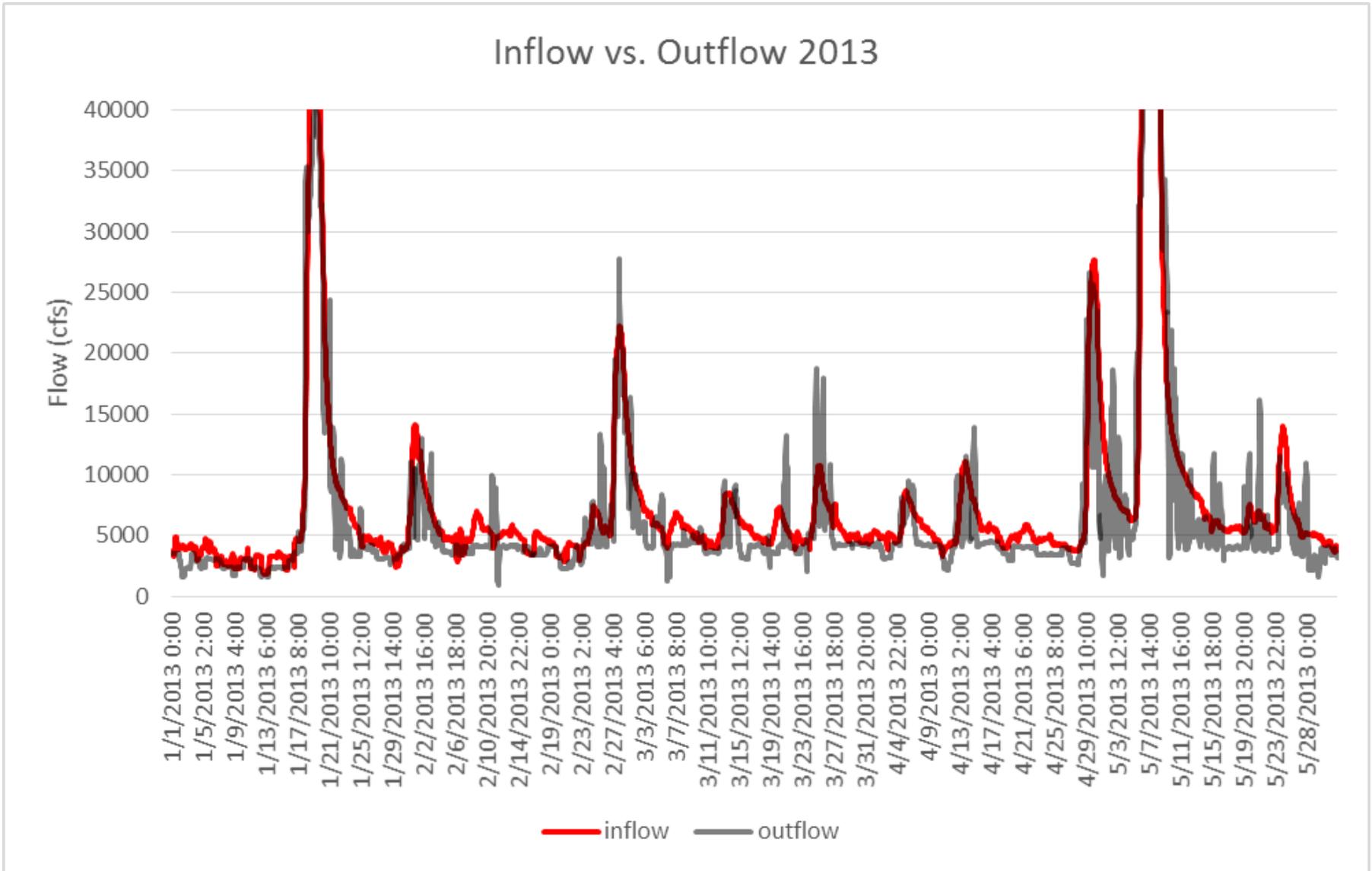


FIGURE 4 2013 PARR PROJECT INFLOW (CARLISLE, ENOREE, TYGER GAGES) VS. OUTFLOW (ALSTON GAGE)

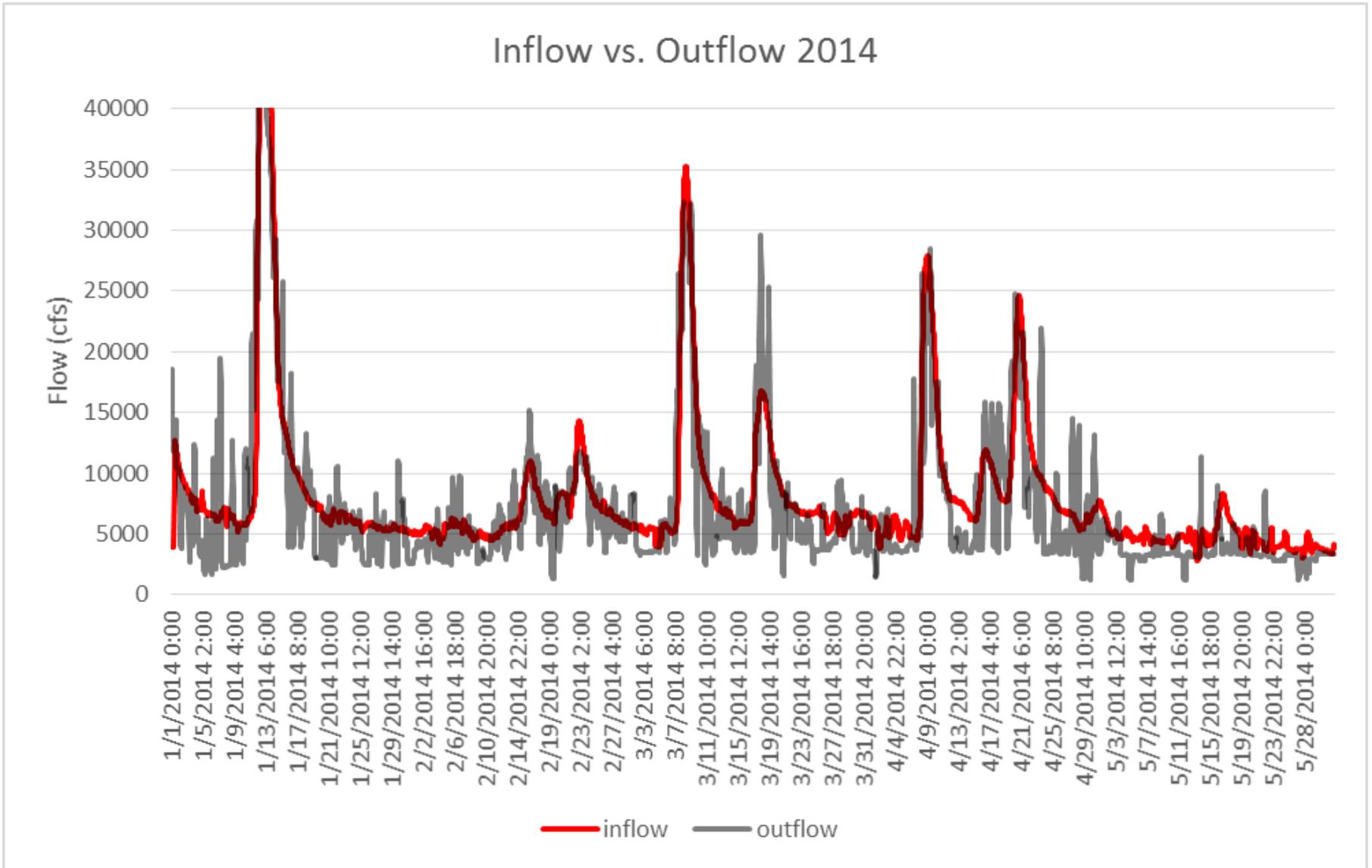


FIGURE 5 2014 PARR PROJECT INFLOW (CARLISLE, ENOREE, TYGER GAGES) VS. OUTFLOW (ALSTON GAGE)

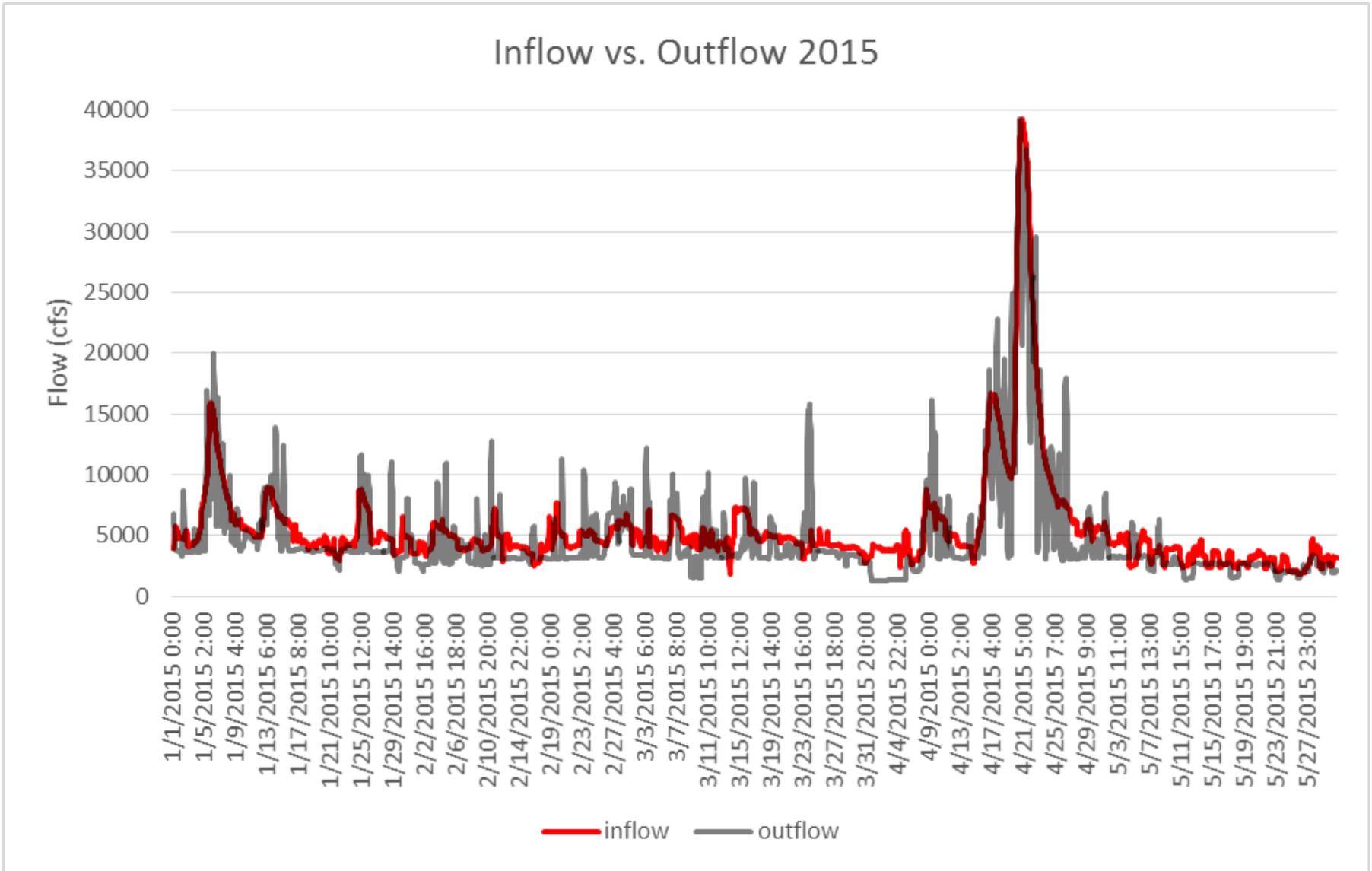


FIGURE 6 2015 PARR PROJECT INFLOW (CARLISLE, ENOREE, TYGER GAGES) VS. OUTFLOW (ALSTON GAGE)

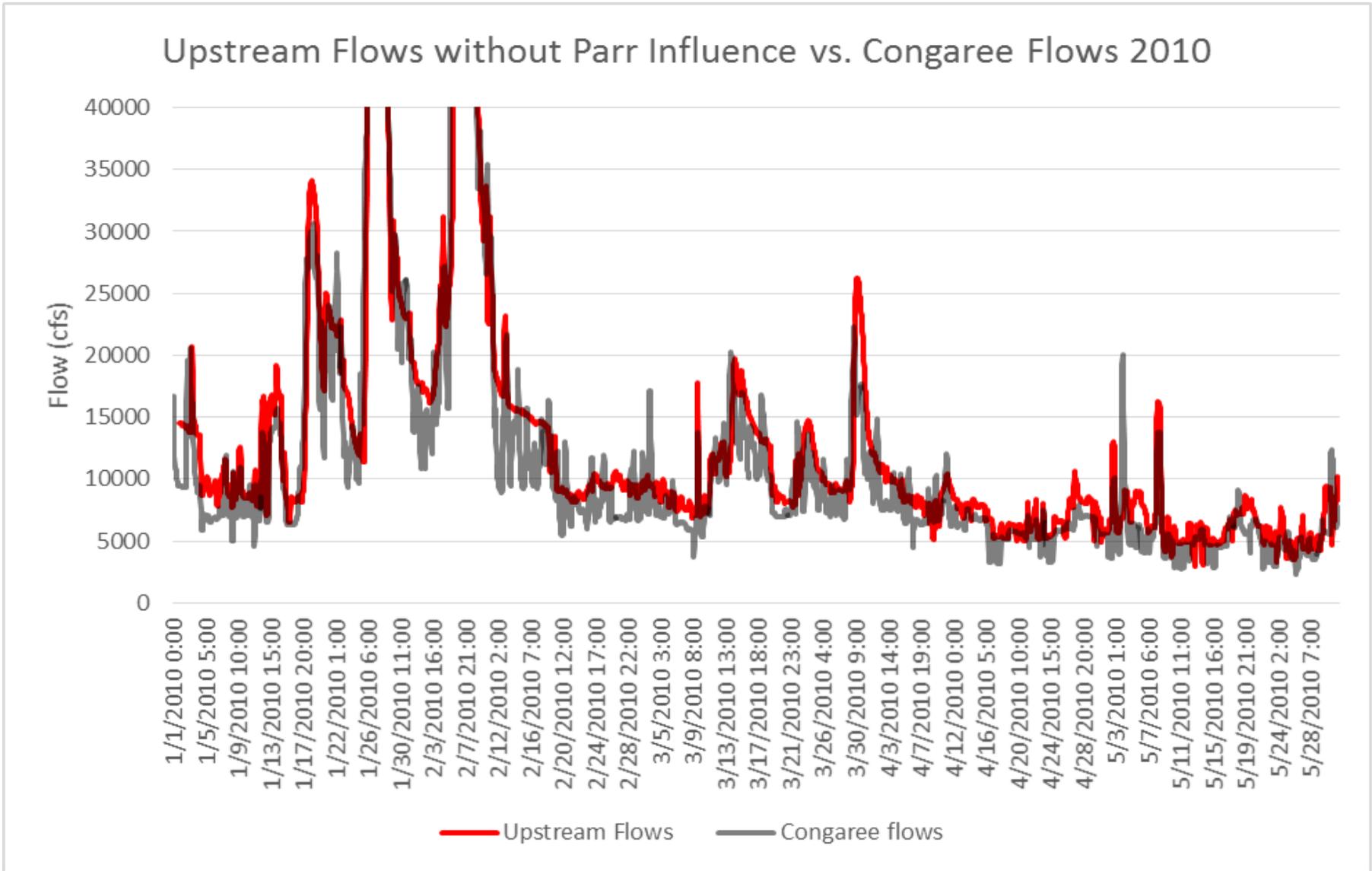


FIGURE 7 2010 UPSTREAM FLOWS (CARLISLE, ENOREE, TYGER, SALUDA GAGES) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

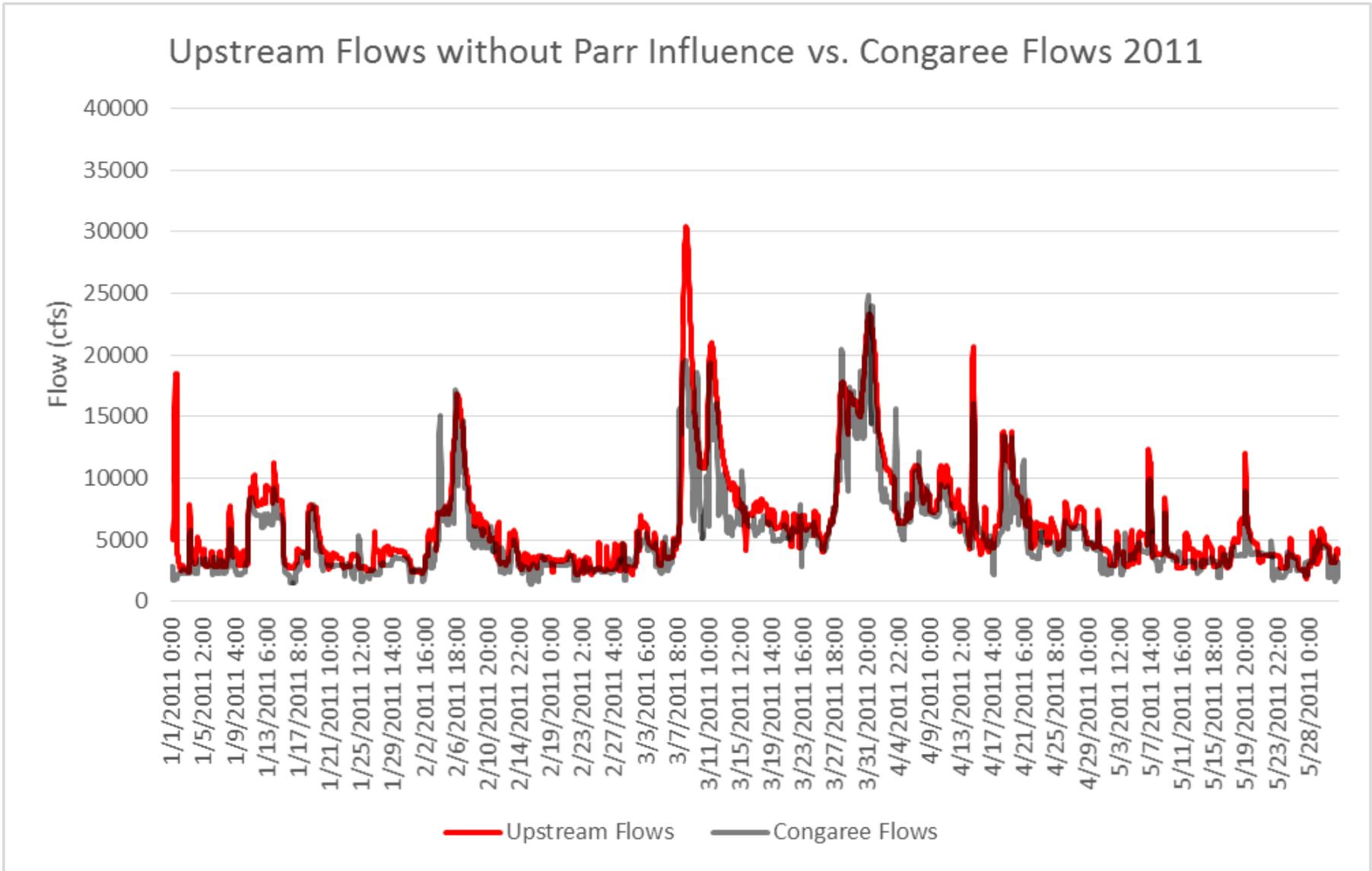


FIGURE 8 2011 UPSTREAM FLOWS (CARLISLE, ENOREE, TYGER, SALUDA GAGES) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

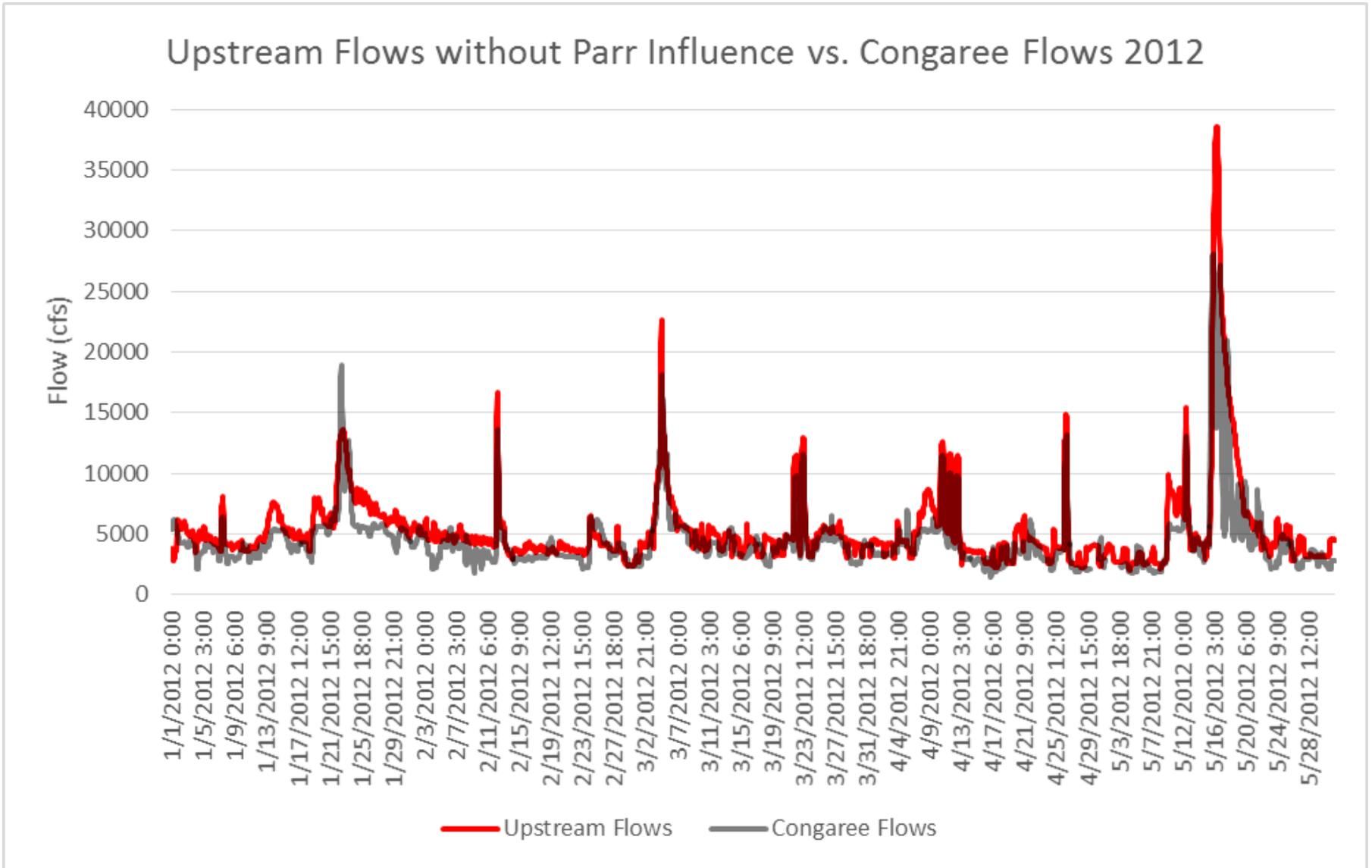


FIGURE 9 2012 UPSTREAM FLOWS (CARLISLE, ENOREE, TYGER, SALUDA GAGES) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

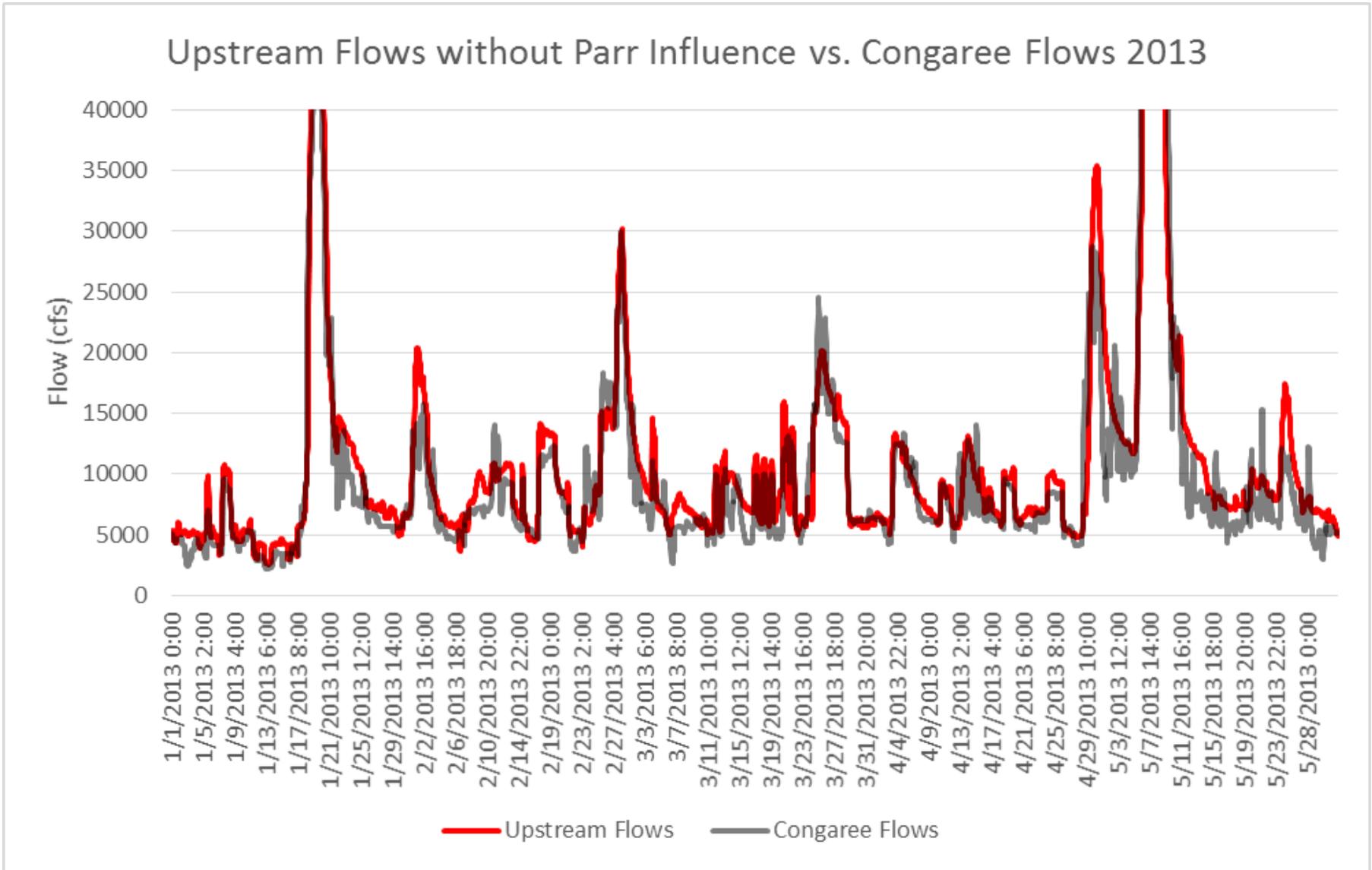


FIGURE 10 2013 UPSTREAM FLOWS (CARLISLE, ENOREE, TYGER, SALUDA GAGES) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

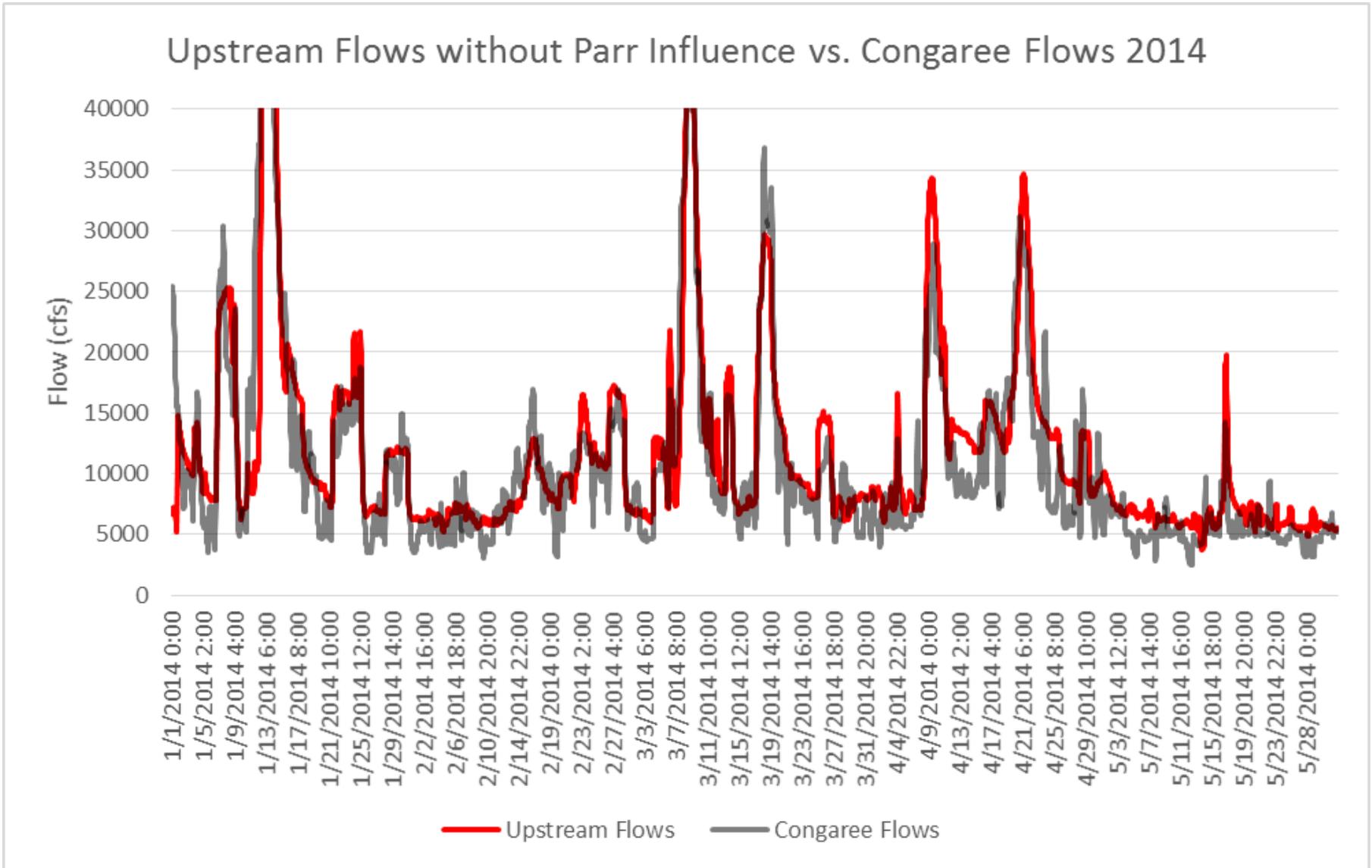


FIGURE 11 2014 UPSTREAM FLOWS (CARLISLE, ENOREE, TYGER, SALUDA GAGES) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

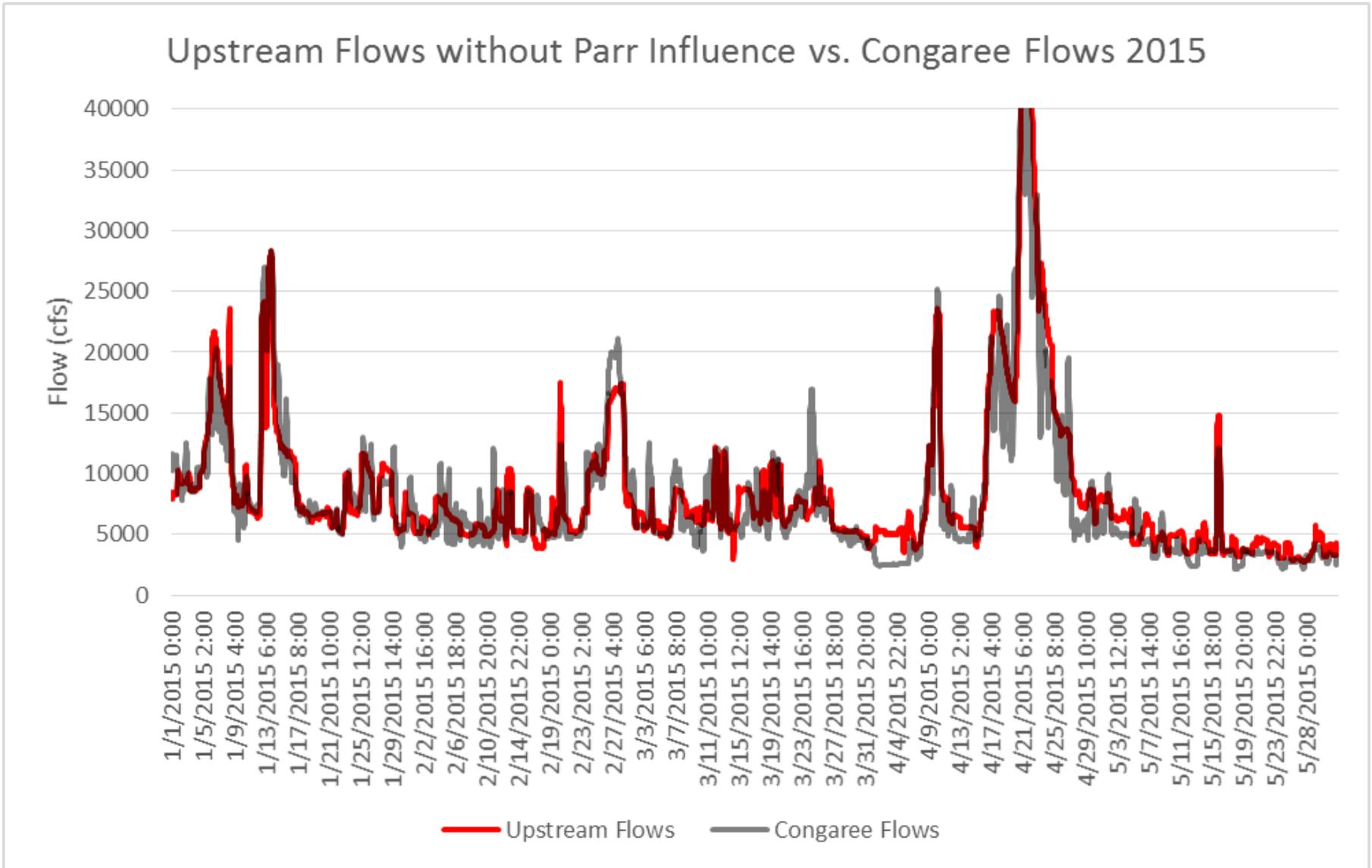


FIGURE 12 2015 UPSTREAM FLOWS (CARLISLE, ENOREE, TYGER, SALUDA GAGES) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

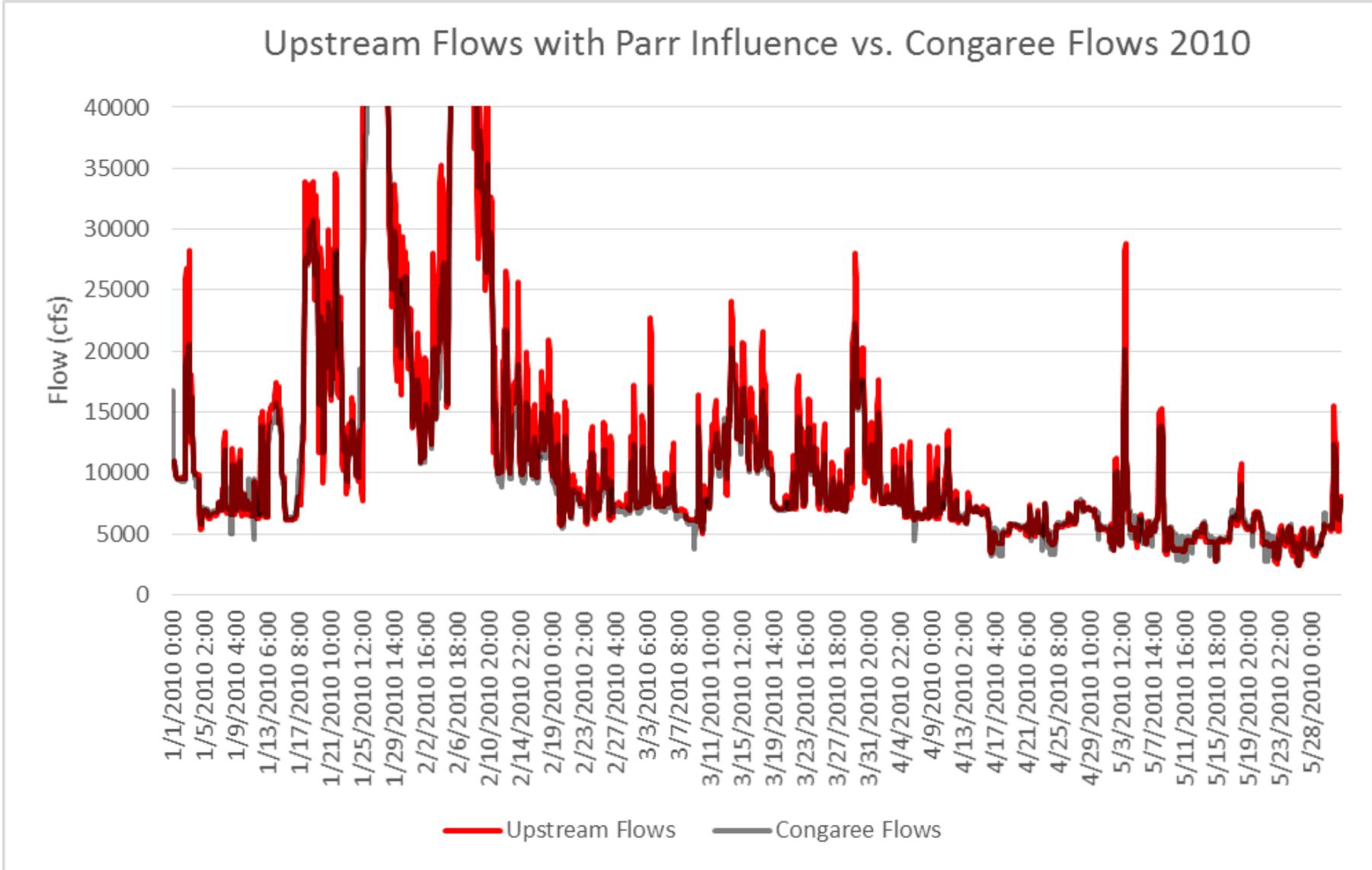


FIGURE 13 2010 UPSTREAM FLOWS (ALSTON AND SALUDA GAGE) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

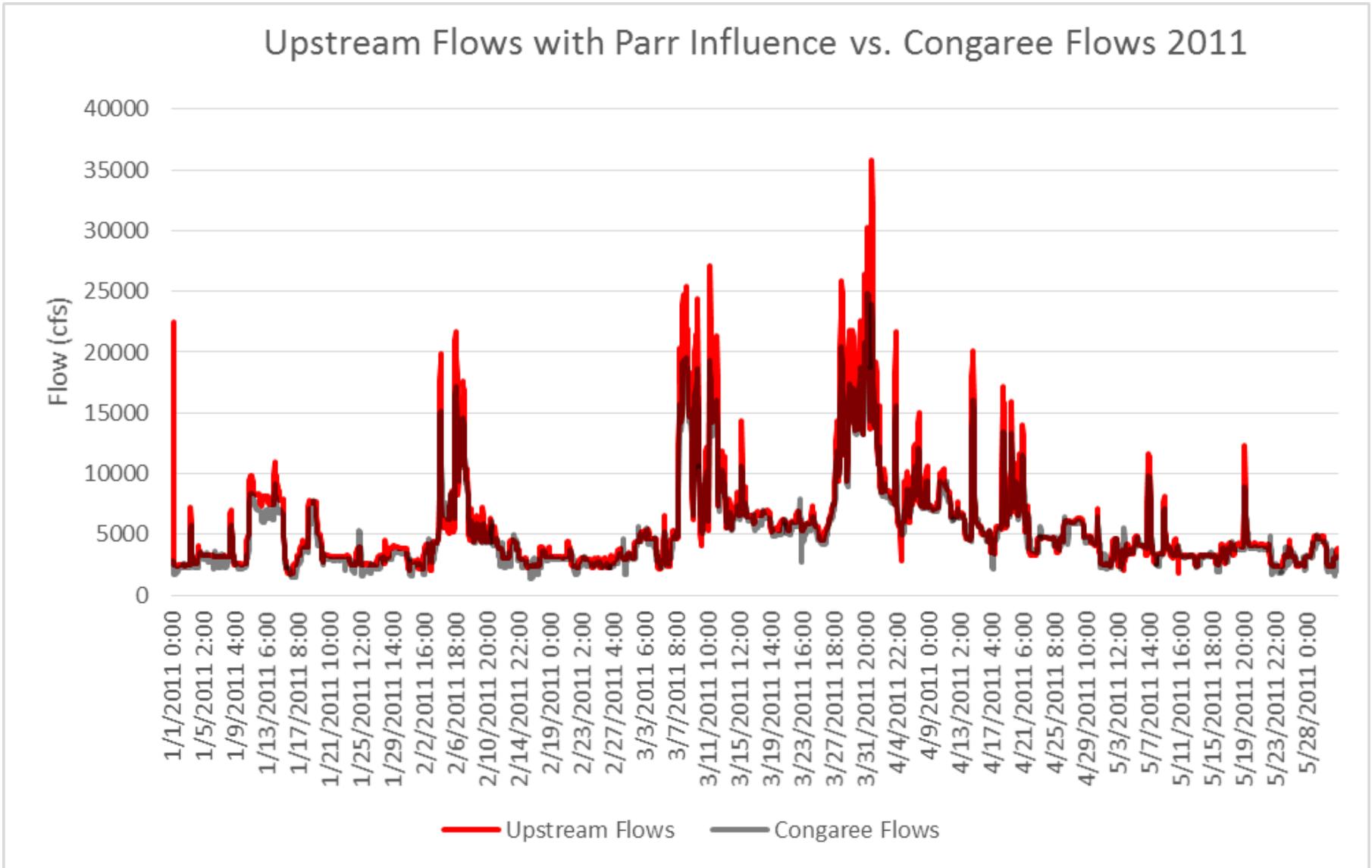


FIGURE 14 2011 UPSTREAM FLOWS (ALSTON AND SALUDA GAGE) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

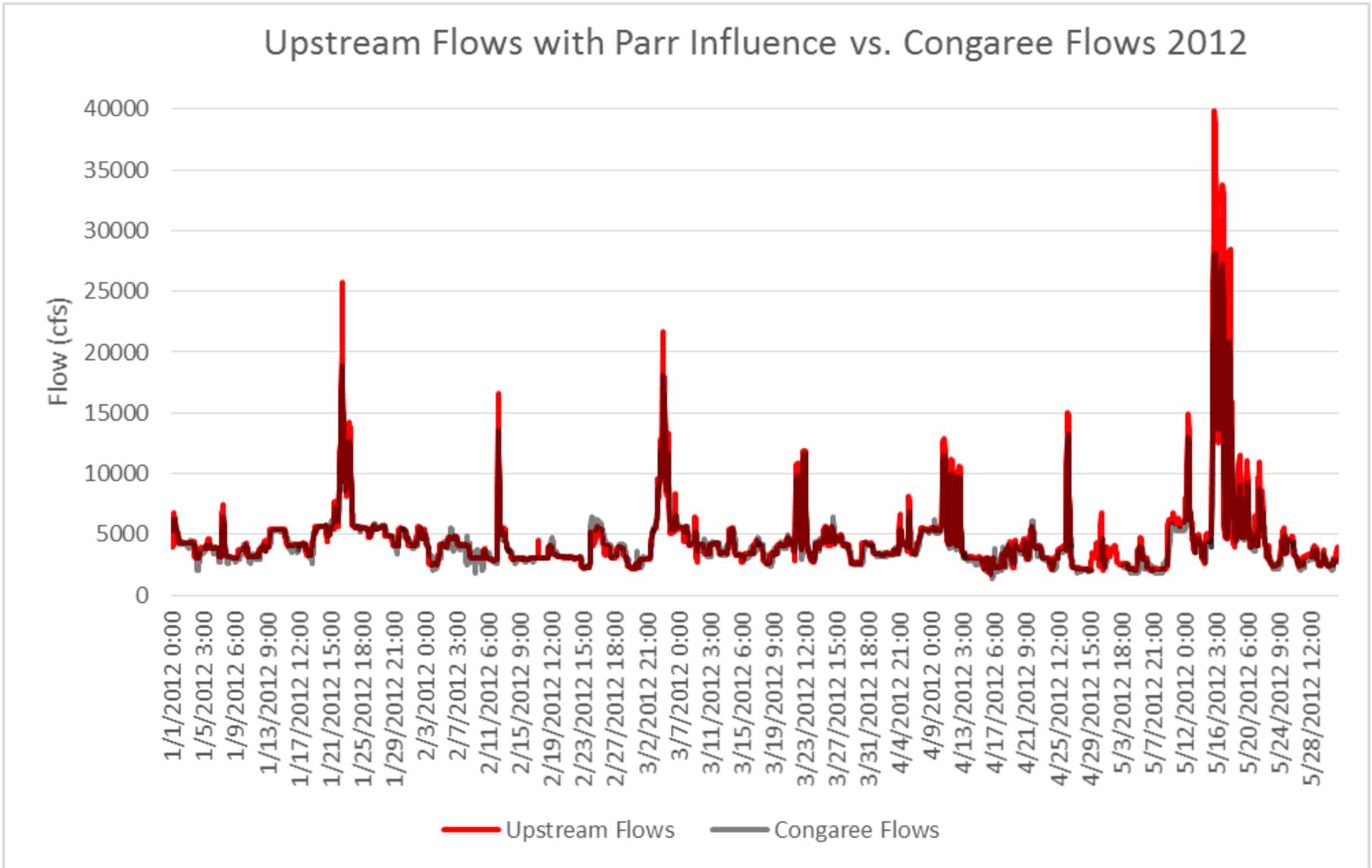


FIGURE 15 2012 UPSTREAM FLOWS (ALSTON AND SALUDA GAGE) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

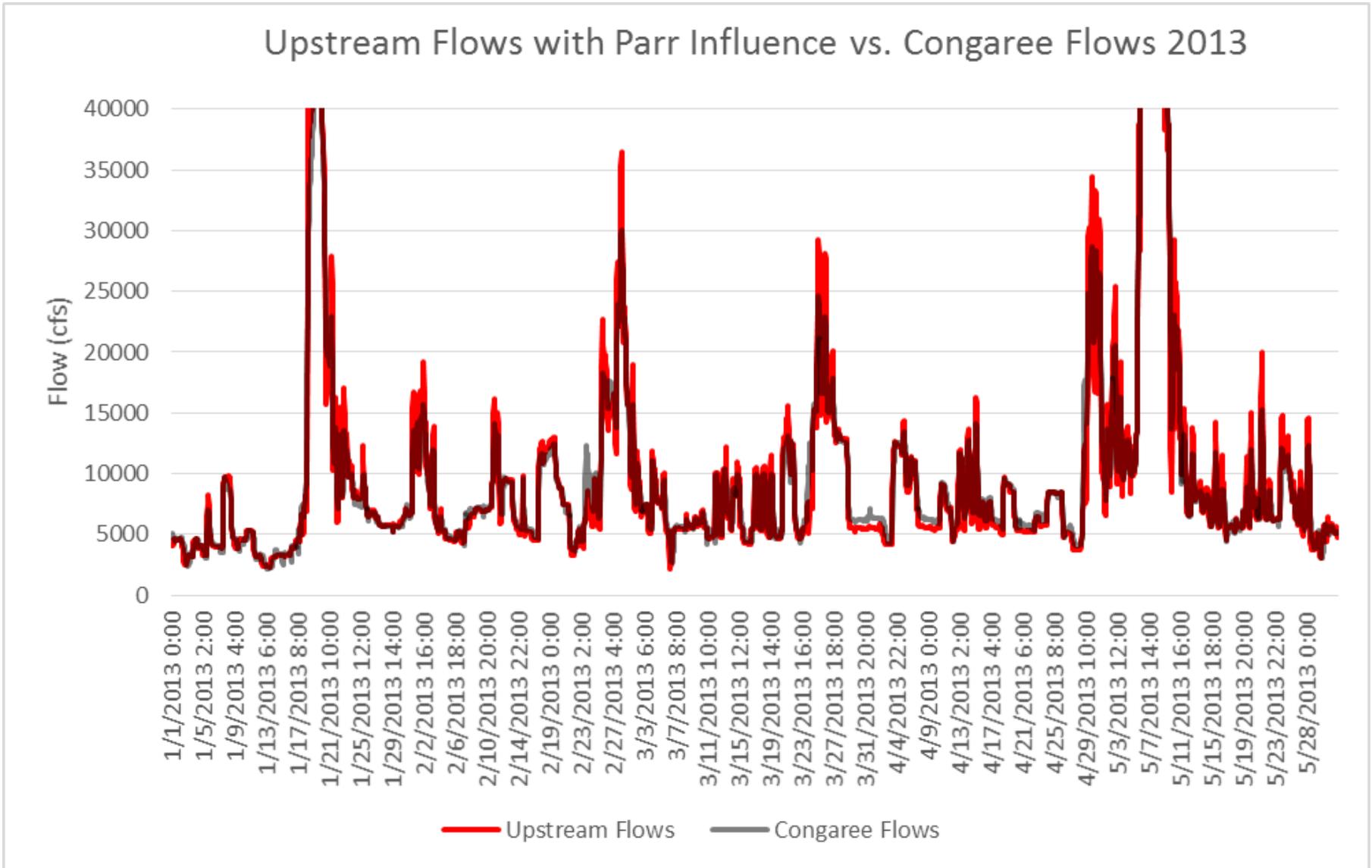


FIGURE 16 2013 UPSTREAM FLOWS (ALSTON AND SALUDA GAGE) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

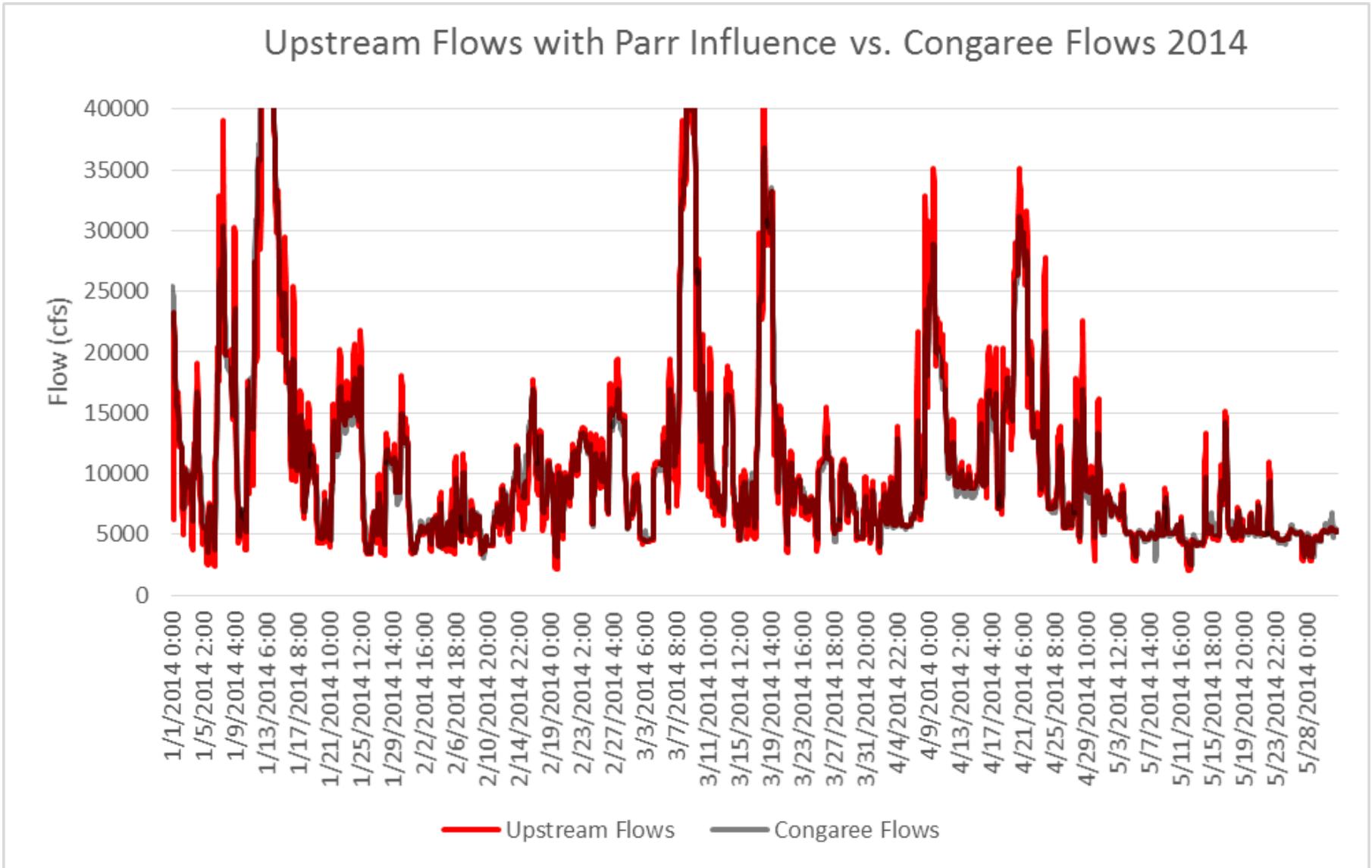


FIGURE 17 2014 UPSTREAM FLOWS (ALSTON AND SALUDA GAGE) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

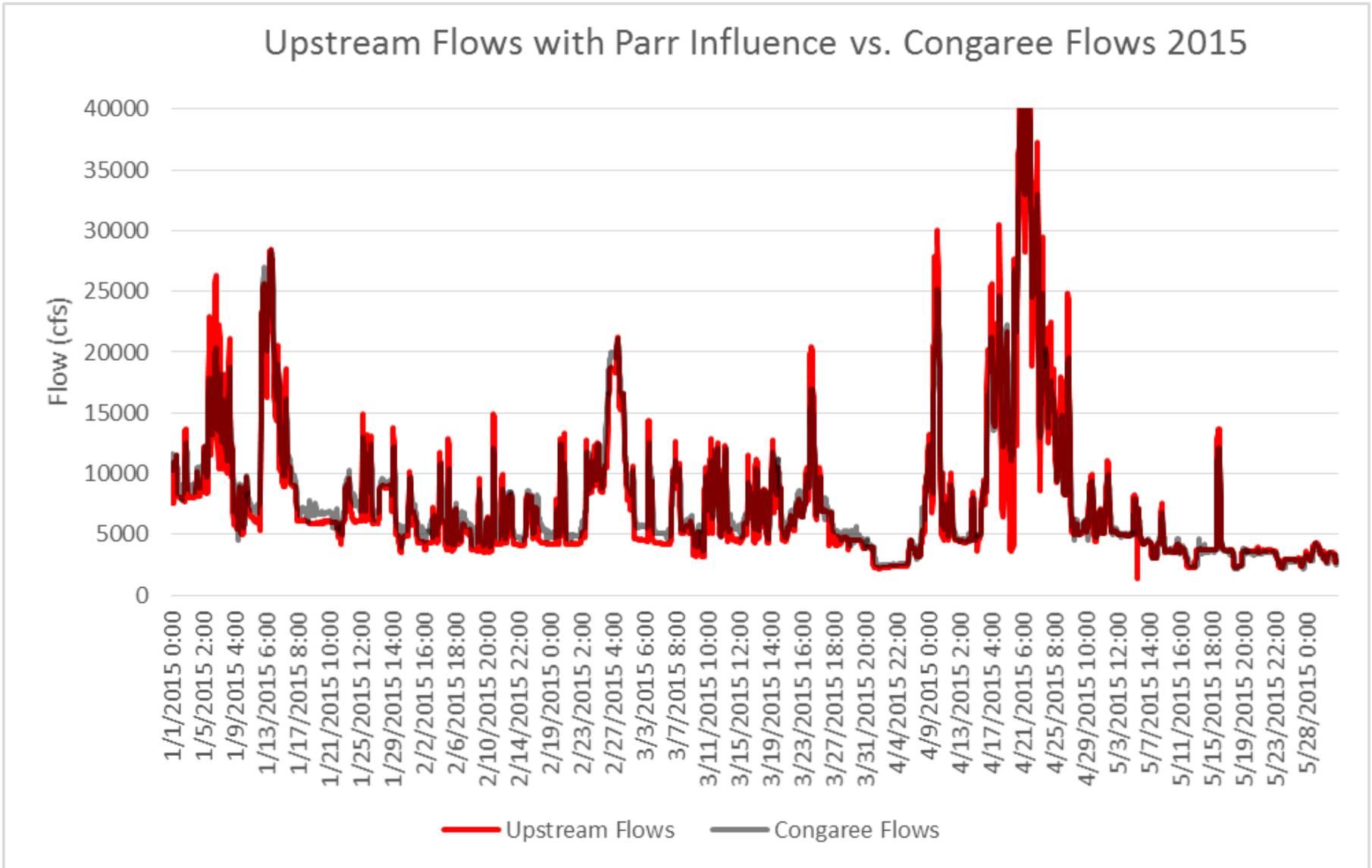


FIGURE 18 2015 UPSTREAM FLOWS (ALSTON AND SALUDA GAGE) VS. CONGAREE FLOWS (CONGAREE RIVER GAGE)

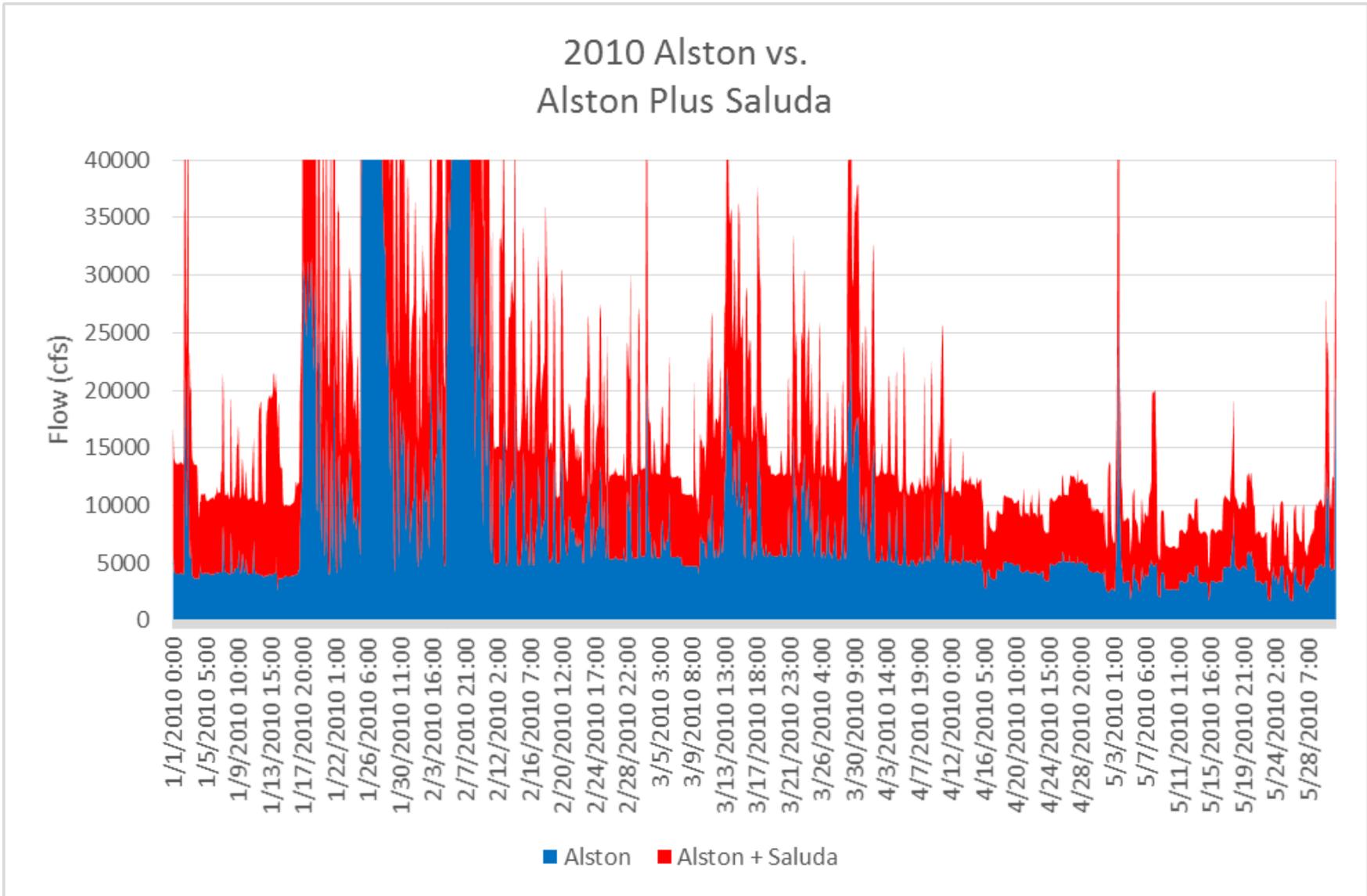


FIGURE 19 2010 ALSTON FLOWS VS. ALSTON AND SALUDA COMBINED FLOWS

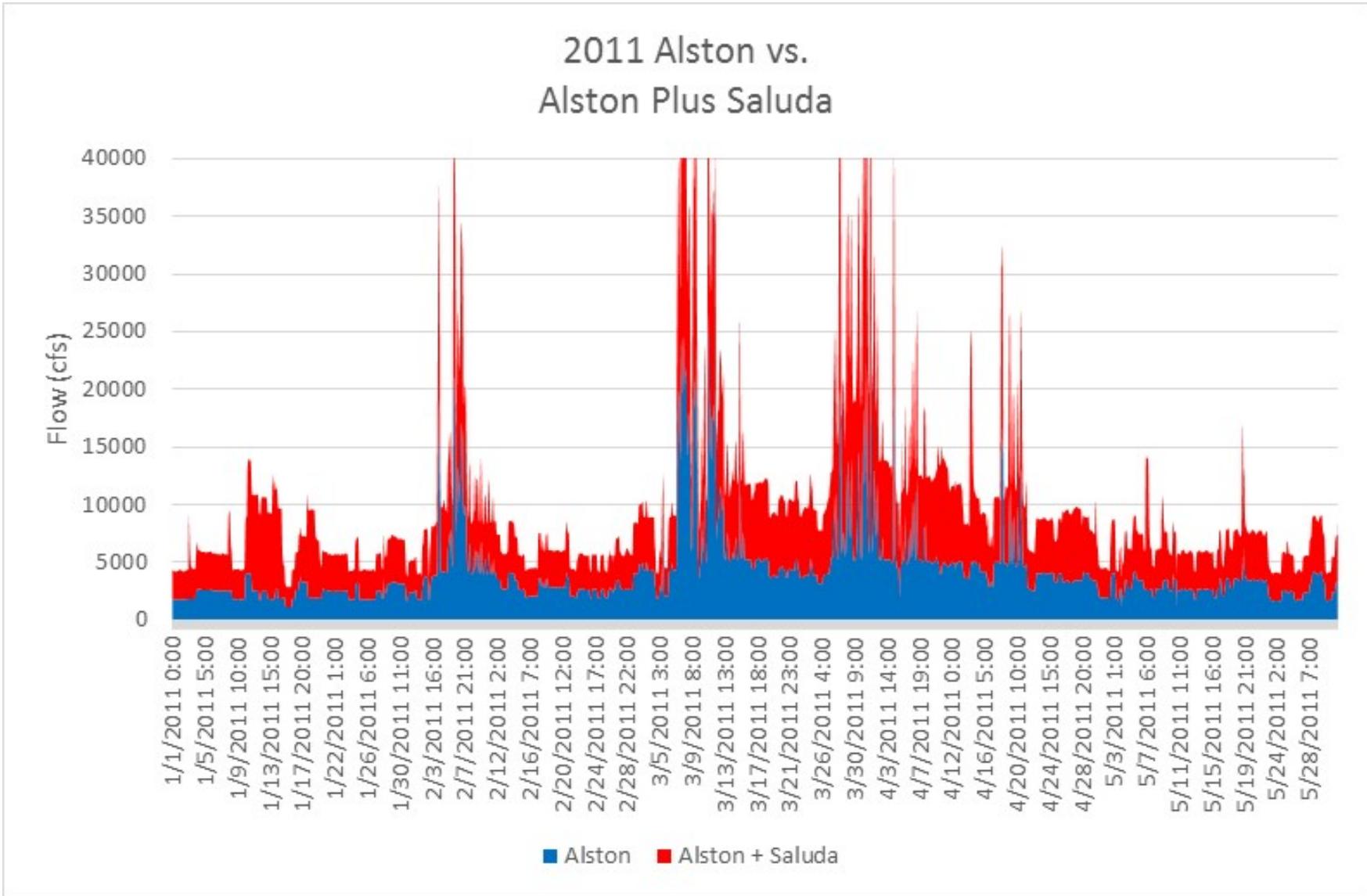


FIGURE 20 2011 ALSTON FLOWS VS. ALSTON AND SALUDA COMBINED FLOWS

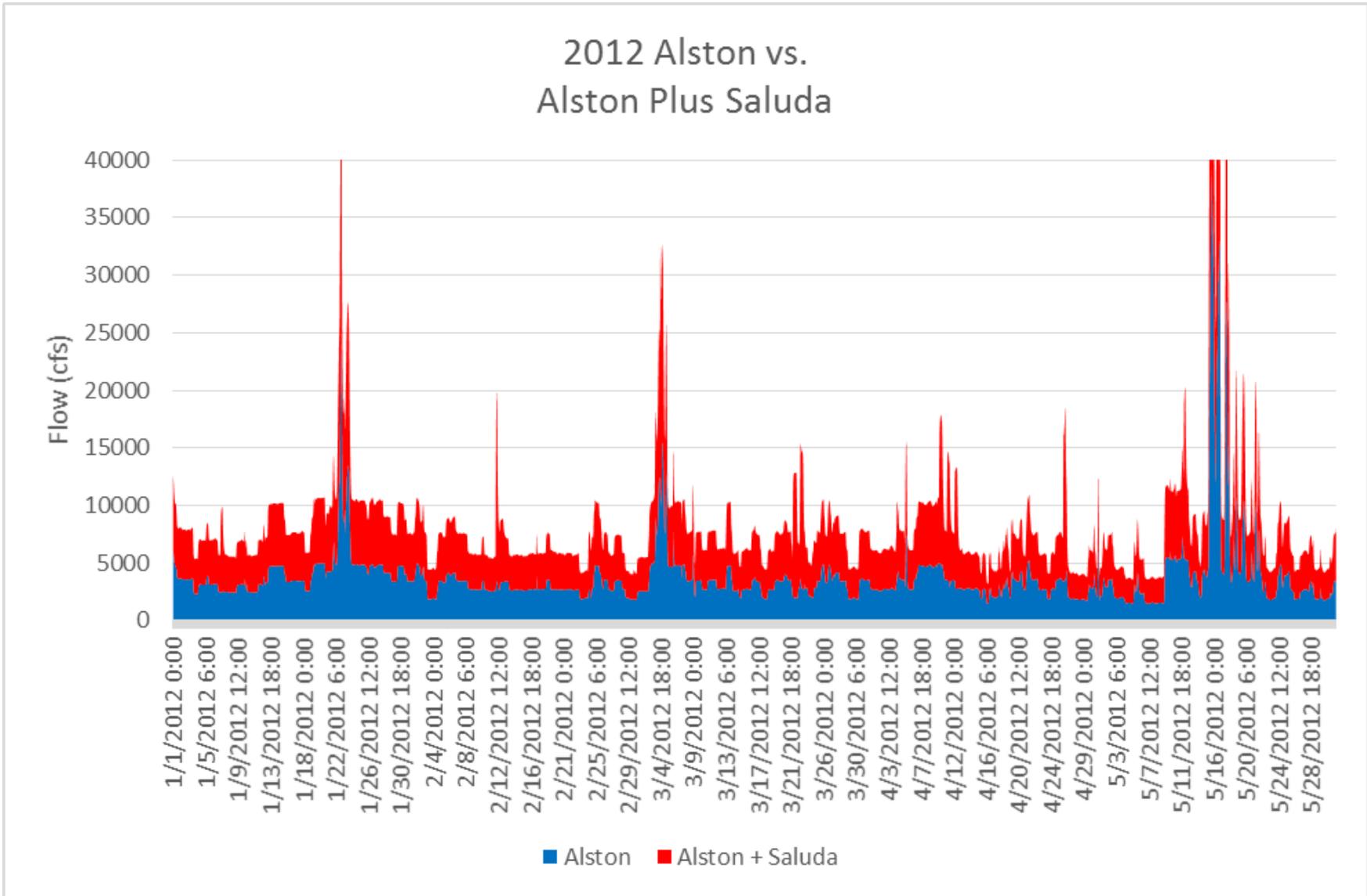


FIGURE 21 2012 ALSTON FLOWS VS. ALSTON AND SALUDA COMBINED FLOWS

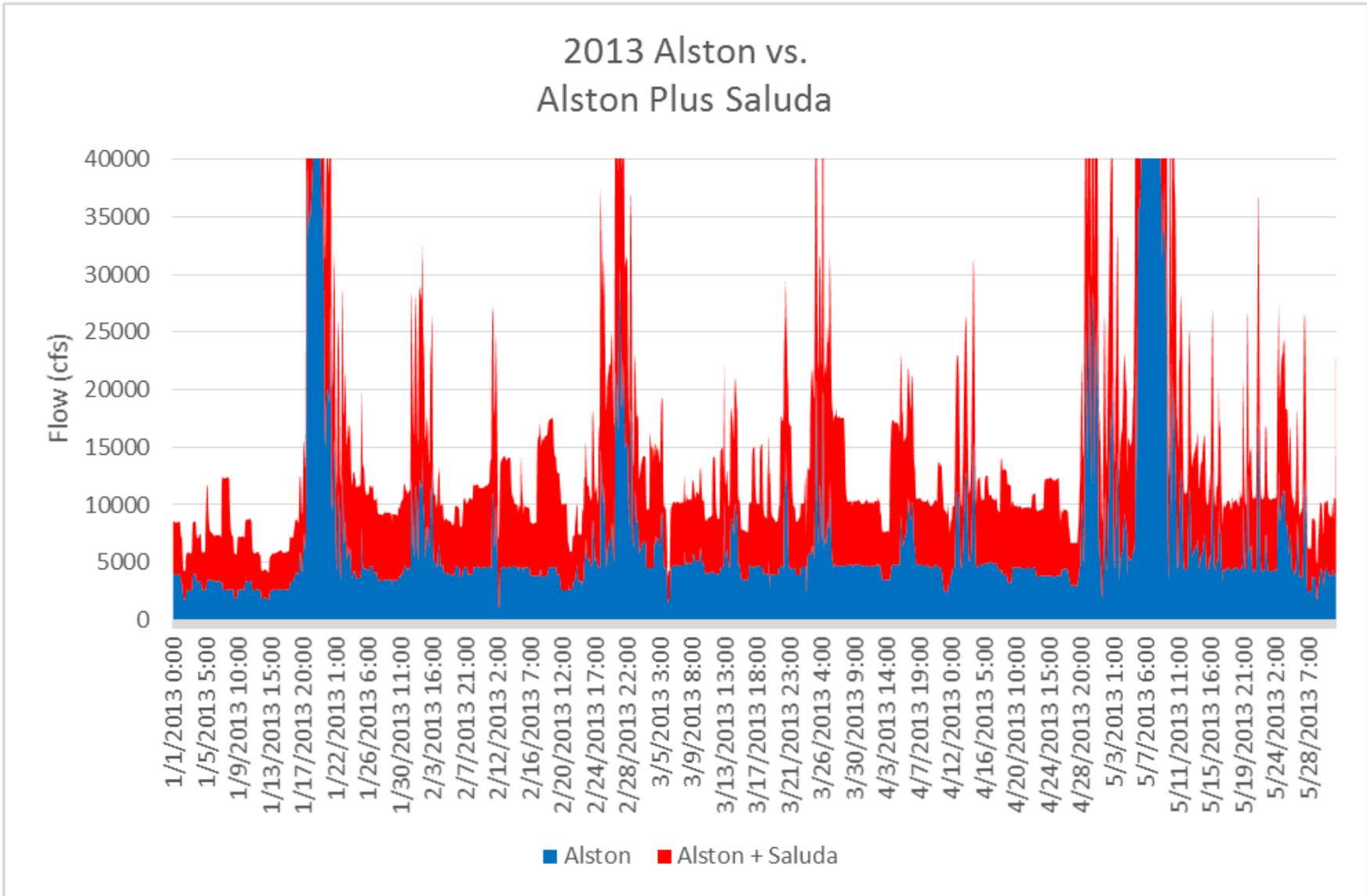


FIGURE 22 2013 ALSTON FLOWS VS. ALSTON AND SALUDA COMBINED FLOWS

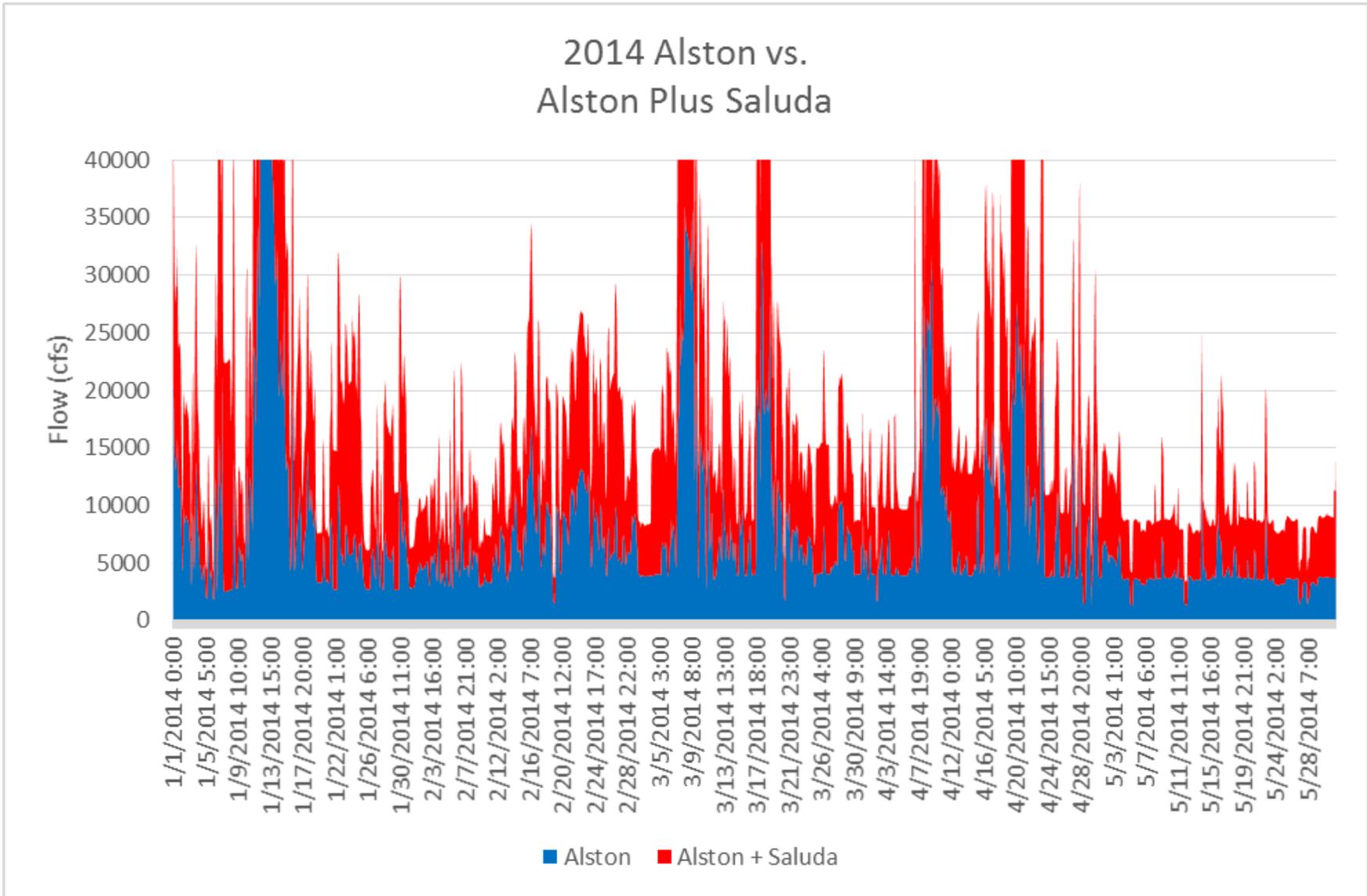


FIGURE 23 2014 ALSTON FLOWS VS. ALSTON AND SALUDA COMBINED FLOWS

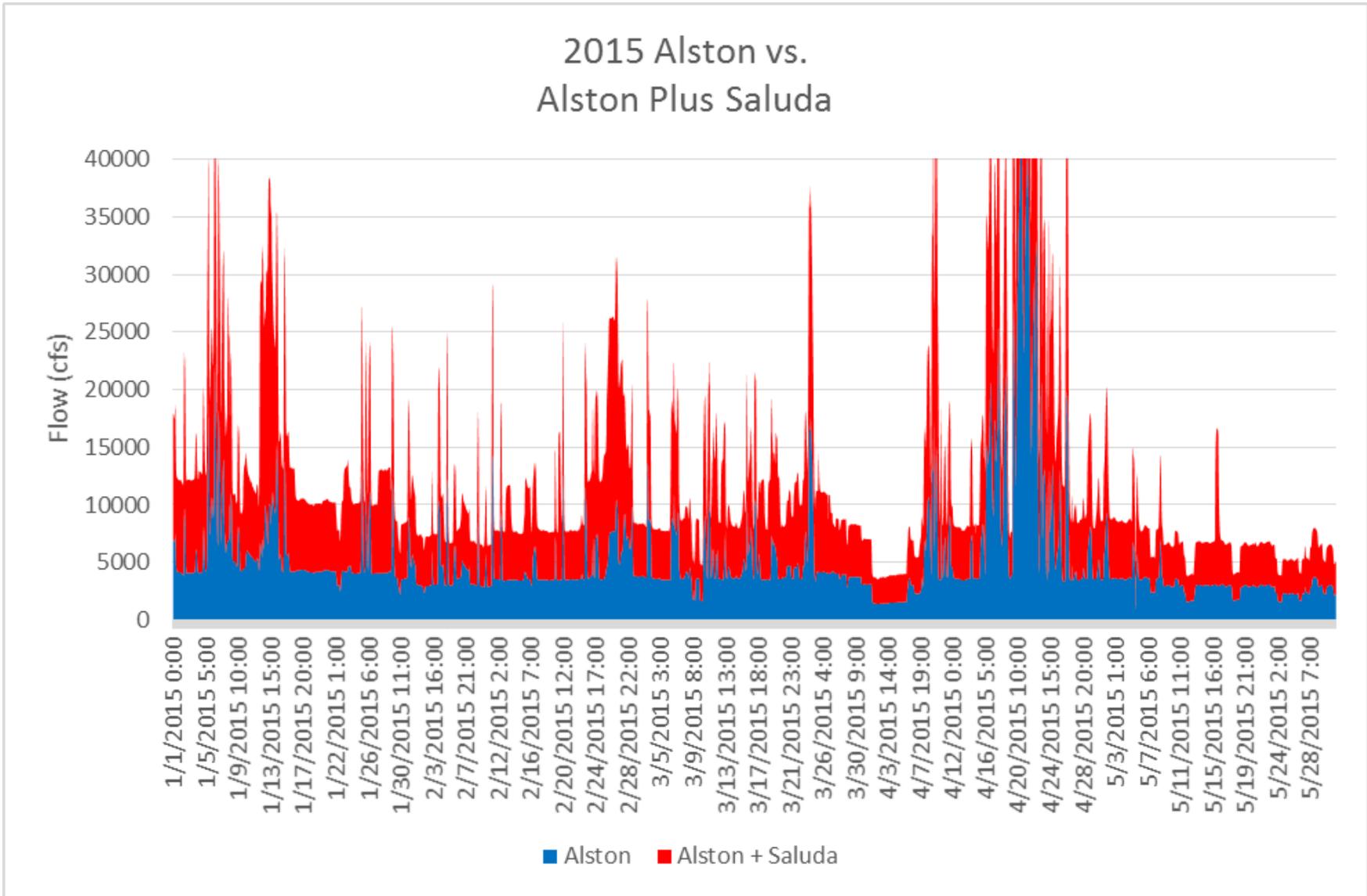


FIGURE 24 2015 ALSTON FLOWS VS. ALSTON AND SALUDA COMBINED FLOWS

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Lake and Land Management TWC Meeting

November 10, 2016

Final KMK 1-9-17

ATTENDEES:

Bill Argentieri (SCE&G)
Tommy Boozer (SCE&G)
Beth Trump (SCE&G)
Caleb Gaston (SCE&G)
Brandon Stutts (SCE&G)
Randy Mahan (SCE&G)
Corbin Johnson (SCE&G)
Dan Adams (SCE&G)
Brandon McCartha (SCE&G)

Dick Christie (SCDNR)
Bill Marshall (SCDNR)
Sam Stokes (SCDNR)
Jeff Carter
Bill Hendrix
Henry Mealing (Kleinschmidt)
Alison Jakupca (Kleinschmidt)
Kelly Kirven (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.

Alison opened the meeting by reviewing the agenda. The purpose of the meeting was to review the proposed revisions to the Parr and Monticello SMPs and the Permitting Handbook and discuss any issues that were still unresolved. The goals of the meeting were to reach consensus on the SMP edits and finalize the SMP and Permitting Handbook documents. The revised documents, with edits shown in track changes, are attached to these notes. Some of the major points of discussion are included below.

Parr Reservoir SMP

The group began discussing the edits made to the Parr SMP. Alison said that the canoe portage and any other areas proposed as part of the Recreation Management Plan will be included in the SMP and discussed in the cover letter to FERC.

Reference to Pearson's Island was changed to "islands," since there are other islands within Parr Reservoir other than Pearson's.

Bill Marshall asked if "collar" lands are included in the Wildlife Management Areas (WMA). SCDNR defined collar lands as the land from the PBL to the water's edge (SCE&G refers to these areas as fringe lands). Alison said that the WMA does extend up to the PBL, and the maps in the report will be revised to clearly show this. As noted in the next paragraph, later in the meeting it was determined that the hunting area designation maps should not be included in the SMP or Permitting Handbook, but these documents should reference the SCDNR website for hunting rules and regulations.

The group discussed the need for the distinction between WMAs and hunting lands and decided that to avoid confusion, references to WMAs in the SMPs would be removed and would instead refer to hunting land. Within the SMP, readers are directed to visit the SCDNR website to learn rules and regulations regarding hunting in the Project area.

Bill Marshall recommended that language be added to the SMP to allow for camping on the islands at Parr Reservoir. Some concerns were raised regarding property ownership and safety. After the meeting. After the meeting, SCE&G discussed Bill Marshall's request internally and decided that they are fine with allowing public use of the islands for day time activities, however they are concerned about nighttime use of the islands based on the susceptibility of Parr Reservoir to high inflows from storm events upstream. During the night, individuals would be sleeping and therefore unaware of rising flows. Instead, SCE&G would prefer to allow overnight camping on the shoreline property between the reservoir and Project boundary, referred to previously as "collar lands," instead of on the islands. This would provide a "primitive" camping experience without promoting overnight island use. SCDNR is considering this proposal and pending a final decision, wording regarding overnight camping along the shoreline will be added to the Parr SMP and Permitting Handbook.

Monticello Reservoir SMP

Similar to the Parr SMP, the group decided to simplify the document and remove the WMA language, instead referring the reader to the SCDNR website for hunting rules and regulations.

There was discussion on whether the piece of property adjacent to the Fairfield tailrace should be classified as Future Recreation or Project Operations. Currently, this area is classified as Future Recreation. There was discussion about which maps and SMPs this property should be included in – the Monticello or Parr maps. There was also discussion about this property being available for public hunting. SCDNR will discuss this internally and provide additional recommendations to SCE&G.

The group also discussed changing color classifications on the SMP maps, specifically to distinguish between "public access area" lands and "future recreation" lands. The group ultimately decided not to change these colors on the map, as they both fall under the general "recreation" classification. Instead, SCE&G will post "No hunting or shooting" signs at the recreation areas on Parr Reservoir. The group also discussed changing color classifications on the Monticello Reservoir map, since both the "Dock Qualification – No" line and the "Non-Development Areas" polygons are both colored red. Hunting is not allowed on "Non-Development Areas" surrounding Monticello. Since the red "Dock Qualification – No" line encompasses the islands, and hunting will be allowed on the islands, it appears that there is a ring of "no hunting land" around the islands. The group decided to change the color of the "Non-Development Areas" polygon to a different color, in order to distinguish between the two classifications.

Permitting Handbook

Edits will be made to the Permitting Handbook to reflect the edits made to the Parr and Monticello SMPs.

Action items from the meeting are listed below.

ACTION ITEMS:

- Kleinschmidt will prepare meeting notes and distribute to the TWC for review.
- Alison will make edits to the SMPs and Permitting Handbook that were discussed during the meeting and reissue the documents to the TWC for review.
- SCDNR will provide feedback on the piece of property near the Fairfield tailrace regarding its use classification.

SHORELINE MANAGEMENT PLAN PARR RESERVOIR

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

Prepared for:

**South Carolina Electric & Gas Company
Cayce, South Carolina**

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtGroup.com

[Date]

SHORELINE MANAGEMENT PLAN
PARR RESERVOIR

PARR HYDROELECTRIC PROJECT
(FERC No. 1894)

Prepared for:

South Carolina Electric & Gas Company
Cayce, South Carolina

Prepared by:

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[DATE]

**PARR HYDROELECTRIC PROJECT
SHORELINE MANAGEMENT PLAN
PARR RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

EXECUTIVE SUMMARY

South Carolina Electric & Gas Company ("SCE&G") is the Licensee of the Parr Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 1894) ("Project"). The Project consists of the Parr Shoals Development and the Fairfield Pumped Storage Development. The developments are located along the Broad River in Fairfield and Newberry Counties, South Carolina.

The Project developments form two distinct Project reservoirs. Parr Reservoir is located along the Broad River, as impounded by Parr Dam, and functions as the lower reservoir for the Fairfield Development. Monticello Reservoir is located adjacent to the Broad River and functions as the upper reservoir for the Fairfield Development. Both Project reservoirs serve as popular recreation destinations and are used and enjoyed by local residents as well as visitors to the state.

In conjunction with its relicensing activities, SCE&G has assembled a diverse and inclusive group of stakeholders to advise and assist in the development of two Shoreline Management Plans ("SMPs"), each tailored to a specific reservoir. SMPs are comprehensive plans for the management of Project land and adjoining water resources and their uses, consistent with License requirements and broad Project purposes, and appropriately accessible and beneficial to adjacent shoreline residents and the recreating public. A SMP serves to identify existing and appropriate future uses and to provide plans and programs for responsible future use and management of project lands and waters as well as the flora and fauna encompassed within them. This SMP exists specifically to address shoreline uses surrounding Parr Reservoir. A SMP to address Monticello Reservoir is included under separate cover and is available from the SCE&G Lake Management Department (Lake Management).

In addition to a SMP for each Project reservoir, a Shoreline Management Handbook and Permitting Guidelines (Permitting Handbook) was developed for both developments in consultation with governmental, non-governmental, and individual stakeholders to address activities that will require consultation with and/or permits from SCE&G. These activities include construction, maintenance, and placement of docks on Monticello Reservoir, shoreline stabilization, lake access pathways and other shoreline activities.

The classification of Project lands surrounding Parr Reservoir is described in Section 5.0 and includes three management classifications. These classifications are as follows: Project Operations; Public Recreation; and, Non-Development Areas. Lands reserved for Project operations are those lands that are specifically required for operation of the Project. They include areas such as plant facility locations, dams, electrical substations, etc. Public Recreation land includes land within SCE&G developed recreation areas and islands that are owned by SCE&G. Undeveloped areas are areas protected from development to preserve the environmental resources and aesthetic values. Land use prescriptions associated with these land management classifications are discussed in further detail in Section 6.0. Prescriptions are administered through the Permitting Handbook.

SCE&G maintains a strong commitment to the management of the waters and shoreline of Parr Reservoir, focusing on the social, ecological, and economic impacts of activities on and near the shoreline and water, taking into consideration in particular the environmental, aesthetic, and recreational character of the shoreline and lake. Section 7.0 details the activities and structures on and adjacent to Parr Reservoir that require SCE&G consultation and/or approval. The permitting procedures for shoreline activities or structures are set out in more detail in Section 8.0 and in the Permitting Handbook.

Section 9.0 details SCE&G's fee structure for the shoreline management program. Such fees can be one-time or periodic.

Periodic surveys of the Parr Reservoir shoreline are conducted by SCE&G and include, among other things, inventories of unauthorized structures. These represent violations of the SMP. SMP violations will be dealt with as deemed by SCE&G, in its sole discretion, to be appropriate. Consequences of violations may range from required removal of unauthorized structure, fines, and/or legal action, and are discussed more fully in Section 10.0.

SCE&G Shoreline Management Practices include actions taken to lessen or mitigate for potential impacts to a particular resource resulting from its direct or indirect use. These include but may not be limited to landowner Best Management Practices ("BMP"). Shoreline Management Practices are further described in Section 11.0 of this document.

Public education and outreach on the protection of valuable shoreline resources is integral to the effectiveness of the SMP. Section 12.0 of this document details specific measures to be undertaken to help educate both adjacent shoreline residents and other Project resource users. Among included objectives will be SMP education and BMP education.

In its Application for New License, SCE&G is proposing 10 year review periods for the SMP. The 10 year SMP review periods provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook with interested stakeholders periodically to ensure its effectiveness; however, changes to the permitting process may be made as it deems necessary and appropriate. This is discussed in Section 13.0.

TABLE OF CONTENTS (CONTINUED)

**SHORELINE MANAGEMENT PLAN
PARR RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

TABLE OF CONTENTS

EXECUTIVE SUMMARY I

1.0 INTRODUCTION1

2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN5

3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN.....6

 3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS.....7

 3.2 PROJECT BOUNDARY8

4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES9

 4.1 CONSULTATION.....9

 4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE
 CONSERVATION GROUP11

 4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE11

 4.1.3 MEETING SCHEDULE.....12

5.0 LAND USE CLASSIFICATIONS13

 5.1 PROJECT OPERATIONS.....15

 5.2 PUBLIC RECREATION15

 5.2.1 PUBLIC ACCESS AREAS.....15

 5.2.2 PEARSON'S ISLAND AND SHOALS15

 5.2.3 FUTURE RECREATION AREAS.....16

 5.2.4 PUBLIC HUNTING16

 5.3 NON-DEVELOPMENT AREAS16

6.0 LAND USE PRESCRIPTIONS.....17

 6.1 PROJECT OPERATIONS.....17

 6.2 PUBLIC RECREATION17

 6.2.1 PEARSON'S ISLAND AND SHOALS18

 6.2.2 HUNTING18

 6.3 NON-DEVELOPMENT AREAS19

7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL.....20

 7.1 AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE
 PERMITTING HANDBOOK20

 7.2 PROHIBITED STRUCTURES AND ACTIVITIES20

8.0 PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES22

8.1	SHORELINE PERMITTING PROCEDURES	22
8.1.1	SHORELINE VEGETATION MANAGEMENT	23
8.1.2	ACCESS PATH	23
8.1.3	WATER WITHDRAWAL.....	25
9.0	SCE&G PERMITTING FEE POLICIES	26
10.0	ENFORCEMENT OF SHORELINE MANAGEMENT PLAN	27
10.1	VIOLATIONS OF SHORELINE MANAGEMENT PLAN	27
11.0	SHORELINE MANAGEMENT PRACTICES.....	28
11.1	SCE&G SHORELINE MANAGEMENT PRACTICES.....	28
11.1.1	FOREST MANAGEMENT/SHORELINE MANAGEMENT PRACTICES.....	28
11.1.2	PROTECTION OF LANDS KNOWN TO PROVIDE IMPORTANT HABITAT VALUES	28
11.2	LANDOWNER RECOMMENDED BMPs	28
11.2.1	MINIMIZING NON-POINT SOURCE POLLUTION	29
12.0	PUBLIC EDUCATION AND OUTREACH.....	31
12.1	SHORELINE MANAGEMENT PLAN EDUCATION.....	31
12.2	PUBLIC ACCESS AREA MAPS	32
12.3	PUBLIC FISHING	32
12.4	WATERFOWL HUNTING ON PARR RESERVOIR.....	32
12.5	SAFETY PROGRAMS	32
13.0	MONITORING AND REVIEW PROCESS	35
13.1	OVERALL LAND USE MONITORING.....	35
13.2	REVIEW PROCESS.....	35
14.0	REFERENCES	36

LIST OF TABLES

TABLE 4-1	PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING	10
TABLE 4-2	ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC ..	11
TABLE 5-1	SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION	13

LIST OF FIGURES

FIGURE 1-1	PROJECT LOCATION AND BOUNDARY MAP	4
FIGURE 5-1	SHORELINE CLASSIFICATIONS MAP FOR PARR RESERVOIR.....	14
FIGURE 8-1	PERMITTED ACCESS PATH	24
FIGURE 12-1	PARR RESERVOIR PUBLIC ACCESS AREA MAP.....	34

**PARR HYDROELECTRIC PROJECT
SHORELINE MANAGEMENT PLAN
PARR RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

1.0 INTRODUCTION

The Parr Hydroelectric Project ("Project") is located on the Broad River in Fairfield and Newberry Counties, South Carolina (Figure 1-1). The Project is located approximately 31 river miles downstream of the Neal Shoals Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 2315) and 24 river miles upstream of the Columbia Diversion Dam. The Project consists of two developments: the Parr Shoals Development ("Parr Development") and the Fairfield Pumped Storage Development ("Fairfield Development"). Subsequently, two reservoirs are included as part of the Project, Monticello Reservoir¹ and Parr Reservoir. The normal maximum water level in Monticello Reservoir is El. 425.0 feet National Geodetic Vertical Datum ("NGVD"), which corresponds to a surface area of 6,800 acres, and a gross storage of 400,000 acre-feet. Monticello Reservoir has approximately 57 miles of shoreline within the Project boundary². Parr Reservoir's normal maximum water level is at El. 266.0 feet NGVD, with a corresponding surface area of 4,400 acres. The gross storage is estimated to be 32,000 acre-feet. Parr Reservoir has approximately 88 miles of shoreline within the Project boundary.

An active storage of up to 29,000 acre-feet is transferred between the two reservoirs by the pumped storage operations of the Fairfield Development. Fairfield Development's alternate cycles of generation and pumping results in daily fluctuations in the water levels of both Monticello and Parr Reservoirs. Monticello, when beginning at normal maximum pool elevation, drops 4.5 to 5 feet over a 10 to 12 hour period during the generating phase of operation. At the

¹ The State of South Carolina considers Monticello Reservoir waters of the State and refers to it as "Lake Monticello".

² Standard License Article 5 requires licensees to acquire and retain sufficient property and rights to construct, maintain, and operate their projects, as identified in their specific license, including any property or rights needed to accomplish all designated project purposes. As such, Project lands are those lands within the FERC project boundary owned by SCE&G in fee title and those lands for which SCE&G has acquired or retained an easement.

same time, the water from Monticello and from the Broad River is flowing into Parr Reservoir, causing it to rise as much as 10 feet. During the pumping cycle, the reverse occurs – the water level rises in Monticello Reservoir and drops in Parr Reservoir.

The Project boundary encompasses land around each reservoir, ~~extending between 50 and 200 horizontal feet from the high water mark~~. South Carolina Electric & Gas Company ("SCE&G") manages SCE&G-owned lands within the Project boundary ("Project property") to comply with the FERC License for the Project (the "Licensee"). The goal of project land management is to serve the public interest by providing recreational access and opportunities, protecting wildlife habitat and water quality, producing electricity, and protecting and preserving cultural and aesthetic resources. The Shoreline Management Plan ("SMP") provides a set of administrative policies, procedures, and practices by which SCE&G seeks to manage the Project shoreline to achieve these goals. Future proposals for specific shoreline related developments or activities will be reviewed for consistency with the SMP.

A draft of the initial Project SMP was filed with the FERC in 1991. After several years of discussion and revisions, the initial SMP was approved by the FERC on June 4, 2001. The history of the Project's SMP is described in more detail in Section 3.0 (History of the Shoreline Management Plan). The current relicensing³ of the Project provides a near term impetus and opportunity for SCE&G to review the existing SMP in cooperation with relicensing stakeholders, including federal and state regulatory agencies, interested non-governmental organizations ("NGO"s), and individuals. Through discussions with these parties, it was decided that the existing FERC approved SMP, which encompasses both Parr and Monticello Reservoirs, should be divided into two distinct SMP's, one for each reservoir. Hence, this SMP has been prepared for Parr Reservoir and is being submitted to FERC as part of SCE&G's Parr Hydroelectric Project comprehensive relicensing package. A SMP for Monticello Reservoir is included under separate cover.

The management guidelines set forth in this SMP are applicable to all lands within the Project boundary surrounding Parr Reservoir. Among other things, the current document includes the following components:

³ The current operating License for the Project is due to expire on June 30, 2020. As such, SCE&G will file for a new License with FERC on or before June 30, 2018.

- Detailed descriptions, management prescriptions and mapping of land classifications;
- Summary information on the Permitting Handbook and fee policies;
- Best management practices ("BMP"s);
- Public education and outreach;
- Reservoir monitoring; and,
- A proposed review process.

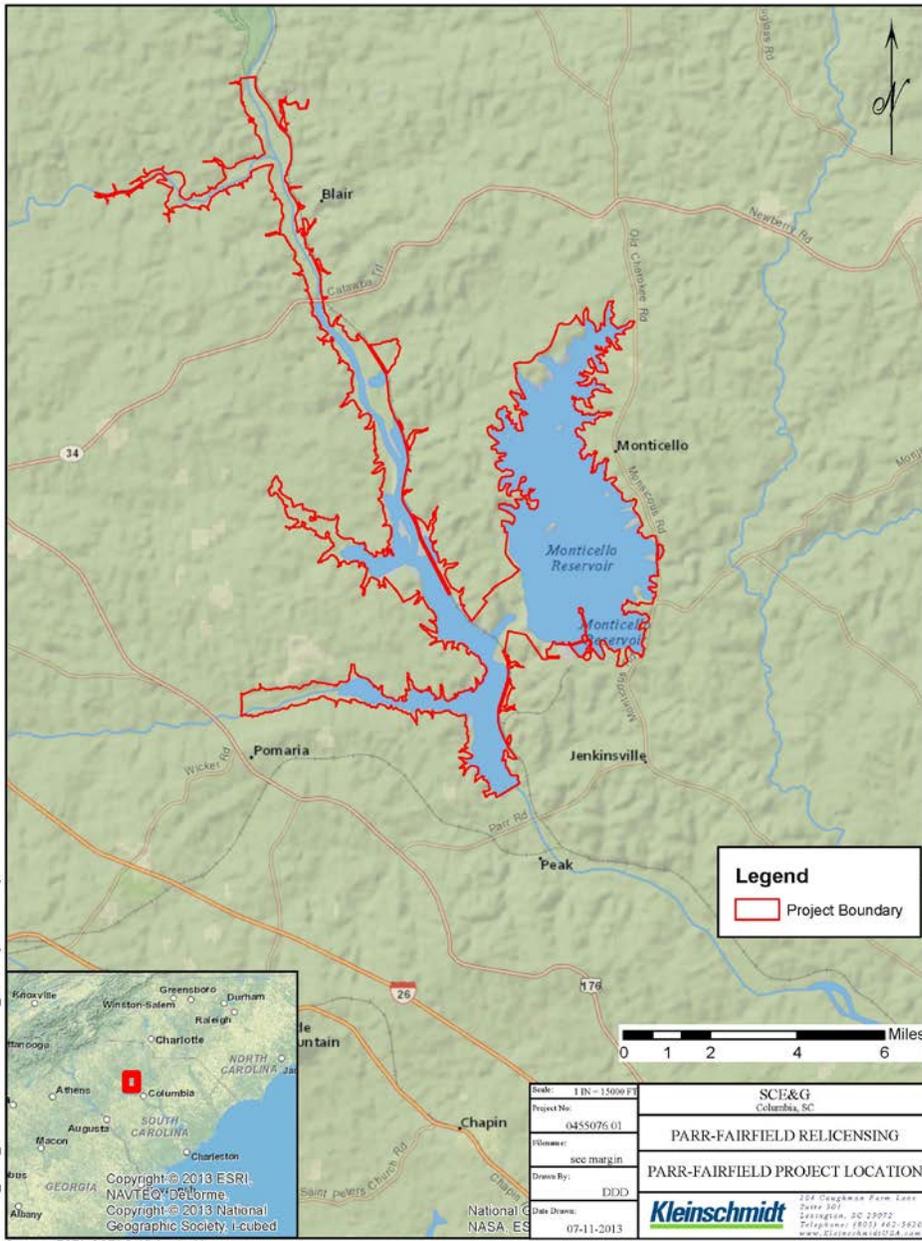


FIGURE 1-1 PROJECT LOCATION AND BOUNDARY MAP

2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN

The Project has served as a major source of power generation for SCE&G's customers and recreation for local residents and visitors to South Carolina for several decades. Consistent with FERC's Standard Land Use Article, a licensee may authorize specific non-project uses and occupancies of a project's shoreline. Examples of non-project uses at Parr Reservoir include access paths across SCE&G property, and water withdrawal. SCE&G has a responsibility to ensure that non-Project uses remain consistent with Project purposes, including protection and enhancement of the Project's scenic, recreational, and environmental values.

As development increases in areas surrounding the Project, so too does stress placed upon Project reservoirs and the surrounding watershed. Thus, a comprehensive SMP for each reservoir that recognizes and addresses sources of potential environmental impact is essential to managing each reservoir for the benefit of all interests and to ensure that non-Project uses remain consistent with the License.

The implementation of the SMP by SCE&G will help to maintain and conserve the area's natural and man-made resources. The SMP will comply with the terms of the License, as well as the regulations and orders of FERC, and is intended to assist in providing a balance between recreational use and development, environmental protection, and energy production.

3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN

Parr Reservoir is formed by the Parr Shoals Dam ("Dam"), which was originally constructed between 1912 and 1914. The Dam is situated across the Broad River and houses a 14.88 megawatt (MW) hydroelectric facility, located in an integral powerhouse. On August 28, 1974, the Federal Power Commission (FPC), predecessor to the FERC, issued SCE&G a new operating License for the Parr Shoals Development. In addition to relicensing the existing facilities, the new License authorized the construction of the 511.2 MW Fairfield Pumped Storage Development. This resulted in the creation of the Fairfield Development's upper pool, Monticello Reservoir. The new License also authorized the enlargement of the existing Parr Reservoir to serve as the lower pool to the Fairfield Development. This involved raising the height of the Dam approximately 9 feet, thereby nearly doubling Parr Reservoir's surface area. The construction of newly licensed facilities was completed in 1978, with the facilities beginning commercial operation that same year (F.P.C., 1974). The newly developed Project, including both Parr and Fairfield Developments, was subsequently referred to as the Parr Hydroelectric Project.

Article 48 of the Project License issued in 1974 required that SCE&G purchase in fee and include within the Project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the Project boundary shall include, but not be limited to: the islands in the Parr and Monticello Reservoirs formed by the 266-foot and 425-foot contour intervals, respectively; shoreline lands up to the 270-foot contour, or 50 feet (measured horizontally) from the Parr Reservoir's 266-foot contour, whichever is greater; and, shoreline lands up to the 430-foot contour interval, or 50 feet (measured horizontally) from Monticello Reservoir's 425-foot contour, whichever is greater. Provided that the Project boundary, except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontally measured, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given. The FPC determined that acquiring these lands would provide SCE&G with adequate shoreline control around the reservoirs, in addition to serving the purposes of Project operation and recreation (F.P.C., 1974). Furthermore, Article 20 of the Project License orders that SCE&G allow public access, to a reasonable extent to Project waters and adjacent Project lands (with the exception of lands necessary for the protection of life, health, and property) for navigation and outdoor recreational

purposes. This Article also allows SCE&G to grant permits for public access to the reservoirs subject to FERC approval (F.P.C., 1974).

In 1991, SCE&G recognized that appropriate policies and procedures should be in place to govern shoreline activities at the Project. Utilizing experience gained at their Saluda Hydroelectric Project (FERC No. 516), SCE&G filed a proposed SMP with FERC to regulate the use of Project shorelines. After extensive stakeholder consultation, an amended SMP was filed with FERC. It was approved on June 4, 2001. The SMP was included as part of the Project's Exhibit R (FERC, 2001).

The SMP approved in 2001 primarily covered activities associated with Monticello Reservoir. It dealt with the following matters: water quality management; forest management; waterfowl management; nuclear exclusion zone restrictions for the operation of SCE&G's V.C. Summer Nuclear Station; fishing, boating, and hunting; public access and recreation; private boat docks and access; vegetation removal; erosion control; and, prohibited activities.

In 2006, SCE&G amended the SMP's policy regarding common docks on Monticello Reservoir. The original policy allowed for two to five property owners to share a single common dock if the shoreline frontage requirement of 200 feet was met. The policy was amended to allow no more than two individual, adjacent single family residential lots to share a common dock. The shoreline frontage requirement of 200 feet was retained.

As noted, the previous SMP included very little pertaining to Parr Reservoir. As such, the need for a new SMP specifically pertaining to Parr Reservoir was identified.

3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS

The SMP serves as a reference document for SCE&G in implementing the Standard Land Use Article, which authorizes SCE&G to permit certain non-project uses of project lands and waters. FERC did not begin including the Standard Land Use Article in new licenses until the early 1980's; thus, it was not included in the Project License issued in 1974 (FERC, 2012). However, FERC granted SCE&G the authority to permit certain non-Project uses through the approval of the 2001 SMP, and added the Standard Land Use Article to the License (Article 62) in 2011, as revised in 2013 (Article 63). This present document, submitted in conjunction with SCE&G's License application, presents a management plan, covering only Parr Reservoir (a SMP for

Monticello Reservoir is included under separate cover), while adhering to the historical management goals agreed to and developed with agencies and stakeholders.

In addition to an updated SMP for each Project reservoir, a Permitting Handbook was developed in consultation with stakeholders and agencies to address activities requiring consultation with and/or permits from SCE&G. These activities include, but are not limited to the following: shoreline stabilization, access path development, and other shoreline activities. SCE&G will review the Permitting Handbook with interested stakeholders periodically to evaluate its effectiveness; however, SCE&G may make changes to the permitting process at any time as it determines in its sole judgment to be necessary and appropriate.

3.2 PROJECT BOUNDARY

SCE&G owns in fee or obtained flowage rights for all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. A Project boundary map is included as Figure 1-1.

4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES

The overall goal of this SMP is to define, document, and present the processes and criteria that SCE&G will employ to manage and balance private and public access to and uses of Project lands, specifically including Parr Reservoir's shoreline, consistent with public safety, energy production operations, environmental protection for Project land as well as Project waters, and reasonable recreational opportunities. This SMP will help to ensure the protection and enhancement of the Project's scenic, environmental, recreational, natural and cultural resources over the term of the License.

This SMP represents a consensus-based, updated management plan intended for submittal with the Project No. 1894 License Application. Specific goals relative to the SCE&G relicensing process that are discussed under this SMP include the following:

1. Provide for reasonable current and future public access;
2. Provide for current and future recreational needs within the Project;
3. Protect fish and wildlife habitat;
4. Protect cultural resources;
5. Protect the ability to meet operational needs;
6. Facilitate compliance with License articles;
7. Minimize adverse impacts to water quality;
8. Protect scenic values;
9. Monitor and permit shoreline activities;
10. Provide a summary catalogue of the types and locations of existing recreational opportunities;
11. Establish Land Management Classifications and Land Use Prescriptions to help in the management of non-Project uses of the Parr Reservoir shoreline lands within the Project boundary;
12. Describe the SMP amendment and monitoring process; and
13. Educate and encourage property owners who own property adjacent to or adjoining Project Property (herein referred to as "adjacent property owners") on the use of voluntary BMPs.

4.1 CONSULTATION

The Project relicensing provides an opportunity for SCE&G to seek input on Project-related shoreline management issues from interested stakeholders. SCE&G recognizes that successfully

completing the relicensing process requires identifying and resolving Project issues in consultation with federal and state resource agencies, local and national NGOs, homeowner associations, and individuals who have an interest in the Parr Hydroelectric Project (Table 4-1). SCE&G began public outreach efforts in January 2013 by holding a series of public workshops in Winnsboro, Newberry, Columbia, and Jenkinsville, SC. Since that time, SCE&G has sought active public involvement in the process and fostered commitment to issue resolution among SCE&G and stakeholders.

TABLE 4-1 PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING

STAKEHOLDER GROUPS
American Rivers
American Whitewater
Catawba Indian Nation
City of Columbia
Chestnut Hill Plantation HOA
Coastal Conservation League
Congaree Riverkeeper
Environmentalists Inc.
Fairfield County
Gills Creek Watershed
National Marine Fisheries Service
National Park Service
Newberry County
South Carolina Department of Health and Environmental Control
South Carolina Department of Natural Resources
South Carolina Department of Parks, Recreation and Tourism
South Carolina Electric & Gas Company
South Carolina Historic Preservation Office
Town of Winnsboro, SC
Tyger-Enoree River Alliance
United States Fish and Wildlife Service
United States Forest Service
University of South Carolina

4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE CONSERVATION GROUP

In support of the relicensing effort, SCE&G formed three Resource Conservation Groups ("RCG"s) to identify, address and resolve Project-related issues by resource area. The RCGs are as follows: the Fish, Wildlife and Water Quality RCG; the Project Operations RCG; and the Lake & Land Management and Recreation RCG. Consideration of potential issues by resource area allows for more focused topic discussion and targeted issue resolution. Some RCGs have established sub-groups, or Technical Working Committees ("TWC"s), for issues requiring special knowledge, education, or experience. Consequently, the Lake & Land Management and Recreation RCG has a Lake and Land Management TWC as well as a Recreation TWC. The Lake and Land Management TWC is discussed further below.

4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE

The primary mission of the Lake and Land Management TWC is to revise the existing Parr Hydroelectric Project SMP to provide a management framework within which Project resources can be effectively protected while assuring appropriate public and private access to the Project resources and the recreational opportunities they present. Another important focus of the TWC is to allow interested parties an effective opportunity to provide input on resource issues and the overall future management of shoreline resources. The resulting collaboration has resulted in the contribution of valuable information by entities and individuals familiar with the Project. The forum was instrumental in addressing important issues relevant to the operation and management of the Project over the term of the new License. In working collaboratively, the members of the TWC (Table 4-2) aimed to blend the objectives of the state and federal resource agencies with other stakeholder interests.

TABLE 4-2 ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC

STAKEHOLDER GROUPS
American Rivers
American Whitewater
Coastal Conservation League
Congaree Riverkeeper
Fairfield County

STAKEHOLDER GROUPS

Gills Creek Watershed

Adjacent Property Owners

National Marine Fisheries Service

National Park Service

South Carolina Department of Health and Environmental Control

South Carolina Department of Natural Resources

South Carolina Department of Parks, Recreation and Tourism

South Carolina Electric & Gas Company

Tyger-Enoree River Alliance

United States Fish and Wildlife Service

United States Forest Service

4.1.3 MEETING SCHEDULE

Between October of 2013 and January of 2018, SCE&G has held numerous meetings of the Lake and Land Management and Recreation RCG and Lake and Land Management TWC to discuss the details of the Project SMPs. The efforts of the TWC are reflected herein.

5.0 LAND USE CLASSIFICATIONS

Three distinct land management classifications have been developed for the shorelines surrounding Parr Reservoir. These land management classifications are as follows: Project Operations; Public Recreation; and, Non-Development Areas. The Public Recreation Classification includes designated public recreation areas, WMA and some islands within Parr Reservoir. Although SCE&G intends to manage its lands according to this classification system, the public generally will not be precluded from access to SCE&G-owned lands regardless of classification, with the exception of lands reserved and used for Project operations or other areas specifically protected from public access and posted as such. The sections below explain/define the land management classifications. The acreages and parcels for each of the classifications are provided in Table 5-1. Figure 5-1 depicts their distribution around Parr Reservoir.

TABLE 5-1 SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION

Commented [AJ1]: Currently verifying all GIS numbers

CLASSIFICATION	SHORELINE MILES	ACRES
Project Operations*	2.77	90
Public Recreation*	5.31	942
Non-Development Areas*	79.91	2,188
TOTAL	87.99	3,220

*No docks allowed

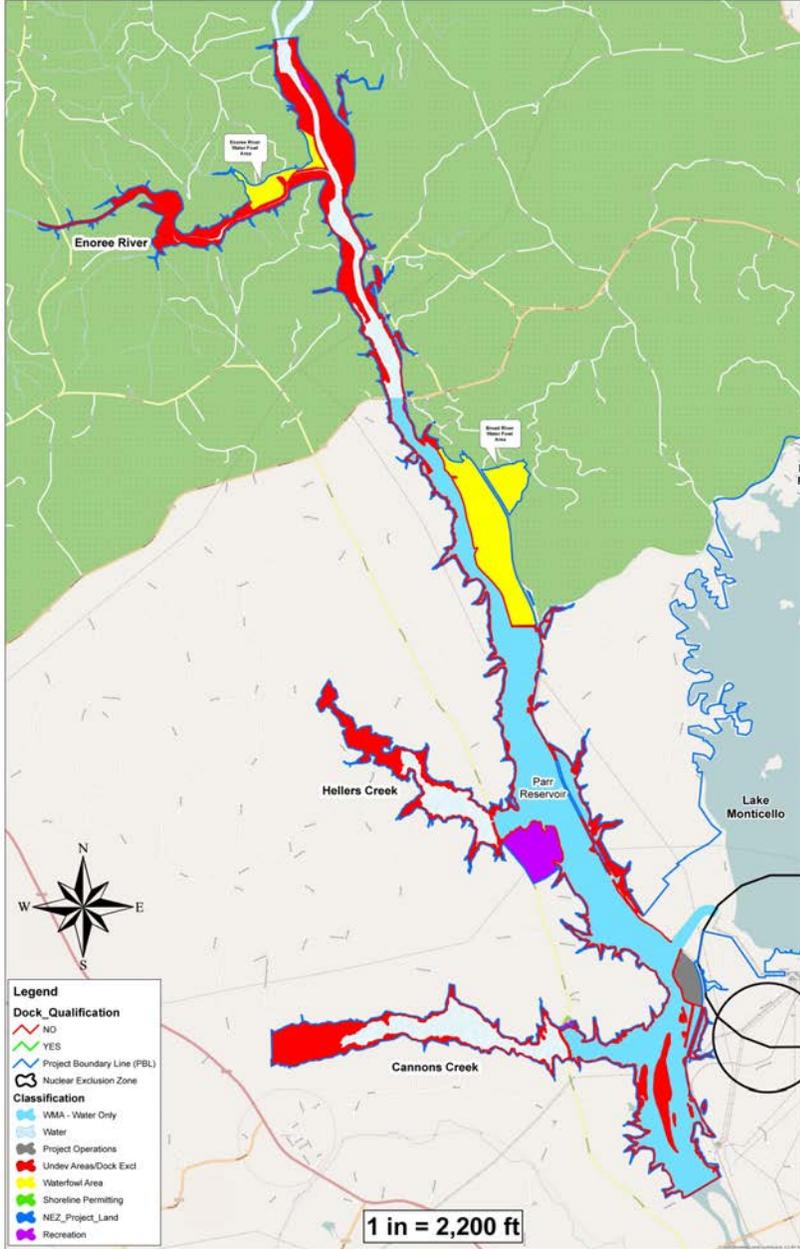


FIGURE 5-1 SHORELINE CLASSIFICATIONS MAP FOR PARR RESERVOIR

5.1 PROJECT OPERATIONS

Areas under this classification include SCE&G-owned and managed lands required for operation of the Parr Development. Public access to these lands is restricted to ensure public safety or to assure the security of the infrastructure system.

5.2 PUBLIC RECREATION

Project lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Public recreation lands include the following:

- Public Access Areas Public boat launches, and other areas currently being managed as public access;
- Islands owned by SCE&G;
- ~~Properties owned by SCE&G that are set aside for future recreational development;~~
- Public hunting Wildlife Management Area lands.

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Commented [AWR3]: Move to Section 5.2.3

5.2.1 PUBLIC ACCESS AREAS

SCE&G has developed and maintains two public parks and one primitive boat ramp on Parr Reservoir. These include the following:

- Cannon's Creek Public Access Area
- Heller's Creek Public Access Area
- Highway 34 Primitive Ramp

Each park provides facilities for boat launching, courtesy dock(s), and/or picnic facilities for public use. Additionally, SCE&G maintains a canoe portage around Parr Shoals Dam.

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5.2.2 PEARSON'S ISLANDS AND SHOALS

Pearson's Island is located within Parr Reservoir and is available for public recreational use in accordance with authorized activities (See the Permitting Handbook for authorized activities). Due to the fluctuation of Parr Reservoir associated with the Fairfield Development's pumped

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storage operations, shoals (areas of exposed, or nearly exposed, shallow lake bottom) in Parr Reservoir may be dewatered and are open for passive⁴ recreational activities.

~~5.2.3 FUTURE RECREATION AREAS~~

~~Future Recreation Areas include lands SCE&G has set aside for future recreational development, if and when it is determined additional recreation access is needed.~~

~~5.2.4 PUBLIC HUNTING WILDLIFE MANAGEMENT AREAS~~

~~PORTIONS OF PROJECT LANDS ARE INCLUDED IN THE SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES ("SCDNR") STATEWIDE WILDLIFE MANAGEMENT AREAS (WMA) PROGRAM. THESE AREAS ARE OPEN TO THE PUBLIC FOR HUNTING AND OTHER RECREATIONAL ACTIVITIES (VISIT [HTTP://DNR.SC.GOV/WMA/](http://dnr.sc.gov/wma/) FOR ADDITIONAL INFORMATION). THE BROAD RIVER AND ENOREE RIVER WMA'S ARE OPEN TO PUBLIC HUNTING ONLY ON SPECIFIED DAYS. PUBLIC IS NOT ALLOWED ON SCE&G PROPERTY UNLESS DESIGNATED UNDER SCDNR'S WILDLIFE MANAGEMENT AREAS (WMA) PROGRAM. FOR ADDITIONAL INFORMATION ON THESE AREAS, PLEASE VISIT THE SCDNR WEBSITE AT [HTTP://DNR.SC.GOV/WMA/](http://dnr.sc.gov/wma/).~~

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Commented [AWR7]: Refer to SCDNR rules and regulations

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~~5.2.3 SCE&G ALLOWS PUBLIC HUNTING ON CERTAIN PROJECT LANDS NOT CURRENTLY INCLUDED IN THE SCDNR WMA PROGRAM, AS DISCUSSED FURTHER UNDER SECTION 6.0.~~

5.3 NON-DEVELOPMENT AREAS

Project lands under this classification are protected from private development. This is done for the protection of the environmental and aesthetic integrity of the shoreline.

⁴Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilities, and/or have a minimal environmental impact.

6.0 LAND USE PRESCRIPTIONS

Land use prescriptions are based upon and reflect the guiding principles regarding the management of the SCE&G-owned lands within each classification. SCE&G publishes a detailed Permitting Handbook (included under separate cover) that contains descriptions of the permitting processes and specifications for various shoreline developments. Activities that require consultation with and/or permits from SCE&G include the following: construction, maintenance and placement of docks and boat lifts, shoreline stabilization; construction and maintenance of shoreline pathways, and other shoreline activities. Persons interested in shoreline development must contact SCE&G's Lake Management Department (803) 217-9221, or at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs> to obtain permitting guidance and a copy of the Permitting Handbook. Section 8.0 of this document discusses the Permitting Handbook in greater depth. General information regarding permitting requirements is included where applicable within the scope of each management prescription below.

6.1 PROJECT OPERATIONS

Properties classified as Project Operation contain project works critical to the operation of the Parr Shoals Development. Public access to, or activities upon, these lands is restricted for reasons of safety and security.

6.2 PUBLIC RECREATION

Project lands devoted to public recreation include developed park sites, properties set aside for ~~future~~ recreational development, ~~and Pearson's Island~~ islands - and shoals ~~on Parr Reservoir~~ owned by SCE&G⁵. ~~With the exception of Pearson's Island, which is maintained in its natural condition,~~ SCE&G manages the areas based on the specific, designated recreational activities including swimming, fishing, picnicking, and boat launching⁶. Public h

⁵ ~~SCE&G manages some of the lands classified for public recreation for timber. Information on SCE&G's forest management practices is included in Section 11.1.1.~~

⁶ SCE&G manages some of the lands classified for public recreation for timber. Information on SCE&G's forest management practices is included in Section 11.1.1.

Hunting may be allowed on specific Public Recreation lands in accordance with state hunting regulations, as expressly discussed under each subsection below. See SCDNR website for state hunting regulations (<http://dnr.sc.gov>).

6.2.1 PUBLIC ACCESS AREAS

SCE&G maintains three public access areas and one canoe portage on Parr Reservoir. These areas developed and maintained access areas on Parr Reservoir are depicted in Figure 12-1. Primitive overnight camping is allowed at the three park sites (Cannon's Creek Access Area, Heller's Creek Access Area, and Highway 34 Primitive Ramp). Private permitted activities are excluded under this classification. Public hunting and shooting is are not allowed at SCE&G Public Access Areas. SCE&G developed and maintained access areas on Parr Reservoir are depicted in Figure 12-1.

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6.2.16.2.2 PEARSON'S ISLAND AND SHOALS

Pearson's Islands is located on Parr Reservoir and is are open for passive public recreational use, such as bank fishing, walking, and bird watching. Waterfowl Hunting is prohibited on SCE&G owned islands. Due to the fluctuation of Parr Reservoir resulting from the Fairfield Development's pumped storage operations, shoals (areas of exposed or nearly exposed, shallow lake bottom) in Parr Reservoir may be dewatered and are open for passive recreational activities also permitted on Pearson's the islands in accordance with WMA state hunting regulations.

FUTURE RECREATION AREAS

Project lands set aside for future recreational development are available for public recreation. Unless otherwise posted, public hunting is allowed on lands classified as Future Recreation in accordance with state hunting regulations.

~~6.2.2 HUNTING WILDLIFE MANAGEMENT AREAS~~

~~Hunting is not allowed on SCE&G property unless designated under SCDNR's WMA Program. WMA Program areas may be available for hunting of waterfowl, small game and/or deer in accordance with WMA regulations and with the purchase of a WMA permit. Other recreational activities are allowed on WMA lands, including passive² activities and fishing as well. See SCDNR website for regulations and WMA maps.~~

~~Portions of Parr Reservoir are designated as a waterfowl management area under the WMA program. This area is discussed under Section 12.3.~~

6.3 NON-DEVELOPMENT AREAS

Lands under this classification warrant special protection because they may provide important habitat or aesthetic values. Meandering paths and water withdrawals on lands under this classification ~~must be permitted and~~ may be considered on a case-by-case basis by SCE&G. Unless otherwise posted, ~~public~~ hunting is allowed in non-development areas in accordance with state hunting regulations.

² Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilities, and/or have a minimal environmental impact.

7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL

SCE&G maintains a strong commitment to managing the shoreline of Parr Reservoir for multiple resources by considering the impact of various activities on the environmental, aesthetic, and recreational character of the lands. SCE&G owns and manages property around the entire periphery of Parr Reservoir. Thus, any activity occurring on the "shoreline" is occurring on SCE&G property. Activities not in compliance with the shoreline activity parameters outlined in this SMP and in the Permitting Handbook may constitute a trespass which SCE&G may elect to prosecute.

7.1 AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE PERMITTING HANDBOOK

Only the following activities and structures may be permitted on Parr Reservoir:

- Construction of a meandering access path;
- Water withdrawal for non-commercial agricultural/landscaping irrigation purposes.

7.2 PROHIBITED STRUCTURES AND ACTIVITIES

Activities and structures that SCE&G does not allow include, but are not limited to, the following:

Prohibited Structures:

- Private boat docks;
- Private shoreline stabilization;
- Boathouses;
- Private boat ramps;
- Commercial marinas;
- Marine rails;
- Sea walls;
- Fences;
- Electrical service;
- Permanent structures;
- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, canoes or other watercraft or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Jet skiing;
- Water skiing;
- Parasailing
- Paragliding
- Mooring;
- Excavations/dredging (except commercial operations permitted by the state);
- Effluent discharges;
- Storage or stockpiling of construction material;
- Livestock access to reservoir⁸;
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Primitive or overnight camping on Project property, except at Cannon's Creek Access Area, Heller's Creek Access Area, and Highway 34 Primitive Ramp;
- Use of herbicides: and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

⁸ Unless grandfathered through deed reservations.

8.0 PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES

8.1 SHORELINE PERMITTING PROCEDURES

Applicants must obtain the proper permit(s), per the SCE&G's Permitting Handbook, prior to the initiation of any construction or activity on the Parr Reservoir shoreline, which consists of the lands below the 266-foot contour interval and designated Project property. As noted above, some activities may also require local, state, and/or federal permits.

Whether a non-Project use is approved under the Standard Land Use article or through prior FERC approval, SCE&G is responsible for ensuring that the use is consistent with the purposes of protecting or enhancing the scenic, recreational, and other environmental values of the Project. To assist applicants in the permitting process, the staff at the SCE&G Lake Management Department is available to answer questions regarding documentation, permits, and specification requirements for their particular project. Permits from SCE&G are required for the following activities:

- Construction of a meandering access path;
- Water withdrawal for non-commercial agricultural/landscaping irrigation purposes.

It is highly advisable to begin the consultation process with SCE&G Lake Management staff at the planning stage of a project. SCE&G staff will be available to discuss specific permitting requirements with the property owner. Depending on the proposed new facility or activity, local, state and federal resource agencies may impose requirements on construction start/stop dates, the placement of erosion control devices, treatment plans, remedial measures, submittal of start construction notifications, and/or best management practices. Any permit applicant should be aware of such conditions, as violations may nullify a permit.

An overview of permitted activities is included below. Detailed information on SCE&G's permitting process, guidelines, and specifications, is provided in SCE&G's Permitting Handbook available at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs>, by calling (803) 217-9221, or by writing:

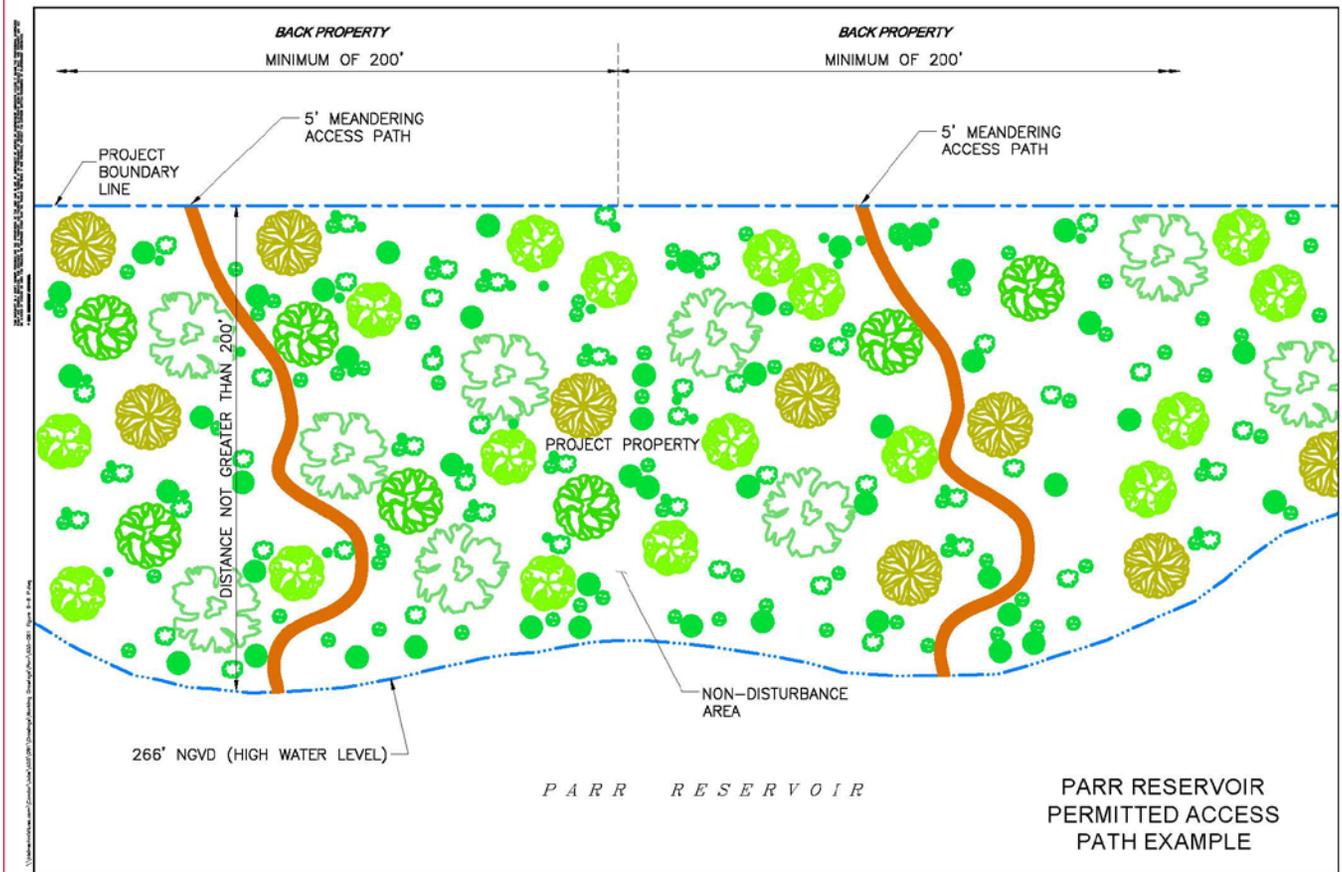
SCE&G Lake Management Department
6248 Bush River Road
Columbia, SC 29212

8.1.1 SHORELINE VEGETATION MANAGEMENT

In general, SCE&G maintains a policy of non-disturbance of any vegetation below the 266-foot contour or on Project property without approval from SCE&G. Permission to remove vegetation within a permitted access path will only be granted by SCE&G Lake Management after a site visit with the applicant. Once clearing of the access path is completed according to the permit, the applicant may maintain the path in the permitted condition utilizing hand held tools and without the use of herbicides. Any unauthorized removal of shoreline vegetation may result in the cancellation of permits issued by SCE&G, as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or shoreline manipulation as SCE&G determines is necessary to mitigate and correct the situation.

8.1.2 ACCESS PATH

A single pedestrian access path may be cleared with hand held tools and without the use of herbicides from the adjacent property owner's land upon approval of SCE&G. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path. A SCE&G Lake Management representative will identify and designate the location of all access paths. Access path restrictions are included in the Permitting Handbook. An example of a permitted access path is included as Figure 8-1.



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FIGURE 8-1 PERMITTED ACCESS PATH

8.1.3 WATER WITHDRAWAL

Water withdrawals requiring piping and other transportation/delivery equipment to be placed along the shoreline or in the littoral zone, are managed according to the terms of this SMP. Water withdrawal for residential property must be for irrigation purposes only. Permits are required, and will not be issued for any other purpose. Associated pumps and electrical service must be located outside SCE&G property. SCE&G reserves the right to prohibit withdrawal during times of drought or water drawdown.

Applications for a permit to remove water must be submitted to SCE&G for review. Water withdrawal applications for greater than one million gallons per day (MGD) will be forwarded to the FERC for approval. Requests for withdrawal of one MGD or less may require agency consultation prior to approval. SCE&G may impose limits in granting permits for approved applications (see Permitting Handbook). The applicant may be required to bear the expenses of filing the application and will be required to compensate SCE&G for water withdrawn.

9.0 SCE&G PERMITTING FEE POLICIES

FERC allows licensees the right to charge reasonable fees to cover the costs of administering shoreline management programs, which add management responsibilities and associated costs to project operations. SCE&G administers its SMP in part through a permitting program, which does include a fee component. This ensures that activities occurring within the Project and in particular on Project land, are consistent with the overall goals for the Project, and that SCE&G's customers are not burdened with the full cost of administering programs that also have significant private, and often non-customer, benefit. Permit fees are due with applications and are required for docks, boat lifts, access paths, water withdrawal, and erosion control projects. Should an application be denied, associated permit fees will be returned. Periodic permit renewal fees may be required depending on the shoreline activity. One-time and periodic permit fees for Parr Reservoir shoreline activities are detailed in the Permitting Handbook. Failure to comply with this policy may result in, among other things, revocation of existing permits, fines, or legal action, as well as loss of consideration for future permits.

SCE&G will give reasonable public notice through appropriate communication avenues before changing the fee structure.

10.0 ENFORCEMENT OF SHORELINE MANAGEMENT PLAN

10.1 VIOLATIONS OF SHORELINE MANAGEMENT PLAN

SCE&G conducts periodic surveys of the Parr Reservoir shoreline to inventory and inspect permitted uses throughout the year. Lake Management representatives make note of unauthorized structures that they see, as well as urging residents and Reservoir visitors to report anything they believe to be unauthorized activity below the 266-foot contour, or on designated Project property. Anyone believing that an activity violating the SMP is occurring is urged to contact SCE&G Lake Management at (803) 217-9221.

SCE&G Lake Management representatives will issue Stop Work Directives and or Trespass Notices for any violations detected on SCE&G property. Any unauthorized clearing of trees or underbrush will result in the revocation of any SCE&G issued permits within 30 days if the violation(s) is (are) not corrected or a course of and schedule for corrective action has not been agreed to and approved by SCE&G. SCE&G may also commence legal action, if it deems it necessary, to require re-vegetation of the affected area. Removal of merchantable timber will require reimbursement to SCE&G subject to valuation of the Forestry Operations Department, including legally allowable "penalties." Consequences for violations may also include restrictions of access to SCE&G property, legal actions, fines, and loss of consideration for future permits.

11.0 SHORELINE MANAGEMENT PRACTICES

11.1 SCE&G SHORELINE MANAGEMENT PRACTICES

SCE&G has established a set of management practices that apply to all of the lands included in the Project Boundary. These practices are reflective of each of their developments unique qualities. The current management practices for the Parr Development (which includes Parr Reservoir) are described in this section, but may be reviewed during the period of the FERC license.

11.1.1 FOREST MANAGEMENT/SHORELINE MANAGEMENT PRACTICES

SCE&G manages timber within the Parr Project boundary line in accordance with South Carolina's Best Management Practices for Forestry publication. An online copy of this publication is available at <http://www.state.sc.us/forest/refbmp.htm>.

11.1.2 PROTECTION OF LANDS KNOWN TO PROVIDE IMPORTANT HABITAT VALUES

Reservoirs are dynamic environments and the important natural and cultural values that Parr Reservoir presents, may evolve over time. During the upcoming license term, areas along the shoreline may be found to warrant protection against materially negative impacts from development upon one or more of a variety of ecologically important characteristics. Such characteristics may include, but not be limited to the following: areas known to be occupied by rare, threatened or endangered species; rare or exemplary natural communities; species in the State Wildlife Action Plan; significant land forms and geologic features; wetlands and shallow coves; and other areas, such as spawning and nesting habitat, determined to be critical to the continued existence of native species. In the event that one of the aforementioned species is determined to be present in the Project boundary, SCE&G will consult with SCDNR to determine appropriate management policies.

11.2 LANDOWNER RECOMMENDED BMPs

In addition to development activities, the environment around Parr Reservoir is susceptible to impacts associated with residential and recreational activities. These include, for example only, improper fertilizer/pesticide use, boat maintenance, and debris disposal. Adjacent property owners can mitigate negative impacts otherwise associated with their property uses and instead

make significant positive contributions to the Reservoir environment, and ultimately the watershed, by employing BMPs that preserve bank integrity and minimize non-point sources of pollution and contamination. Adjacent property owners should understand that using BMPs will help to preserve the scenic, environmental, and recreational qualities of the reservoir that they so highly value. Examples of effective BMPs recommended to adjacent property owners are provided in the succeeding section. SCE&G is available to provide more information and to assist landowners in determining effective BMPs for activities on their properties. Also, anyone may contact the Natural Resource Conservation Service or local county extension office (<http://www.sc.nrcs.usda.gov/contact/>).

11.2.1 MINIMIZING NON-POINT SOURCE POLLUTION

Reservoir pollution may result from a variety of activities related to residential development, agriculture, forestry, and construction. Contaminants may enter the reservoir and tributaries via overland flows carrying biological, chemical, and other substances picked up and carried by runoff from rain events. This runoff water may contain sediment, bacteria, oil, grease, detergents pesticides, fungicides, fertilizers, and other pollutants. These pollutants, depending on type, quantities, and concentrations can overwhelm a reservoir's natural ability to filter and process them, thus leading to degraded water quality and aquatic environments.

Although a single point of impact or action may seem insignificant in its effect on the reservoir, the cumulative effects of the resource may be considerable. With this in mind, SCE&G encourages adjacent land owners to be mindful that they are members of a larger community that uses and impacts the reservoir. Employing the following BMPs can go a long way in preserving and improving reservoir water quality:

- Use permeable paving materials and reduce the area of impervious surfaces, particularly driveways, sidewalks, walkways, and parking areas;
- Dispose of vehicle fluids, paints, and/or household chemicals as indicated on their respective labels and do not deposit these products into storm drains, project waters, or onto the ground;
- Use soap sparingly when washing vehicles and wash them on a grassy areas , preferably sloping gently away from the reservoir, so the ground can filter the water naturally;
- Use hose nozzles with triggers to save water and dispose of used soapy water in sinks or other vessels that direct the materials into sewer systems, not in the street;

- Maintain septic tanks and drain fields according to the guidelines and/or regulations established by appropriate regulatory authorities;
- Remove pet waste and dispose of properly in areas that do not drain to the reservoir; and
- Use only low or no phosphorous fertilizer on lawns near the reservoir.

12.0 PUBLIC EDUCATION AND OUTREACH

This SMP is intended to foster management of shoreline use and development to achieve consistency with the FERC License, as well as the promote protection of public safety and environmental quality (water quality, natural habitat, aesthetics, etc.). To garner support and compliance from the public and lake users, it is key to educate them to the need and means to protect shoreline resources. Additionally, the public must be aware of the management and permitting programs put in place to provide this protection. To accomplish the task of increasing public awareness of the goals and objectives of this SMP SCE&G has developed an education and outreach program that includes the components described below.

12.1 SHORELINE MANAGEMENT PLAN EDUCATION

SCE&G's Public Education and Outreach program seeks to educate the public on various aspects of the management of Parr Reservoir, including the Permitting Handbook, recommended BMP use, relevant Project Operations information, and the Safety Program. To accomplish this, SCE&G uses various public education measures including informational pamphlets, public meetings, newsletters, and an internet webpage.

The Internet, in particular, presents an excellent mechanism for disseminating information and improving awareness. SCE&G maintains a website designed to provide information on the SMP and the Permitting Handbook. Printed copies of the following materials may also be obtained by contacting SCE&G Lake Management at (803) 217-9221. Information and materials that will be available at the website include the following:

- Permitting Handbook;
- Permit application forms;
- Examples and information on BMPs;
- Alternative and example designs for shoreline stabilization on Monticello Reservoir; and
- Useful links and other related information.

Additional outreach mechanisms that SCE&G intends to employ in implementing the SMP include the following:

- Provide speakers for homeowner and other organizations' meetings;

- Provide information to realtors and encourage dissemination of this information to all potential adjacent property buyers; and
- Develop and distribute new, “user friendly” brochures that include general reservoir information, permitting processes, shoreline BMPs, and relevant contact information.

12.2 PUBLIC ACCESS AREA MAPS

A figure depicting existing and future Public Access Areas on Parr Reservoir is included as Figure 12-1. ~~Waterfowl area maps are available from the SCDNR at: <http://dnr.sc.gov/wma/maps.html>. You may also visit the SCE&G website for permitting information: <https://www.sceg.com/about-us/lakes-and-recreation#monticello-parr-reservoirs>.~~

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Field Code Changed

12.3 PUBLIC HUNTING AND FISHING

The SCDNR maintains hunting and fishery management responsibility and state hunting and fishing regulations enforcement on Parr Reservoir. Separate regulations apply to hunting in areas included in the WMA program and it is imperative that the individual check WMA regulations and maps prior to hunting. Fishing State regulations and maps are available at SCDNR's website at: <http://www.dnr.sc.gov/fishregs/>.

12.4 ~~WATERFOWL HUNTING ON PARR RESERVOIR~~

~~Portions of Parr Reservoir is are open for public waterfowl hunting only during specified days and times during state waterfowl seasons. Portions of Parr Reservoir are included under SCDNR's statewide WMA program. Separate regulations apply to hunting in areas included in the WMA program and it is imperative that the individual check WMA regulations and maps prior to hunting. Regulations and maps pertaining to Parr Reservoir are available at SCDNR's website at: <http://dnr.sc.gov/wma/>, or by contacting SCDNR at:~~

~~Waterfowl and~~ Hunting and Fishing Regulations
 S.C. Department of Natural Resources
 Wildlife and Fresh Water Fisheries
 1000 Assembly Street
 Columbia, South Carolina 29201
 Telephone: 803-734-3886

~~12.5~~12.4 SAFETY PROGRAMS

Due to operation of the pumped storage generating plant, the waters of Parr Reservoir can fluctuate several feet in a matter of a few hours. This rapid fluctuation makes it especially important for boaters and other recreationists to exercise a high degree of care and fully assume

personal responsibility for their safety by being especially aware and cautious. For public safety, hazardous areas which are marked should not be entered and any other warnings posted around the reservoir should be observed as well.

SCE&G and SCDNR cooperate to mark shoals and other hazardous areas to increase boating safety. However, boaters should not assume all shoals and hazardous areas have been marked.

SCDNR also enforces the boating laws of South Carolina. Boaters should ensure that watercraft and safety equipment are in good working condition and in compliance with all applicable state laws.

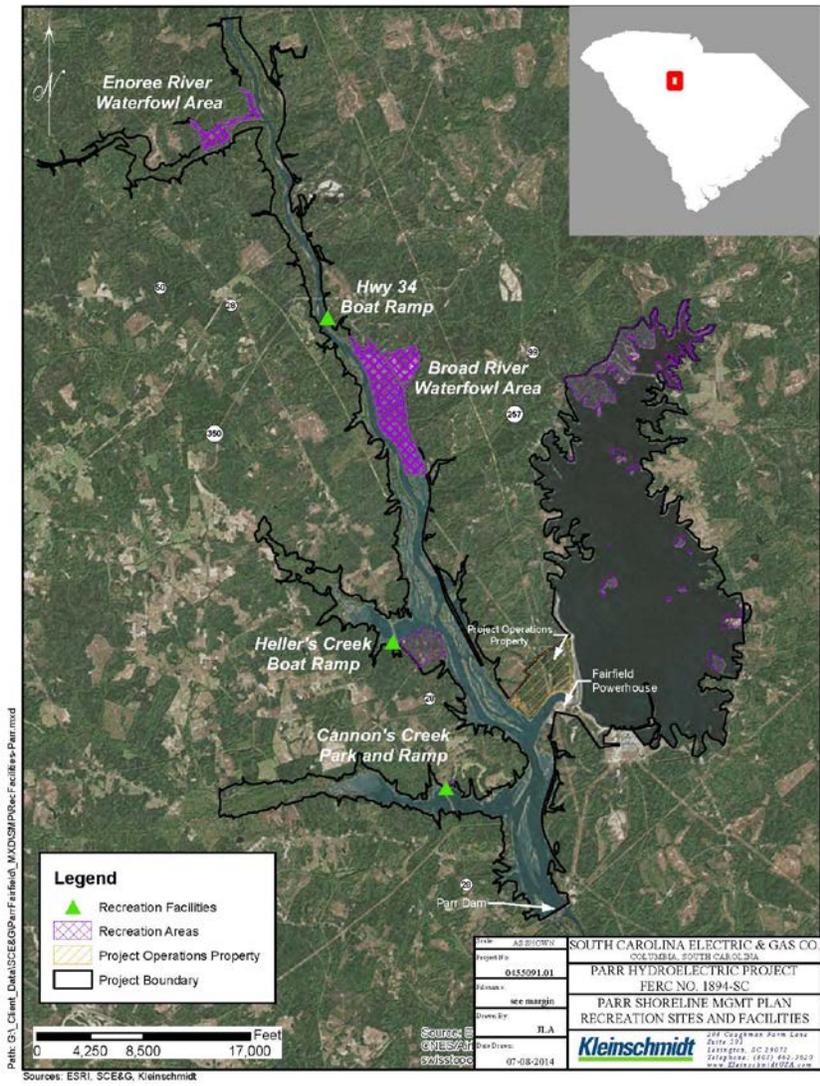


FIGURE 12-1 PARR RESERVOIR PUBLIC ACCESS AREA MAP

13.0 MONITORING AND REVIEW PROCESS

13.1 OVERALL LAND USE MONITORING

As demographics and user groups change within the Project area, changes in residential and commercial areas may occur. Often this type of use change is incremental and cumulative, occurring over a period of years or decades. To monitor land use around Parr Reservoir, SCE&G will employ a geographic information system (GIS) to compare new and existing permit applications against GIS data for the land management classifications. Such monitoring will provide long-term data that should be useful in identifying areas experiencing change. Every 10 years, during the SMP review process (see Section 13.2 on Review Process below), SCE&G will report on changes in land use for the various land management classifications in addition to filing Form 80 surveys. If it is found that material changes within the Project boundary have occurred that are not consistent with the current SMP goals, amendments to the SMP may be warranted. Such situations might include significant changes in land ownership, major commercial upgrades or uses, or new residential uses or pressures.

13.2 REVIEW PROCESS

SCE&G proposes a 10 year SMP review cycle interval. A 10 year SMP review period interval should provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. The SMP review process will begin sufficiently in advance of the end of each period so that it will be completed within the 10 year time frame. One month prior to the scheduled start of the review process, its occurrence will be advertised in various media formats (e.g., website, newsletter, contact with homeowner associations, etc.). SCE&G will use those same media avenues to issue a report on the outcome of the review process. As in the past, SCE&G will solicit input from interested parties in addressing issues that arise and have a bearing on Reservoir management. This includes keeping lines of communication open during the time between review periods. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook periodically with interested stakeholders to ensure its effectiveness; however, changes to the permitting process may be made periodically, as needed, outside of the scheduled review periods.

14.0 REFERENCES

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- Federal Energy Regulatory Commission (FERC). 2012. Guidance for Shoreline Management Planning at Hydropower Projects. Online. [URL]: <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/smpbook.pdf>.
- Federal Energy Regulatory Commission (FERC). 2001. Order Approving Land use and Shoreline Management Plan. June 4, 2001. 95 FERC 61,351.

SHORELINE MANAGEMENT PLAN MONTICELLO RESERVOIR

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

Prepared for:

**South Carolina Electric & Gas Company
Cayce, South Carolina**

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtGroup.com

[Date]

SHORELINE MANAGEMENT PLAN
MONTICELLO RESERVOIR

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**PARR HYDROELECTRIC PROJECT
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SOUTH CAROLINA ELECTRIC & GAS COMPANY

TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
1.0 INTRODUCTION	1
2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN	5
3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN	6
3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS	7
3.2 PROJECT BOUNDARY	8
4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES	9
4.1 CONSULTATION	10
4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE CONSERVATION GROUP	11
4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE	11
4.1.3 MEETING SCHEDULES	12
5.0 LAND USE CLASSIFICATIONS	13
5.1 PROJECT OPERATIONS	15
5.2 NUCLEAR EXCLUSION ZONE	15
5.3 SHORELINE PERMITTING	15
5.4 PUBLIC RECREATION	15
5.4.1 RECREATION LAKE	16
5.4.2 PUBLIC ACCESS AREAS	16
5.4.3 ISLANDS	16
5.4.4 FUTURE RECREATION AREAS	16
5.5 NON-DEVELOPMENT AREAS	16
6.0 LAND USE PRESCRIPTIONS	17
6.1 PROJECT OPERATIONS	17
6.2 NUCLEAR EXCLUSION ZONE	17
6.3 SHORELINE PERMITTING	17
6.4 PUBLIC RECREATION	18
6.4.1 RECREATION LAKE	18
6.4.2 ISLANDS	18
6.5 NON-DEVELOPMENT AREAS	18
7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL	20

TABLE OF CONTENTS (CONT'D)

7.1	AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE PERMITTING HANDBOOK	20
7.2	PROHIBITED STRUCTURES AND ACTIVITIES	20
8.0	PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES	22
8.1	SHORELINE PERMITTING PROCEDURES	22
8.1.1	DOCKS	23
8.1.2	SHORELINE VEGETATION MANAGEMENT	24
8.1.3	ACCESS PATH	25
8.1.4	SHORELINE STABILIZATION	25
8.1.5	WATER WITHDRAWAL.....	30
9.0	SCE&G PERMITTING FEE POLICIES	31
10.0	ENFORCEMENT OF SHORELINE MANAGEMENT PLAN	32
10.1	VIOLATIONS OF SHORELINE MANAGEMENT PLAN	32
11.0	SHORELINE MANAGEMENT PRACTICES	33
11.1	SCE&G SHORELINE MANAGEMENT PRACTICES.....	33
11.1.1	FOREST MANAGEMENT SHORELINE MANAGEMENT PRACTICES	33
11.1.2	AQUATIC PLANT MANAGEMENT ACTIVITIES	33
11.1.3	WOODY DEBRIS & STUMP MANAGEMENT.....	34
11.1.4	AQUATIC HABITAT ENHANCEMENT	34
11.1.5	PROTECTION OF LANDS KNOWN TO PROVIDE IMPORTANT HABITAT VALUES	34
11.2	LANDOWNER RECOMMENDED BMPs	35
11.2.1	MINIMIZING NON-POINT SOURCE POLLUTION	35
12.0	PUBLIC EDUCATION AND OUTREACH.....	37
12.1	SHORELINE MANAGEMENT PLAN EDUCATION.....	37
12.2	PUBLIC ACCESS AREA MAPS	38
12.3	PUBLIC FISHING	38
12.4	WILDLIFE MANAGEMENT AREAS/WATERFOWL HUNTING ONLY	38
12.5	WATER SAFETY	39
13.0	MONITORING AND REVIEW PROCESS	41
13.1	OVERALL LAND USE MONITORING.....	41
13.2	REVIEW PROCESS.....	41
14.0	REFERENCES	42

LIST OF TABLES

TABLE 4-1	PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING	10
TABLE 4-2	ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC .	12
TABLE 5-1	SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION	13

TABLE OF CONTENTS (CONT'D)

LIST OF FIGURES

FIGURE 1-1 PROJECT LOCATION AND BOUNDARY MAP 4
FIGURE 5-1 SHORELINE CLASSIFICATIONS MAP FOR MONTICELLO RESERVOIR 14
FIGURE 8-1 PERMITTED ACCESS PATH 26
FIGURE 8-2 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING
BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (A) 28
FIGURE 8-3 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING
BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (B) 28
FIGURE 8-4 EXAMPLE OF SHORELINE RIP-RAP DETAIL 29
FIGURE 12-1 MONTICELLO RESERVOIR PUBLIC ACCESS AREA MAP 40

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**SHORELINE MANAGEMENT PLAN
MONTICELLO RESERVOIR**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

EXECUTIVE SUMMARY

South Carolina Electric & Gas Company ("SCE&G") is the Licensee of the Parr Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 1894) ("Project"). The Project consists of the Parr Shoals Development and the Fairfield Pumped Storage Development. The developments are located along the Broad River in Fairfield and Newberry Counties, South Carolina.

The Project developments form two distinct Project reservoirs. Parr Reservoir is located along the Broad River, as impounded by Parr Shoals Dam, and functions as the lower reservoir for the Fairfield Development. Monticello Reservoir is located adjacent to the Broad River and functions as the upper reservoir for the Fairfield Development. Both Project reservoirs serve as popular recreation destinations and are used and enjoyed by local residents as well as visitors to the state.

In conjunction with its relicensing activities, SCE&G has assembled a diverse and inclusive group of stakeholders to advise and assist in the development of two Shoreline Management Plans ("SMPs"), each tailored to a specific reservoir. SMPs are comprehensive plans for the management of Project land and adjoining water resources and their uses, consistent with License requirements and broad Project purposes, and appropriately accessible and beneficial to adjacent shoreline residents and the recreating public. A SMP serves to identify existing and appropriate future uses and to provide plans and programs for responsible future use and management of project lands and waters as well as the flora and fauna encompassed within them. This SMP exists specifically to address shoreline uses surrounding Monticello Reservoir. A SMP to address Parr Reservoir is included under separate cover and available from the SCE&G Lake Management Department (Lake Management).

In addition to a SMP for each Project reservoir, a Shoreline Management Handbook and Permitting Guidelines (Permitting Handbook) was developed for both developments in consultation with governmental, non-governmental, and individual stakeholders to address activities that will require consultation with and/or permits from SCE&G. These activities include construction, maintenance, and placement of docks, shoreline stabilization, lake access pathways and other shoreline activities.

The classification of Project lands surrounding Monticello Reservoir is described in Section 5.0 and includes five management classifications. These classifications are as follows: Project Operations; Nuclear Exclusion Zone; Shoreline Permitting; Public Recreation; and Non-Development Areas. Lands reserved for Project operations are those lands that are specifically required for operation of the Project. They include areas such as plant facility locations, dams, electrical substations, etc. The Nuclear Exclusion Zone (NEZ) is a defined area surrounding the V.C. Summer Nuclear Station. Within the NEZ, SCE&G, as the licensed nuclear plant operator, has responsibility and the authority to control all activities and has the absolute right to exclude or remove persons and property. Public Recreation land includes land within public parks, SCE&G developed recreation areas, and islands.¹ Non-Development Areas are areas protected from development to preserve environmental resources and aesthetic values. Conversely, lands included within the Shoreline Permitting classification are not automatically excluded from development related shoreline use, and hence may be available for permitted shoreline development such as access paths and docks.

Land use prescriptions associated with these land management classifications are discussed in Section 6.0. Prescriptions are administered through the Permitting Handbook.

SCE&G maintains a strong commitment to the management of the waters and shoreline of Monticello Reservoir, focusing on the social, ecological, and economic impacts of activities on and near the shoreline and water, taking into consideration in particular, the environmental, aesthetic, and recreational character of the shoreline and lake. Section 7.0 details the activities and structures on and adjacent to Monticello Reservoir that require SCE&G consultation and/or approval. The permitting procedures for shoreline activities or structures are set out in more detail in Section 8.0 and in the Permitting Handbook.

¹ SCE&G owns all land within the Monticello Development, including all islands within Lake Monticello

Section 9.0 details SCE&G's fee structure for the shoreline management program.

Periodic surveys of the Monticello Reservoir shoreline are conducted by SCE&G and include, among other things, inventories and inspections of all docks, including those built and permitted throughout the current year. SCE&G also looks for unauthorized structures within the Project property at that time. These represent violations of the SMP. SMP violations will be dealt with as deemed by SCE&G, in its sole discretion, to be appropriate. Consequences of violations may range from dock permit cancellations to fines and/or legal action, and are discussed more fully in Section 10.0.

SCE&G Shoreline Management Practices include actions taken to lessen or mitigate for potential impacts to a particular resource resulting from direct or indirect use. These include but may not be limited to shoreline stabilization and vegetation management, as well as aquatic plant management. Shoreline Management Practices are further described in Section 11.0 of this document.

Public education and outreach on the protection of valuable shoreline resources is integral to the effectiveness of the SMPs. Section 12.0 of this document details specific measures to be undertaken to help educate both adjacent shoreline residents and other Project resource users. Among included objectives will be SMP education and Best Management Practices ("BMP") education.

In its Application for New License, SCE&G is proposing 10 year review periods for the SMP. The 10 year SMP review periods provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook with interested stakeholders periodically to evaluate and improve its effectiveness. SCE&G reserves the right, however to make changes to the permitting process as it deems necessary and appropriate. This is discussed in Section 10.0.

1.0 INTRODUCTION

The Parr Hydroelectric Project ("Project") is located on the Broad River in Fairfield and Newberry Counties, South Carolina (Figure 1-1). The Project is located approximately 31 river miles downstream of the Neal Shoals Hydroelectric Project (Federal Energy Regulatory Commission ["FERC"] No. 2315) and 24 river miles upstream of the Columbia Diversion Dam. The Project consists of two developments: the Parr Shoals Development ("Parr Development") and the Fairfield Pumped Storage Development ("Fairfield Development"). Subsequently, two primary reservoirs are included as part of the Project, Monticello Reservoir² and Parr Reservoir. The normal maximum water level in Monticello Reservoir is El. 425.0 feet National Geodetic Vertical Datum ("NGVD"), which corresponds to a surface area of 6,800 acres, and a gross storage of 400,000 acre-feet. Monticello Reservoir has approximately 57 miles of shoreline within the Project boundary. Parr Reservoir's normal maximum water level is at El. 266.0 feet NGVD, with a corresponding surface area of 4,400 acres. The gross storage is estimated to be 32,000 acre-feet. Parr Reservoir has approximately 88 miles of shoreline within the Project boundary.

An active storage of up to 29,000 acre-feet is transferred between the two reservoirs by the pumped storage operations of the Fairfield Development. Fairfield Development's alternate cycles of generation and pumping results in daily fluctuations in the water levels of both Monticello and Parr Reservoirs. Monticello, when beginning at normal maximum pool elevation, drops 4.5 to 5 feet over a 10 to 12 hour period during the generating phase of operation. At the same time, the water from Monticello and from the Broad River is flowing into Parr Reservoir, causing it to rise as much as 10 feet. During the pumping cycle, the reverse occurs – the water level rises in Monticello Reservoir and drops in Parr Reservoir.

The Project boundary³ encompasses land around each reservoir, extending between 50 and 200 horizontal feet from the high water mark. A 300-acre Recreation Sub-impoundment ("Recreation Lake") is situated adjacent to Monticello Reservoir and is included within the FERC Project

² The State of South Carolina considers Monticello Reservoir waters of the State and refers to it as "Lake Monticello".

³ Standard License Article 5 requires licensees to acquire and retain sufficient property and rights to construct, maintain, and operate their projects, as identified in their specific license, including any property or rights needed to accomplish all designated project purposes. As such, Project lands are those lands within the FERC project boundary owned by SCE&G in fee title and those lands for which SCE&G has acquired or retained an easement.

boundary. This lake was constructed by South Carolina Electric & Gas Company ("SCE&G") solely for recreational use. The Recreation Lake is unaffected by operational reservoir fluctuations on Monticello Reservoir.

SCE&G manages SCE&G-owned lands within the Project boundary ("Project property") to comply with the FERC license for the Project (the "License"). The goal of project land management is to serve the public interest by providing recreational access and opportunities, protecting wildlife habitat and water quality, producing electricity, and protecting and preserving cultural and aesthetic resources. The Shoreline Management Plan ("SMP") provides a set of administrative policies, procedures, and practices by which SCE&G seeks to manage the Project shoreline to achieve these goals. Future proposals for specific shoreline related developments or activities will be reviewed for consistency with the SMP.

A draft of the initial Project SMP was filed with the FERC in 1991. After several years of discussion and revisions, the initial SMP was approved by the FERC on June 4, 2001. The history of the Project's SMP is described in more detail in Section 3.0 (History of the Shoreline Management Plan). The current relicensing⁴ of the Project provides a near term impetus and opportunity for SCE&G to review the existing SMP in cooperation with relicensing stakeholders, including federal and state regulatory agencies, interested non-governmental organizations ("NGO"s), and individuals. Through discussions with these parties, it was decided that the existing FERC approved SMP, which encompasses both Monticello and Parr Reservoirs, should be divided into two distinct SMP's, one for each reservoir. Hence, this SMP has been prepared for Monticello Reservoir and is being submitted to FERC as part of SCE&G's Parr Hydroelectric Project comprehensive relicensing package. A SMP for Parr Reservoir is included under separate cover.

The management guidelines set forth in this SMP are applicable to all lands within the Project boundary surrounding Monticello Reservoir. Among other things, the current document includes the following components:

⁴ The current operating license for the Project is due to expire on June 30, 2020. As such, SCE&G will file for a new license with FERC on or before June 30, 2018.

- Detailed descriptions, management prescriptions and mapping of land classifications;
- Summary information on the Permitting Handbook and fee policies;
- Best management practices ("BMP"s);
- Public education and outreach;
- Reservoir monitoring; and,
- A proposed review process.

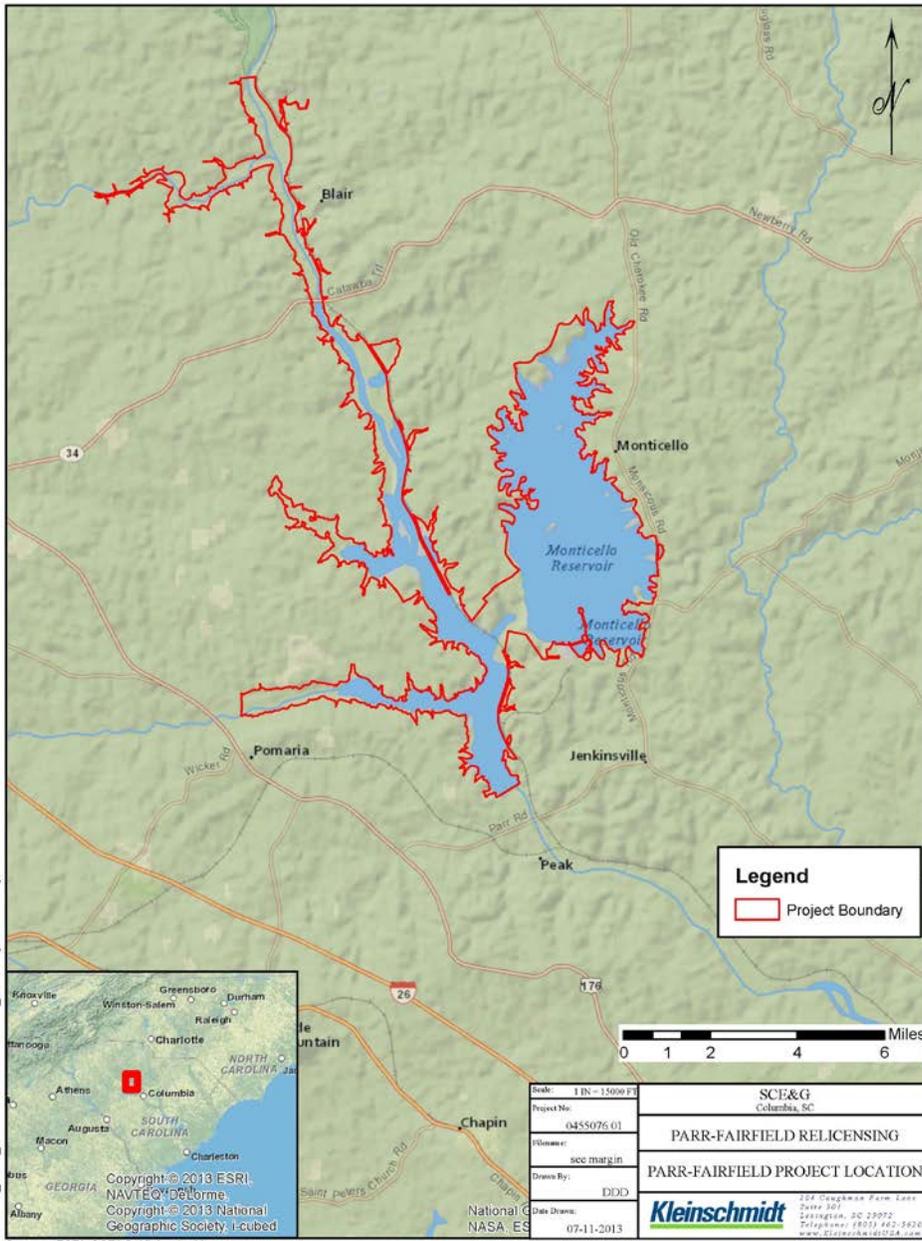


FIGURE 1-1 PROJECT LOCATION AND BOUNDARY MAP

2.0 PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN

The Project has served as a major source of power generation for SCE&G's customers and recreation for local residents and visitors to South Carolina for several decades. Consistent with FERC's Standard Land Use Article, a licensee may authorize specific non-project uses and occupancies of a project's shoreline. Examples of non-project uses at Monticello Reservoir include residential boat docks, access paths across Project property, and erosion control structures. SCE&G has a responsibility to ensure that non-Project uses remain consistent with Project purposes, including protection and enhancement of the Project's scenic, recreational, and environmental values.

As development increases in areas surrounding the Project, so too does stress placed upon Project reservoirs and the surrounding watershed. Thus, a comprehensive SMP for each reservoir that recognizes and addresses sources of potential environmental impact is essential to managing each reservoir for the benefit of all interests and to ensure that non-Project uses remain consistent with the License.

The implementation of the SMP by SCE&G will help to maintain and conserve the area's natural and man-made resources. The SMP will comply with the terms of the License, as well as the regulations and orders of FERC, and is intended to assist in providing a balance between recreational use and development, environmental protection, and energy production.

3.0 HISTORY OF THE SHORELINE MANAGEMENT PLAN

On August 28, 1974, the Federal Power Commission (FPC), predecessor to the FERC, issued SCE&G a new License for the Parr Hydroelectric Project. In addition to relicensing the existing 14.88 megawatt (MW) Parr Shoals Development, the new License authorized the construction of the 511.2 MW Fairfield Pumped Storage Development. This resulted in the creation of the Fairfield Development's upper pool, Monticello Reservoir. The new License also authorized the enlargement of the existing Parr Reservoir to serve as the lower pool to the Fairfield Development. This involved raising the height of Parr Dam approximately 9 feet, thereby nearly doubling Parr Reservoir's surface area (F.P.C., 1974). The construction of newly licensed facilities was completed in 1978, with the facilities beginning commercial operation that same year (F.P.C., 1974).

Commented [AWR1]: Delete these citation in this section.

Article 48 of the Project License issued in 1974 required that SCE&G purchase in fee and include within the project boundary all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control. The lands encompassed by the project boundary shall include, but not be limited to: the islands in the Parr and Monticello Reservoirs formed by the 266-foot and 425-foot contour intervals, respectively; shoreline lands up to the 270-foot contour, or 50 feet (measured horizontally) from the Parr Reservoir's 266-foot contour, whichever is greater; and, shoreline lands up to the 430-foot contour interval, or 50 feet (measured horizontally) from Monticello Reservoir's 425-foot contour, whichever is greater. Provided that the Project boundary, except with respect to land necessary or appropriate for recreational purposes, shall not exceed 200 feet, horizontally measured, from the 266-foot or the 425-foot contour, unless satisfactory reasons to the contrary are given. The FPC determined that acquiring these lands would provide SCE&G with adequate shoreline control around the reservoirs, in addition to serving the purposes of Project operation and recreation (F.P.C., 1974).

Furthermore, Article 20 of the Project License orders that SCE&G allow public access, to a reasonable extent to Project waters and adjacent Project lands (with the exception of lands necessary for the protection of life, health, and property) for navigation and outdoor recreational purposes. This Article also allows SCE&G to grant permits for public access to the reservoirs subject to FERC approval (F.P.C., 1974).

In 1991, SCE&G recognized that appropriate policies and procedures should be in place to govern shoreline activities at the Project. Utilizing experience gained at their Saluda Hydroelectric Project (FERC No. 516), SCE&G filed a proposed SMP with the FERC to regulate the use of Project shorelines. After extensive stakeholder consultation, an amended SMP was filed with the FERC. It was approved on June 4, 2001. The SMP was included as part of the Project's Exhibit R (FERC, 2001).

The SMP approved in 2001 primarily covered activities associated with Monticello Reservoir. It dealt with the following matters: water quality management; forest management; waterfowl management; nuclear exclusion zone restrictions for the operation of SCE&G's V.C. Summer Nuclear Station; fishing, boating, and hunting; public access and recreation; private boat docks and access; vegetation removal; water withdrawal; erosion control; and prohibited activities.

In 2006, SCE&G amended the SMP's policy regarding common docks. The original policy allowed for two to five adjacent property owners to share a single common dock if the shoreline frontage requirement of 200 feet was met. The policy was amended to allow no more than two individual, adjacent single family residential lots to share a common dock. The shoreline frontage requirement of 200 feet was retained.

3.1 CURRENT SMP DOCUMENT AND SHORELINE CLASSIFICATIONS

The SMP serves as a reference document for SCE&G in implementing the Standard Land Use Article, which authorizes SCE&G to permit certain non-project uses of project lands and waters. FERC did not begin including the Standard Land Use Article in new licenses until the early 1980's; thus it was not included in the Project License issued in 1974 (FERC, 2012). However, FERC granted SCE&G the specific authority to permit certain non-Project uses through the approval of the 2001 SMP, and added the Standard Land Use Article to the License (Article 62) in 2011, as revised in 2013 (Article 63). This present document, submitted in conjunction with SCE&G's License application, presents a management plan, covering only Monticello Reservoir (a SMP for Parr Reservoir is included under separate cover), while adhering to the historical management goals agreed to and developed with agencies and stakeholders.

In addition to an updated SMP for each Project reservoir, a Permitting Handbook was developed in consultation with stakeholders and agencies to address activities requiring consultation with and/or permits from SCE&G. These activities include, but are not limited to the following:

construction, maintenance, and placement of docks; shoreline stabilization; construction and maintenance of lake access pathways; limited brushing; and other shoreline activities. SCE&G will review the Permitting Handbook with interested stakeholders periodically to evaluate its effectiveness; however, SCE&G may make changes to the permitting process at any time as it determines in its sole judgment to be necessary and appropriate.

3.2 PROJECT BOUNDARY

SCE&G owns in fee or obtained flowage rights for all lands necessary or appropriate for project operations, including lands for recreational use and shoreline control, as described above in Section 3.0. A Project boundary map is included as Figure 1-1.

4.0 SHORELINE MANAGEMENT PLAN GOALS AND OBJECTIVES

The overall goal of this SMP is to define, document, and present the processes and criteria that SCE&G will employ to manage and balance private and public access to and uses of Project lands, specifically including Monticello Reservoir's shoreline, consistent with public safety, energy production operations, environmental protection for Project land as well as Project waters, and reasonable recreational opportunities. This SMP will help to ensure the protection and enhancement of the Project's scenic, environmental, recreational, natural and cultural resources over the term of the License.

This SMP represents a consensus-based, updated management plan intended for submittal with the Project No. 1894 License Application. Specific goals relative to the SCE&G relicensing process that are discussed under this SMP include the following:

1. Provide for reasonable current and future public access;
2. Provide for current and future recreational needs within the Project;
3. Protect fish and wildlife habitat;
4. Protect cultural resources;
5. Protect the ability to meet operational needs;
6. Facilitate compliance with License articles;
7. Minimize adverse impacts to water quality;
8. Monitor and address erosion;
9. Protect scenic values;
10. Monitor and permit shoreline activities;
11. Provide a summary catalogue of the types and locations of existing recreational opportunities;
12. Establish Land Management Classifications and Land Use Prescriptions to help in the management of non-Project uses of the Monticello Reservoir shoreline lands within the Project boundary;
13. Describe the SMP amendment and monitoring process; and
14. Educate and encourage property owners who own property adjacent to or adjoining Project Property (herein referred to as "adjacent property owners") on the use of voluntary BMPs.

4.1 CONSULTATION

The Project relicensing provides an opportunity for SCE&G to seek input on Project-related shoreline management issues from interested stakeholders. SCE&G recognizes that successfully completing the relicensing process requires identifying and resolving Project issues in consultation with federal and state resource agencies, local and national NGOs, homeowner associations, and individuals who have an interest in the Parr Hydroelectric Project (Table 4-1). SCE&G began public outreach efforts in January 2013 by holding a series of public workshops in Winnsboro, Newberry, Columbia, and Jenkinsville, SC. Since that time, SCE&G has sought active public involvement in the process and fostered commitment to issue resolution among SCE&G and stakeholders.

TABLE 4-1 PARTICIPATING GROUPS IN PARR HYDROELECTRIC PROJECT RELICENSING

STAKEHOLDER GROUPS
American Rivers
American Whitewater
Catawba Indian Nation
City of Columbia
Chestnut Hill Plantation HOA
Coastal Conservation League
Congaree Riverkeeper
Environmentalists Inc.
Fairfield County
Gills Creek Watershed
National Marine Fisheries Service
National Park Service
Newberry County
South Carolina Department of Health and Environmental Control
South Carolina Department of Natural Resources
South Carolina Department of Parks, Recreation and Tourism
South Carolina Electric & Gas Company
South Carolina Historic Preservation Office
Town of Winnsboro, SC
Tyger-Enoree River Alliance

STAKEHOLDER GROUPS

United States Fish and Wildlife Service

United States Forest Service

University of South Carolina

4.1.1 RECREATION/LAKE AND LAND MANAGEMENT RESOURCE CONSERVATION GROUP

In support of the relicensing effort, SCE&G formed three Resource Conservation Groups ("RCG"s) to identify, address and resolve Project-related issues by resource area. The RCGs are as follows: the Fish, Wildlife and Water Quality RCG; the Project Operations RCG; and the Lake & Land Management and Recreation RCG. Consideration of potential issues by resource area allows for more focused topic discussion and targeted issue resolution. Some RCGs have established sub-groups, or Technical Working Committees ("TWC"s), for issues requiring special knowledge, education, or experience. Consequently, the Lake & Land Management and Recreation RCG has a Lake and Land Management TWC as well as a Recreation TWC. The Lake and Land Management TWC is discussed further below.

4.1.2 LAKE AND LAND MANAGEMENT TECHNICAL WORKING COMMITTEE

The primary mission of the Lake and Land Management TWC is to revise the existing Parr Hydroelectric Project SMP to provide a management framework within which Project resources can be effectively protected while assuring appropriate public and private access to the Project resources and the recreational opportunities they present. Another important focus of the TWC is to allow interested parties an effective opportunity to provide input on resource issues and the overall future management of shoreline resources. The resulting collaboration has resulted in the contribution of valuable information by entities and individuals familiar with the Project. The forum was instrumental in addressing important issues relevant to the operation and management of the Project over the term of the new License. In working collaboratively, the members of the TWC (Table 4-2) aimed to blend the objectives of the state and federal resource agencies with other stakeholder interests.

TABLE 4-2 ORGANIZATIONS PARTICIPATING ON THE LAKE AND LAND MANAGEMENT TWC

STAKEHOLDER GROUPS
American Rivers
American Whitewater
Coastal Conservation League
Congaree Riverkeeper
Fairfield County
Gills Creek Watershed
Adjacent Property Owners
National Marine Fisheries Service
National Park Service
South Carolina Department of Health and Environmental Control
South Carolina Department of Natural Resources
South Carolina Department of Parks, Recreation and Tourism
South Carolina Electric & Gas Company
Tyger-Enoree River Alliance
United States Fish and Wildlife Service
United States Forest Service

4.1.3 MEETING SCHEDULES

Between October of 2013 and January of 2018, SCE&G has held numerous meetings of the Lake and Land Management and Recreation RCG and Lake and Land Management TWC to discuss the details of the Project SMPs. The efforts of the TWC are reflected herein.

5.0 LAND USE CLASSIFICATIONS

Five distinct land management classifications have been developed for the shorelines surrounding Monticello Reservoir. These land management classifications are as follows: Project Operations; Nuclear Exclusion Zone; Shoreline Permitting; Public Recreation; and, Non-Development Areas. The Public Recreation Classification includes designated public recreation areas, the Recreation Lake, and all islands on Monticello Reservoir. Although SCE&G intends to manage its lands according to this classification system, the public generally will not be precluded from access to SCE&G-owned lands regardless of classification, with the exception of lands reserved and used for Project operations, lands/areas within the Nuclear Exclusion Zone, or other areas specifically protected from public access and posted as such. The sections below explain/define the land management classifications. The acreages and parcels for each of the classifications are provided in Table 5-1. Figure 5-1 depicts their distribution around Monticello Reservoir.

TABLE 5-1 SHORELINE MILES AND ACREAGES BY LAND USE CLASSIFICATION

Commented [AJ2]: Currently verifying all GIS numbers.

CLASSIFICATION	SHORELINE MILES	ACRES
Project Operations*	4.14	501
Nuclear Exclusion Zone *	5.43	184
Shoreline Permitting	20.70	225
Public Recreation*	18.73**	892**
Non-Development*	8.60	150
TOTAL	57.60	1,952

*No docks allowed

** Includes the shoreline surrounding the Recreation Lake and all islands

Commented [AJ3]: To be updated

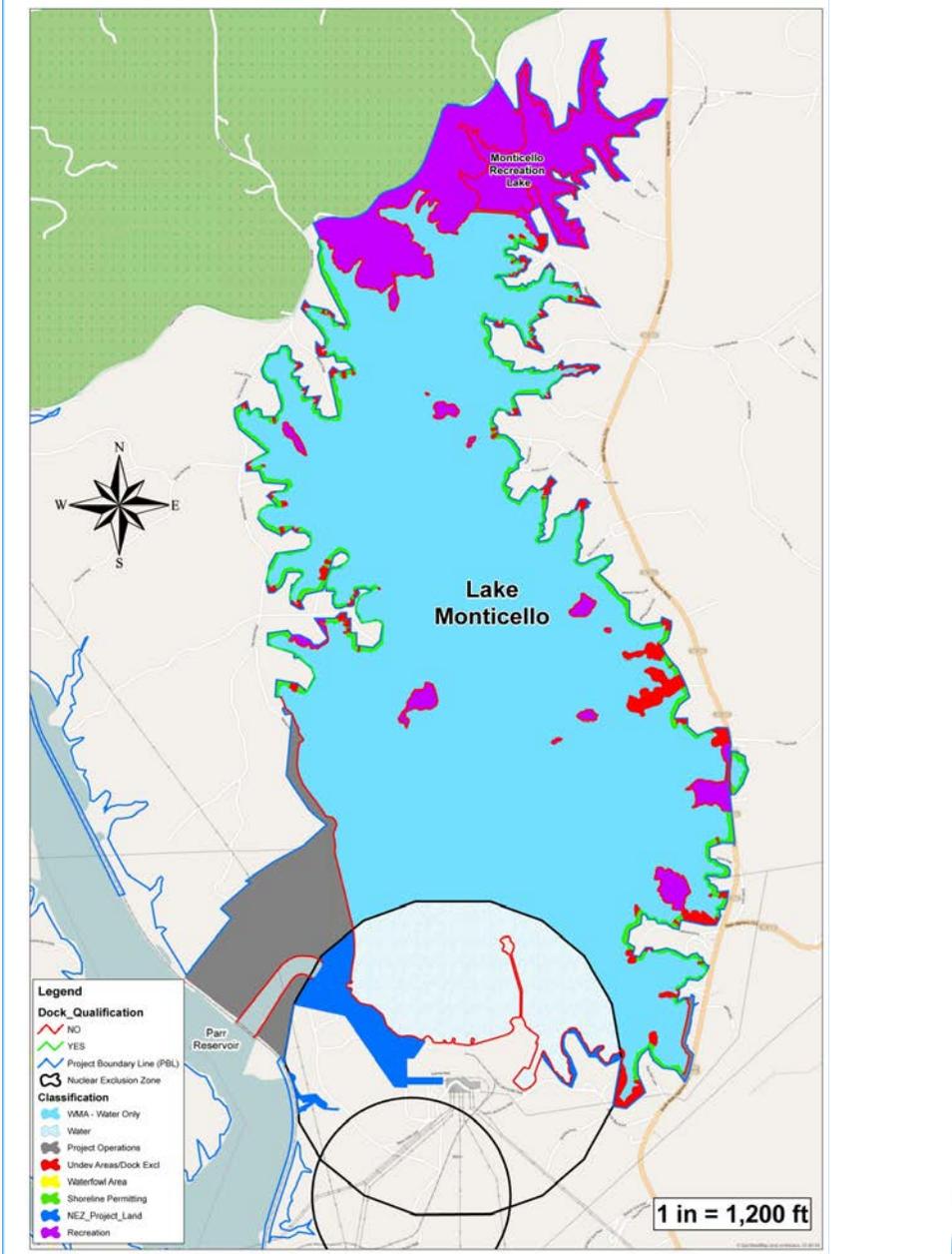


FIGURE 5-1 SHORELINE CLASSIFICATIONS MAP FOR MONTICELLO RESERVOIR

[DATE]

5.1 PROJECT OPERATIONS

Areas under this classification include SCE&G-owned and managed lands required for operation of the Fairfield Development. Public access to these lands is restricted to ensure public safety or to assure the security of the infrastructure system.

5.2 NUCLEAR EXCLUSION ZONE

In addition to its use as part of the Fairfield Development, Monticello Reservoir provides cooling water for the V.C. Summer Nuclear Station located on its shore (authorized under 52 F.P.C. 537 [1974]). The Nuclear Exclusion Zone consists of the area surrounding the V.C. Summer Nuclear Station between the Project boundary line and shoreline and a specified area within Monticello Reservoir where SCE&G as the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property. This area is designated by warning signs on the landward side and by buoys on the lakeward side. Admittance to this area is restricted in order to comply with licensing requirements administered by the Nuclear Regulatory Commission.

5.3 SHORELINE PERMITTING

It is the policy of SCE&G to authorize certain private uses of and/or acts on Project property by permit when such uses or acts are consistent with the public interest and comply with the requirements of the Project License. Areas within the Shoreline Permitting Classification may be eligible for certain private residential uses upon approval by SCE&G. This does not include commercial activities (other than commercial water withdrawals).

5.4 PUBLIC RECREATION

Project lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage.

Public recreation lands include the following:

- Recreation Lake
- Public Access Areas Public boat launches, and other areas currently being managed as public access;
- Islands on Monticello Reservoir;

Commented [AWR4]: Move to 5.4.2

~~• Properties owned by SCE&G that are set aside for future recreational development.~~

5.4.1 RECREATION LAKE

The Recreation Lake is located at the north end of Monticello Reservoir and is approximately 300 acres and 10 miles of shoreline. The Recreation Lake was constructed to provide stable water for fisheries and recreation opportunities.

5.4.2 PUBLIC ACCESS AREAS

There are four public parks and one informal fishing area on Monticello Reservoir. All recreation facilities at Monticello Reservoir are open year-round from sunrise to sunset, except the Recreation Lake Beach Area, which is closed October 1 through March 31. For a list of authorized activities, please see the Permitting Handbook.

5.4.3 ISLANDS

There are 8 islands within Monticello Reservoir, all of which are available for public recreational use in accordance with authorized activities (see Permitting Handbook for authorized activities).

~~**5.4.4 FUTURE RECREATION AREAS**~~

~~Future Recreation Areas include lands SCE&G has set aside for future recreational development, if and when it is determined additional recreation access is needed.~~

5.5 NON-DEVELOPMENT AREAS

Lands under this classification warrant special protection because they may provide important habitat, aesthetic values, or other significant Project characteristics.

6.0 LAND USE PRESCRIPTIONS

Land use prescriptions are based upon and reflect the guiding principles regarding the management of the SCE&G-owned lands within each classification. SCE&G publishes a detailed Permitting Handbook (included under separate cover) that contains descriptions of the permitting processes and specifications for various shoreline developments. Activities that require consultation with and/or permits from SCE&G include the following: construction, maintenance and placement of docks, shoreline stabilization; construction and maintenance of shoreline pathways, and other shoreline activities. Persons interested in shoreline development must contact SCE&G's Lake Management Department (803) 217-9221, or at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs> to obtain permitting guidance and a copy of the Permitting Handbook. Section 8.0 of this document discusses the Permitting Handbook in greater depth. General information regarding permitting requirements is included where applicable within the scope of each management prescription below.

6.1 PROJECT OPERATIONS

Properties classified as Project Operation contain project works critical to the operation of the Fairfield Development. Public access and recreation activities on these lands are restricted for reasons of safety and security.

6.2 NUCLEAR EXCLUSION ZONE

Properties and waters classified as Nuclear Exclusion Zone contain project works/areas critical to the operation of the V.C. Summer Nuclear Station. Public access and recreation activities on these lands are restricted for reasons of safety and security.

6.3 SHORELINE PERMITTING

Residential landowners whose property adjoins lands within the Shoreline Permitting classification may be eligible for certain permitted structures only upon written consent from Lake Management. SCE&G strictly regulates the placement and construction of permitted structures. To address aspects of shoreline structures, SCE&G has developed permitting application procedures and associated dock specification guidelines. These guidelines are detailed in SCE&G's Permitting Handbook.

6.4 PUBLIC RECREATION

Project lands devoted to public recreation include developed park sites, properties set aside for future recreational development, and islands on Monticello Reservoir owned by SCE&G⁵. With the exception of the islands, which are maintained in their natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including swimming, fishing, picnicking, and boat launching⁶. SCE&G developed and maintained access areas on Monticello Reservoir are depicted in Figure 12-1. Private permitted activities, other than those noted under the Recreation Lake Section (Section 6.4.2) are excluded.

6.4.1 RECREATION LAKE

The park area at the Recreation Lake offers fishing, swimming and picnic facilities. Regulations for its use are posted at the park site. The swimming/beach area is closed October through March. The boat launch area is open every day, all year long. No private docks or boat ramps will be permitted on the shoreline of the Recreation Lake. Meandering paths and water withdrawals for residential irrigation only may be considered on a case-by-case basis.

6.4.2 ISLANDS

SCE&G owns all of the islands on Monticello Reservoir and they are available for [passive⁷](#) public recreational use, [which includes activities](#) such as fishing, walking and bird watching. Hunting is [prohibited-permitted](#) on the islands [in accordance with state hunting regulations pertaining to WMA lands](#).

6.5 NON-DEVELOPMENT AREAS

Lands under this classification warrant special protection because they may provide important habitat or aesthetic values. [Non-development Areas are available for passive⁸ public recreational use](#). SCE&G will not permit private shoreline development for Project lands under this classification.

⁵ SCE&G also manages some of the lands classified as public recreation for timber. Information on SCE&G's forest management practices is included in Section 11.1.1.

⁶ The waters of Monticello Reservoir, excluding the Recreation Lake, [and Monticello Reservoir islands](#) are available for public waterfowl hunting as discussed under Section 12.34.

⁷ [Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilities, and/or have a minimal environmental impact.](#)

⁸ [Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilities, and/or have a minimal environmental impact.](#)

7.0 SHORELINE ACTIVITIES REQUIRING SCE&G APPROVAL

SCE&G maintains a strong commitment to managing the shoreline of Monticello Reservoir for multiple resources by considering the impact of various activities on the environmental, aesthetic, and recreational character of the lands. SCE&G owns and manages the Project lands around the entire periphery of Monticello Reservoir and the Recreation Lake. Thus, any activity occurring on the "shoreline" is occurring on SCE&G property. Any activity not in compliance with the shoreline activity parameters outlined in this SMP and in the Permitting Handbook constitutes a trespass which SCE&G may elect to prosecute.

7.1 AUTHORIZED ACTIVITIES REQUIRING APPROVAL THROUGH THE PERMITTING HANDBOOK

Only the following activities and structures may be permitted on Monticello Reservoir:

- Construction or modification to private docks;
- Construction of a meandering access path and associated vegetation removal;
- Shoreline stabilization methods (including rip-rap and bio-engineering);
- Water withdrawal.

7.2 PROHIBITED STRUCTURES AND ACTIVITIES

Activities and structures that SCE&G does not allow include, but are not limited to, the following:

Prohibited Structures:

- Roofs or covers over docks;
- Boat lifts;
- Boat slips;
- Boathouses;
- Fueling facilities on a dock;
- Private boat ramps;
- Houseboats;
- Watercraft exceeding 30 feet in length;
- Watercraft with marine sanitation devices ("MSD");
- Commercial marinas;

- Marine rails;
- Sea walls;
- Fences;
- Electrical service;
- Permanent structures other than permitted docks;
- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, camper trailers, canoes or other watercraft, motor homes or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Water skiing;
- Jet Skiing
- Parasailing
- Paragliding
- Mooring;
- Excavations/dredging;
- Effluent discharges;
- Planting of grass except as a permitted bioengineering erosion control measure;
- Storage or stockpiling of construction material;
- Livestock access to reservoir⁹
- Primitive or overnight camping on all Project property, except at Highway 99 Public Access Area and islands;
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Use of herbicides; and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

⁹ Unless grandfathered through deed reservations.

8.0 PERMITTING PROCESS FOR SHORELINE ACTIVITIES OR STRUCTURES

8.1 SHORELINE PERMITTING PROCEDURES

Applicants must obtain the proper permit(s), per the SCE&G's Permitting Handbook, prior to the initiation of any construction or activity on Project property. As noted above, some activities may also require local, state, and/or federal permits

Whether a non-Project use is approved under the Standard Land Use article or through Project-specific FERC approval, SCE&G is responsible for ensuring that the use is consistent with the purposes of protecting or enhancing the scenic, recreational, and other environmental values of the Project. To assist applicants in the permitting process, the staff at the SCE&G Lake Management Department is available to answer questions regarding documentation, permits, and specification requirements for their particular project. Permits from SCE&G are required for the following activities:

- Construction of a meandering access path;
- Water withdrawal;
- Installation/application of shoreline stabilization; and,
- Installation of private docks.

It is highly advisable to begin the consultation process with SCE&G Lake Management staff at the planning stage of a project. SCE&G staff will be available to discuss specific permitting requirements with the property owner. Depending on the proposed new facility or activity, local, state and federal resource agencies may impose requirements on construction start/stop dates, the placement of erosion control devices, treatment plans, remedial measures, submittal of start construction notifications, and/or BMPs. Any permit applicant should be aware of such conditions, as violations may nullify a permit.

An overview of permitted activities is included below. Detailed information on SCE&G's permitting process, guidelines, and specifications, is provided in SCE&G's Permitting Handbook available at <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs>, under Lake Monticello Dock Permits Application, or by calling (803) 217-9221, or by writing:

SCE&G Lake Management Department
6248 Bush River Road
Columbia, SC 29212

8.1.1 DOCKS

A permit must be obtained from SCE&G Lake Management Department for the construction, installation, replacement of, or addition to any dock prior to the start of the activity. The configuration and location of a dock will be determined during a site visit by an SCE&G representative. At a minimum, dock construction and location must not create a nuisance, or otherwise be incompatible with overall Project recreation use. Impact on navigation or an adjoining property owner will be a strong determining factor. Size, length, or orientation may be restricted, or a permit may be denied if the dock would interfere with navigation or unreasonably impact an adjoining property owner. Dock length may vary depending on curvature or slope of the shoreline or lot line configuration. Any variance (i.e. increase in size or length) from guidelines included in the Permitting Handbook will be evaluated as to the effects on navigation, aesthetic value, or impact on adjacent properties and may be denied if in SCE&G's sole judgment the effects and impacts warrant denial. No dock will be permitted in narrow cove areas, which are defined to be areas where the distance across the water from one shoreline to the other at the 425-foot contour (normal high water level) is less than 200 feet. Only one dock will be permitted on a single-family lot¹⁰. Please see the Permitting Handbook for additional requirements.

General boat dock design may involve either fixed or a combination of fixed and floating structures. Common docks are encouraged and may be mandated for all adjacent property owners as an alternative to individual docks and will be required on property with inadequate property line frontage (property line frontage requirements included in Permitting Handbook), or in such other circumstances that SCE&G deems appropriate. Dock layout specifications are included in the Permitting Handbook.

Docks generally will not be permitted on shoreline affected by significant erosion or steep slopes. Applicants may submit a request for approval accompanied by a plan to address shoreline

¹⁰ SCE&G does not guarantee usable water access to the waters of Monticello Reservoir at any time. Each lot along the shoreline will have different slopes and contours that will determine water depth in front of the lot. The Monticello Reservoir is a pumped storage project that can fluctuate vertically up to 4.5 feet over a 10 to 12 hour period during generation and pumping phases. The fluctuation of the reservoir will, at times, limit or restrict the use of most docks on the Monticello shoreline.

erosion that can be accomplished without the clearing of vegetation or disturbance of shallow water habitat. However, SCE&G reserves the right, in its sole discretion, to deny a permit.

The types of docks permitted include private individual and private common docks. See Permitting Handbook for more details describing dock permitting policies.

8.1.2 SHORELINE VEGETATION MANAGEMENT

In general, SCE&G maintains a policy of non-disturbance of any vegetation within the Project boundary without approval from SCE&G. Permission to remove vegetation within a permitted access path will only be granted by SCE&G Lake Management after a site visit with the applicant. Once clearing of the access path is completed according to the permit, the applicant may maintain the path in the permitted condition utilizing hand held tools and without the use of herbicides. Any unauthorized removal of shoreline vegetation may result in the cancellation of the dock and other permits issued by SCE&G as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or shoreline manipulation as SCE&G determines is necessary to mitigate and correct the situation.

8.1.3 ACCESS PATH

A single access path may be cleared with hand held tools and without the use of herbicides from the adjacent property owner's land upon approval of SCE&G. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path. A SCE&G Lake Management representative will identify and designate the location of all access paths. Access path restrictions are included in the Permitting Handbook. An example of a permitted access path is included as Figure 8-1.

8.1.4 SHORELINE STABILIZATION

Shoreline erosion occurs in some areas where the reservoir shoreline is exposed to prolonged or recurrent wind and wave action. Such erosion, if significant enough, can lead to sedimentation in those areas of the reservoir, affecting aquatic habitats and drainage channels, stream channels, water intakes, and affecting the character of the reservoir in general. Provided it conforms to good engineering standards, as judged by SCE&G, SCE&G supports voluntary efforts to address shoreline erosion in the immediate area of docks or access path for adjacent property owners. To ensure that appropriate, effective techniques and materials are used, SCE&G monitors and controls erosion control projects on or directly affecting Project Property as detailed in the Permitting Handbook. Owners of property adjoining Project Property who wish to employ erosion control measures on or affecting Project Property must use SCE&G shoreline stabilization practices appropriate for the specific situation.

Because shoreline vegetation serves several important functions (i.e., soil integrity, wildlife habitat, water cleansing functions, and aesthetic value) SCE&G prefers to see employment of vegetative shoreline stabilization techniques to address soil erosion problems, whenever possible. These techniques may be referred to as bioengineering, and consist of installing living plant material as a main component in controlling problems of land instability. Plants used should consist of native species that, ideally, have been collected in the immediate vicinity of a project site to ensure that they are well-adapted to site conditions. The ultimate goal in using bioengineering techniques is to establish diverse plant communities to stabilize erosion prone areas through development of a vegetative cover and a reinforcing root matrix.

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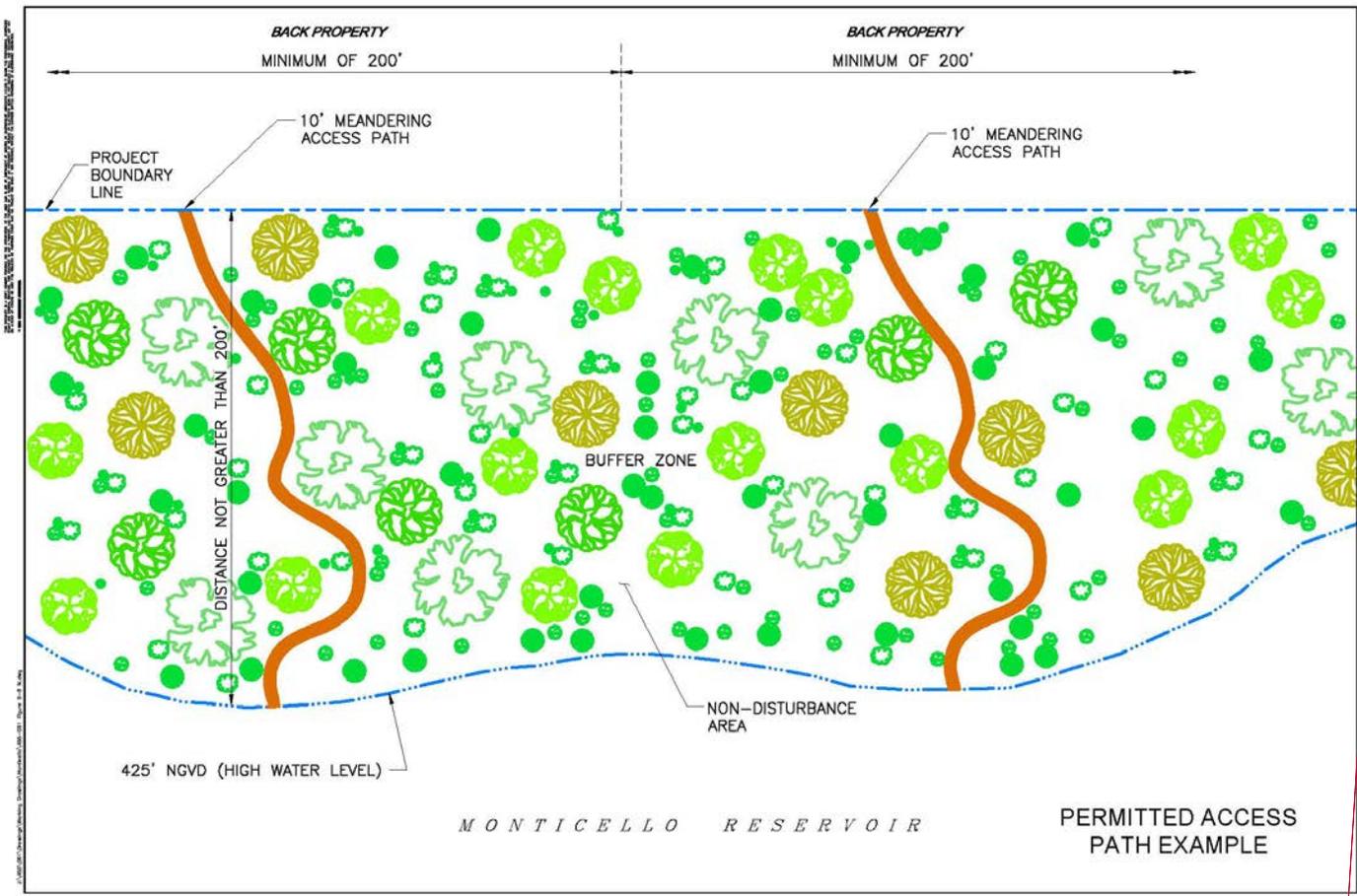


FIGURE 8-1 PERMITTED ACCESS PATH

Bioengineering techniques are least effective at sites with significant and prolonged exposure to strong currents or wind-generated waves. Stabilization of areas experiencing strong erosion pressure may also require the use of structural erosion control methods such as rip-rap. Areas with high-gradient banks or those in advanced stages of erosion may also benefit from such structural components. The optimal solution at a given location often involves combinations of techniques providing both structural and environmental benefits to the shoreline. A variety of bioengineering methodologies and devices are available to address erosion. Illustrations of erosion control designs that utilize both vegetation and structural elements are provided in Figure 8-2 and Figure 8-3. As depicted in the figures, rip rap can provide immediate shoreline stability, thereby enabling plantings to become established to add root-based soil integrity. Optimal erosion control designs must account for site specific slope and erosion pressure as well as homeowner/landowner preferences. Figure 8-4 illustrates a site at which SCE&G's general guidance on using rip rap is followed. Bricks, blocks, tires, or materials other than rip-rap are prohibited as alternative shoreline stabilization material. SCE&G's Lake Management Department is available to provide the benefit of its knowledge and experience to help homeowners attempting to select the design right for them and the Reservoir environment.

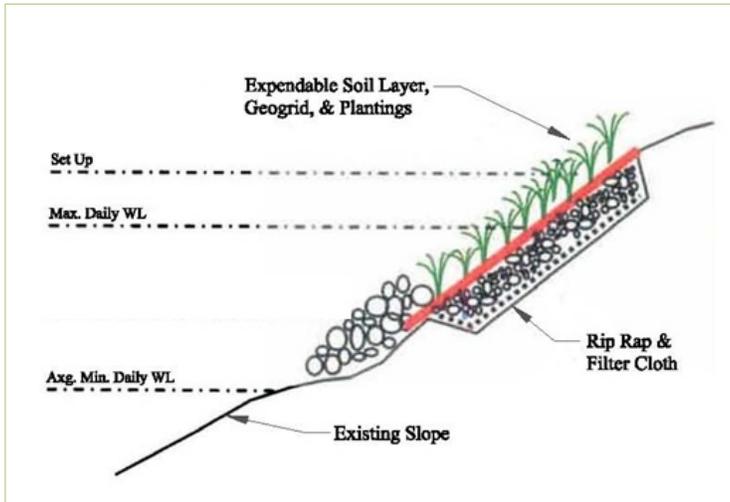


FIGURE 8-2 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (A)

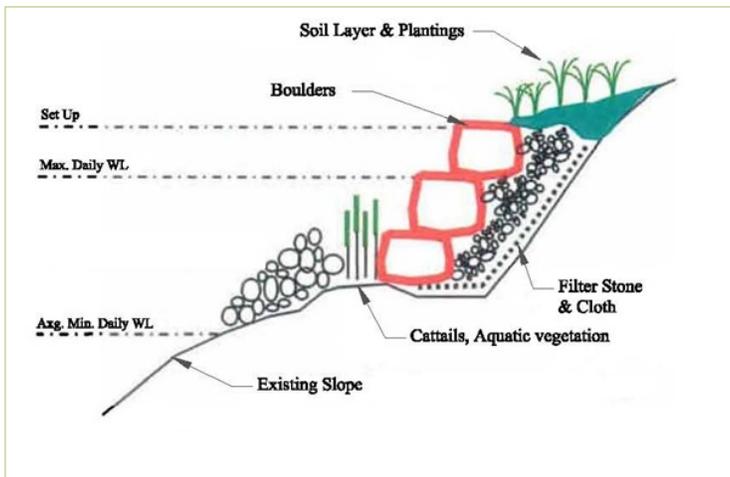


FIGURE 8-3 EXAMPLES OF SHORELINE EROSION CONTROL DESIGNS UTILIZING BIOENGINEERING AND STRUCTURAL TECHNOLOGIES (B)

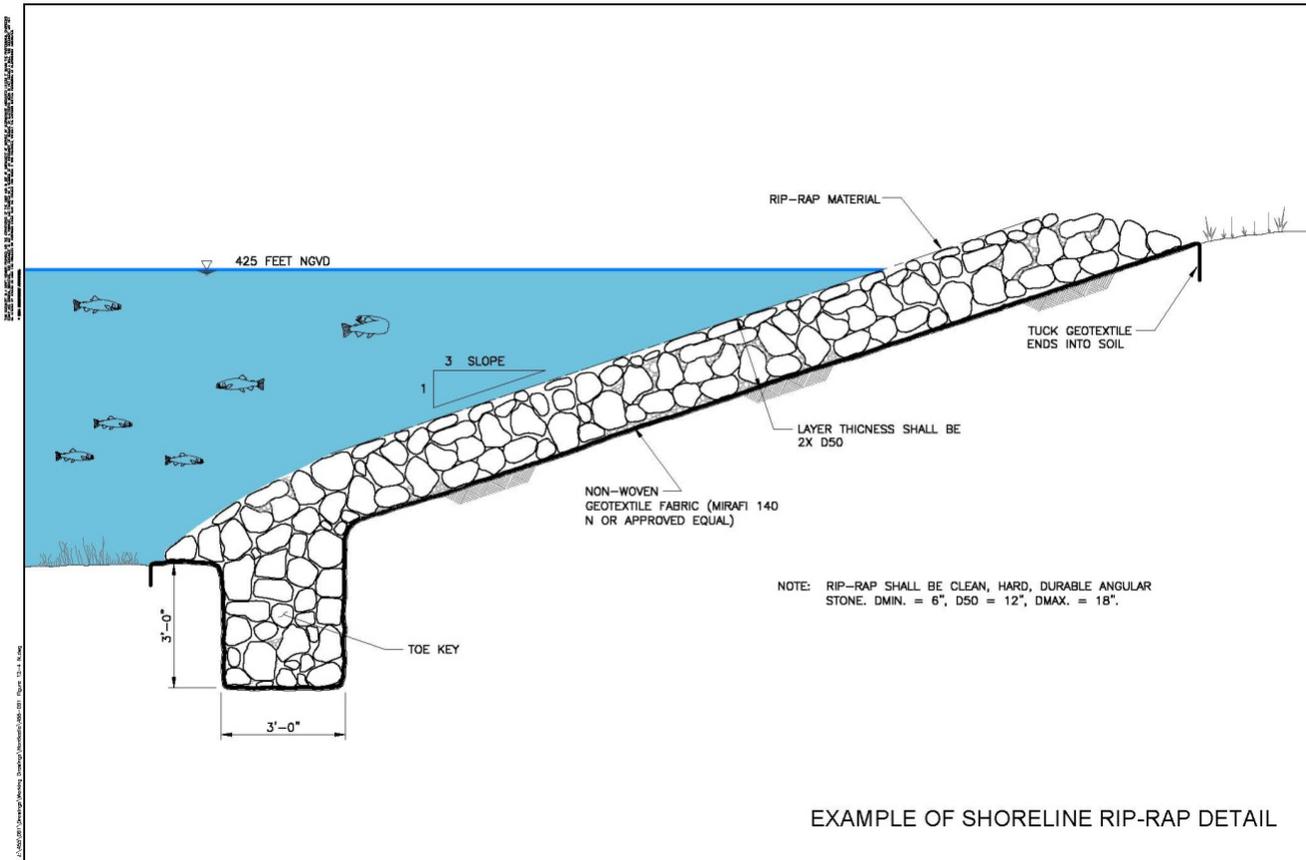


FIGURE 8-4 EXAMPLE OF SHORELINE RIP-RAP DETAIL

8.1.5 WATER WITHDRAWAL

Water withdrawals requiring piping and other transportation/delivery equipment to be placed along the shoreline or in the littoral zone, are managed according to the terms of this SMP. Water withdrawal for residential property must be for irrigation purposes only. Permits are required, and will not be issued for any other purpose. Associated pumps and electrical service must be located outside SCE&G property. SCE&G reserves the right to prohibit withdrawal during times of drought or water drawdown.

Applications for a permit to remove water must be submitted to SCE&G for review. Water withdrawal applications for greater than one million gallons per day (MGD) will be forwarded to the FERC for approval. Requests for withdrawal of one MGD or less may require agency consultation prior to approval. SCE&G may impose limits in granting permits for approved applications (see Permitting Handbook). The applicant may be required to bear the expenses of filing the application and will be required to compensate SCE&G for water withdrawn.

9.0 SCE&G PERMITTING FEE POLICIES

FERC allows licensees the right to charge reasonable fees to cover the costs of administering shoreline management programs, which add management responsibilities and associated costs to project operations. SCE&G administers its SMP in part through a permitting program, which does include a fee component. This ensures that activities occurring within the Project and in particular on Project land, are consistent with the overall goals for the Project, and that SCE&G's customers are not burdened with the full cost of administering programs that also have significant private, and often non-customer, benefit. Permit fees are due with applications and are required for docks, access paths, water withdrawal, and erosion control projects. Should an application be denied, associated permit fees will be returned. Periodic permit renewal fees may be required depending on the shoreline activity. Permit fees for Monticello Reservoir shoreline activities are detailed in the Permitting Handbook. Failure to comply with this policy may result in, among other things, revocation of existing permits, fines, or legal action, as well as loss of consideration for future permits.

SCE&G will give reasonable public notice through appropriate communication avenues before changing the fee structure.

10.0 ENFORCEMENT OF SHORELINE MANAGEMENT PLAN

10.1 VIOLATIONS OF SHORELINE MANAGEMENT PLAN

SCE&G conducts periodic surveys of the Monticello Reservoir shoreline to inventory and inspect docks, access paths, and shoreline erosion control structures/projects. Lake Management representatives make note of unauthorized structures that they see, as well as urging residents and Reservoir visitors to report anything they believe to be unauthorized activity within the Project boundary. Anyone believing that an activity violating the SMP is occurring is urged to contact SCE&G Lake Management at (803) 217-9221.

SCE&G Lake Management representatives will issue Stop Work Directives and/or Trespass Notices for any violations detected on SCE&G property. Any unauthorized clearing of trees or underbrush may result in the revocation of responsible parties' dock permits within 30 days if the violation(s) is (are) not corrected or a course of and schedule for corrective action has not been agreed to and approved by SCE&G. SCE&G may also commence legal action, if it deems it necessary, to require re-vegetation of the affected area. Removal of merchantable timber will require reimbursement to SCE&G subject to valuation of the Forestry Operations Department, including legally allowable "penalties." Consequences for violations may also include restrictions of access to SCE&G property, legal actions, fines, and loss of consideration for future permits.

11.0 SHORELINE MANAGEMENT PRACTICES

11.1 SCE&G SHORELINE MANAGEMENT PRACTICES

SCE&G has established a set of management practices that apply to all of the lands included in the Project boundary. These practices are reflective of each of their developments unique qualities. The management practices for the Fairfield Development (which includes Monticello Reservoir) described herein, may be reviewed and revised periodically during the period of the FERC license.

11.1.1 FOREST MANAGEMENT SHORELINE MANAGEMENT PRACTICES

SCE&G manages timber within the Monticello Project boundary line in accordance with South Carolina's Best Management Practices for Forestry publication. An online copy of this publication is available at <http://www.state.sc.us/forest/refbmp.htm>.

11.1.2 AQUATIC PLANT MANAGEMENT ACTIVITIES

Some species of aquatic plants can become significant nuisances to recreation and Project operations should their populations not be controlled. Some of the common problem species that may be found in Monticello Reservoir include hydrilla, water primrose, and several species of pondweed. When managing invasive and exotic aquatic plants it is important to also protect the aquatic ecosystems and fish habitat. This requires the integration and use of specific BMPs appropriate to the regional and local conditions.

SCE&G's Lake Management Department, in cooperation with the South Carolina Aquatic Plant Management Council, manages the Aquatic Weed Program on Monticello Reservoir. Because some aquatic weed control techniques can harm fish and native plant species if improperly used, it is unlawful, per state and federal regulations, for individuals to spray or treat aquatic growth in the waters of Monticello Reservoir. SCE&G joins with SCDNR to ask that any aquatic vegetation problems recognized by Reservoir visitors or adjacent property owners be reported to SCE&G's Lake Management Department and the SCDNR. In addition, to help curb the spread of invasive aquatic species, SCE&G joins with SCDNR to ask that Reservoir visitors examine their boats and trailers and remove all vegetation and visible mud from boats and trailers before placing them into the waters of Monticello Reservoir and after removing them from Monticello Reservoir. This plea and advice also applies to every body of water in the State. Additional

information on aquatic plant management throughout the state, including Monticello Reservoir, is available at SCDNR's website, <http://www.dnr.sc.gov/invasiveweeds/plan>.

11.1.3 WOODY DEBRIS & STUMP MANAGEMENT

Monticello Reservoir does not have a significant source of woody debris. Woody debris and stump management are discussed in the Permitting Handbook.

11.1.4 AQUATIC HABITAT ENHANCEMENT

SCE&G may partner with SCDNR to enhance fisheries habitat. Enhancing aquatic habitat is an important aspect of freshwater fisheries management. SCDNR and/or SCE&G may establish and maintain aquatic habitat enhancements on Monticello Reservoir such as, but not limited to, vegetation plantings, felled trees cabled along shorelines, spawning and fry rearing enhancements, artificial reefs or "fish attractors." Signage or buoys advising anglers and boaters of enhancement structures in the area may be installed. Structures should be designed and constructed so as not to pose hazards to navigation. At an absolute minimum, they must be designed and constructed to maintain adequate navigation clearance at normal low water elevations. All fisheries habitat enhancement activities will be coordinated with SCDNR and SCE&G.

Additional information on the SCDNR Fish Habitat Enhancement Program can be found online at www.dnr.sc.gov/fish/. For questions regarding an existing fisheries habitat enhancement structure or the notification of a missing buoy/marker, please contact SCDNR at 803-661-4767.

11.1.5 PROTECTION OF LANDS KNOWN TO PROVIDE IMPORTANT HABITAT VALUES

Reservoirs are dynamic environments and the important natural and cultural values that Monticello Reservoir presents may evolve over time. During the upcoming license term, areas along the shoreline may be found to warrant protection against materially negative impacts from development upon one or more of a variety of ecologically important characteristics. Such characteristics may include, but not be limited to the following: areas known to be occupied by rare, threatened or endangered species; rare or exemplary natural communities; species in the State Wildlife Action Plan; significant land forms and geologic features; wetlands and shallow coves; and other areas, such as spawning and nesting habitat, determined to be critical to the continued existence of native species. In the event that one of the aforementioned species is

determined to be present in the Project boundary, SCE&G will consult with SCDNR to determine appropriate management policies.

11.2 LANDOWNER RECOMMENDED BMPs

In addition to development activities, the environment around Monticello Reservoir is susceptible to impacts associated with residential and recreational activities. These include, for example only, improper fertilizer/pesticide use, boat maintenance, and debris disposal. Adjacent property owners can mitigate negative impacts otherwise associated with their property uses and instead make significant positive contributions to the Reservoir environment, and ultimately the watershed, by employing BMPs that preserve bank integrity and minimize non-point sources of pollution and contamination. Adjacent property owners should understand that using BMPs will help to preserve the scenic, environmental, and recreational qualities of the reservoir that they so highly value. Examples of effective BMPs recommended to adjacent property owners are provided in the succeeding section. SCE&G is available to provide more information and to assist landowners in determining effective BMPs for activities on their properties. Also, anyone may contact the Natural Resource Conservation Service or local county extension office (<http://www.sc.nrcs.usda.gov/contact/>).

11.2.1 MINIMIZING NON-POINT SOURCE POLLUTION

Reservoir pollution may result from a variety of activities related to residential development, agriculture, forestry, and construction. Contaminants may enter the reservoir and tributaries via overland flows carrying biological, chemical, and other substances picked up and carried by runoff from rain events. This runoff water may contain sediment, bacteria, oil, grease, detergents pesticides, fungicides, fertilizers, and other pollutants. These pollutants, depending on type, quantities, and concentrations can overwhelm a reservoir's natural ability to filter and process them, thus leading to degraded water quality and aquatic environments.

Although a single point of impact or action may seem insignificant in its effect on the reservoir, the cumulative effects of the resource may be considerable. With this in mind, SCE&G encourages adjacent land owners to be mindful that they are members of a larger community that uses and impacts the reservoir. Employing the following BMPs can go a long way in preserving and improving reservoir water quality:

- Use permeable paving materials and reduce the area of impervious surfaces, particularly driveways, sidewalks, walkways, and parking areas;
- Dispose of vehicle fluids, paints, and/or household chemicals as indicated on their respective labels and do not deposit these products into storm drains, project waters, or onto the ground;
- Use soap sparingly when washing vehicles and wash them on a grassy areas , preferably sloping gently away from the reservoir, so the ground can filter the water naturally;
- Use hose nozzles with triggers to save water and dispose of used soapy water in sinks or other vessels that direct the materials into sewer systems, not in the street;
- Maintain septic tanks and drain fields according to the guidelines and/or regulations established by appropriate regulatory authorities;
- Remove pet waste and dispose of properly in areas that do not drain to the reservoir; and
- Use only low or no phosphorous fertilizer on lawns near the reservoir.

12.0 PUBLIC EDUCATION AND OUTREACH

This SMP is intended to foster management of shoreline use and development to achieve consistency with the FERC License, as well as to promote protection of public safety and environmental quality (water quality, natural habitat, aesthetics, etc.). To garner support and compliance from the public and lake users, it is key to educate them to the need and means to protect shoreline resources. Additionally, the public must be aware of the management and permitting programs put in place to provide this protection. To accomplish the task of increasing public awareness of the goals and objectives of this SMP SCE&G has developed an education and outreach program that includes the components described below.

12.1 SHORELINE MANAGEMENT PLAN EDUCATION

SCE&G's Public Education and Outreach program seeks to educate the public on various aspects of the management of Monticello Reservoir, including the Permitting Handbook, recommended BMP use, relevant Project Operations information, and the Safety Program. To accomplish this, SCE&G uses various public education measures including informational pamphlets, public meetings, newsletters, and an internet webpage.

The Internet, in particular, presents an excellent mechanism for disseminating information and improving awareness. SCE&G maintains a website designed to provide information on the SMP and the Permitting Handbook. Printed copies of the following materials may also be obtained by contacting SCE&G Lake Management at (803) 217-9221. Information and materials that will be available at the website include the following:

- Permitting Handbook;
- Permit application forms;
- Examples and information on BMPs;
- Alternative and example designs for shoreline stabilization; and
- Useful links and other related information.

Additional outreach mechanisms that SCE&G intends to employ in implementing the SMP include the following:

- Provide speakers for homeowner and other organizations' meetings;

- Provide information to realtors and encourage dissemination of this information to all potential Reservoir shoreline back-property buyers; and
- Develop and distribute new, “user friendly” brochures that include general reservoir information, permitting processes, shoreline BMPs, and relevant contact information.

12.2 PUBLIC ACCESS AREA MAPS

A figure depicting existing and future Public Access Areas on Monticello Reservoir is included as Figure 12-1.

12.3 PUBLIC HUNTING AND FISHING

The SCDNR maintains fishery management responsibility and state fishing regulations enforcement on Monticello Reservoir. Fishing regulations are available at SCDNR's website at: <http://www.dnr.sc.gov/fishregs/>.

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12.4 WILDLIFE MANAGEMENT AREAS/WATERFOWL HUNTING ONLY

The waters of Monticello Reservoir, excluding the Recreation Lake, are designated as a waterfowl management area and are available for public waterfowl hunting. The designation for waterfowl management allows hunting on or in the water ~~only~~ [and on the islands in Monticello Reservoir](#), ~~and-but~~ not on adjacent [shoreline](#) land. A South Carolina Wildlife Management Area (WMA) permit is required to hunt in areas with this designation. Regulations pertaining to Monticello Reservoir are available at SCDNR's website at: <http://dnr.sc.gov/wma/>, or by contacting SCDNR at:

Commented [AWR7]: Match this to be similar to what we did at Parr SMP.

Waterfowl and Hunting Regulations
 S.C. Department of Natural Resources
 Wildlife and Freshwater Fisheries
 1000 Assembly Street
 Columbia, South Carolina 29201
 Mailing Address:
 P.O. Box 167
 Columbia, South Carolina 29202
 Telephone: 803-734-3886

12.5 WATER SAFETY

Due to operation of the pumped storage generating plant, the waters of Monticello Reservoir can fluctuate several feet in a matter of a few hours. This rapid fluctuation makes it especially important for boaters and other recreationists to exercise a high degree of care and fully assume personal responsibility for their safety by being especially aware and cautious. For public safety, hazardous areas which are marked should not be entered and any other warnings posted around the reservoir should be observed as well.

SCE&G and SCDNR cooperate to mark shoals and other hazardous areas to increase boating safety. However, boaters should not assume all shoals and hazardous areas have been marked.

SCDNR also enforces the boating laws of South Carolina. Boaters should ensure that watercraft and safety equipment are in good working condition and in compliance with all applicable state laws.

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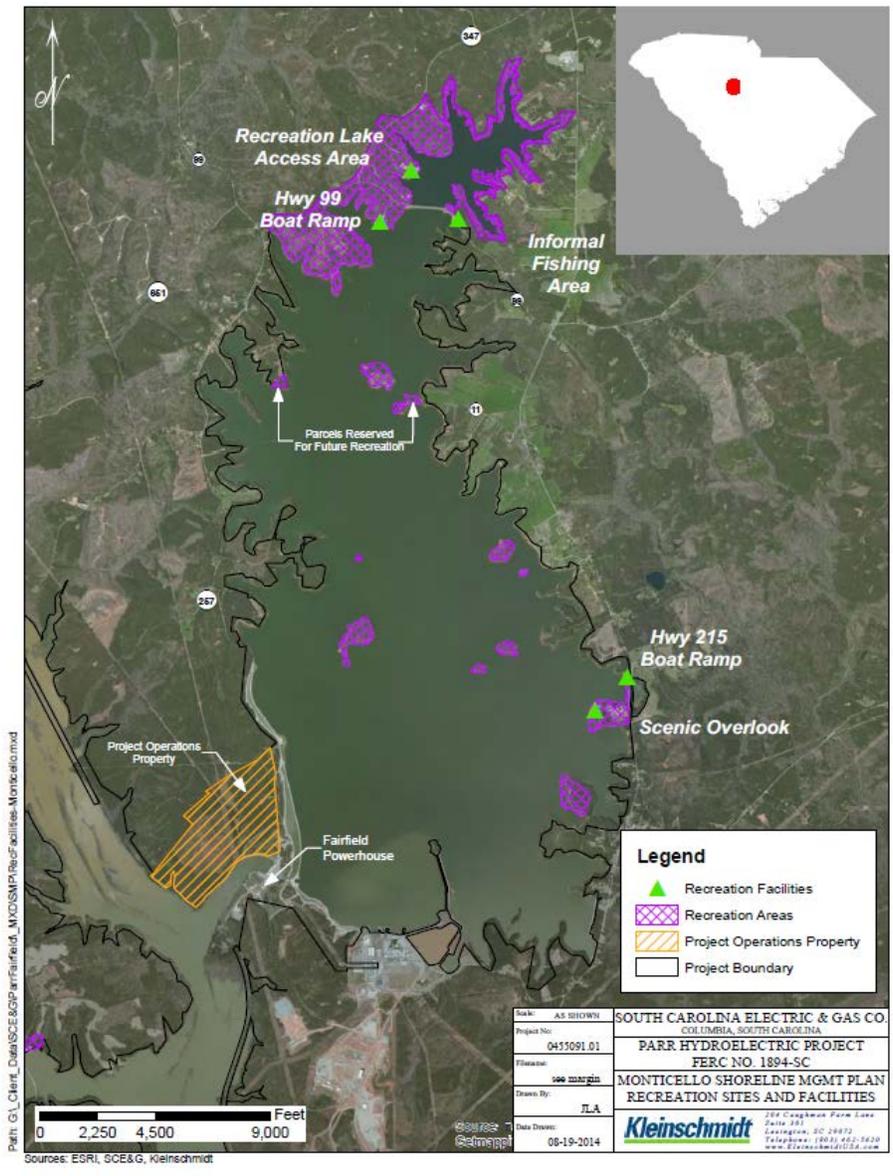


FIGURE 12-1 MONTICELLO RESERVOIR PUBLIC ACCESS AREA MAP

DATE

13.0 MONITORING AND REVIEW PROCESS

13.1 OVERALL LAND USE MONITORING

As demographics and user groups change within the Project area, changes in residential and commercial areas may occur. Often this type of use change is incremental and cumulative, occurring over a period of years or decades. To monitor land use around Monticello Reservoir, SCE&G will employ a geographic information system (GIS) to compare new and existing permit applications against GIS data for the land management classifications. Such monitoring will provide long-term data that should be useful in identifying areas experiencing change. Every 10 years, during the SMP review process (see Section 13.2 on Review Process below), SCE&G will report on changes in land use for the various land management classifications. If it is found that material changes within the Project boundary have occurred that are not consistent with the current SMP goals, amendments to the SMP may be warranted. Such situations might include significant changes in land ownership, major commercial upgrades or uses, or new residential uses or pressures.

13.2 REVIEW PROCESS

SCE&G proposes a 10 year SMP review cycle interval. A 10 year SMP review period interval should provide reasonable opportunities for SCE&G, in concert with governmental, non-governmental, and individual stakeholders, periodically and deliberately to assess new issues that arise as a result of development around the Reservoir, and allow for analyses of cumulative effects. The SMP review process will begin sufficiently in advance of the end of each period so that it will be completed within the 10 year time frame. One month prior to the scheduled start of the review process, its occurrence will be advertised in various media formats (e.g., website, newsletter, contact with homeowner associations, etc.). SCE&G will use those same media avenues to issue a report on the outcome of the review process. As in the past, SCE&G will solicit input from interested parties in addressing issues that arise and have a bearing on Reservoir management. This includes keeping lines of communication open during the time between review periods. Concurrently with the FERC SMP review process, SCE&G will review the Permitting Handbook periodically with interested stakeholders to ensure its effectiveness; however, changes to the permitting process may be made, as needed, outside of the scheduled review periods.

14.0 REFERENCES

- Federal Power Commission (F.P.C.). 1974. Order Issuing New License for the Parr Hydroelectric Project. August 28, 1974. 52 F.P.C. 537.
- Federal Energy Regulatory Commission (FERC). 2012. Guidance for Shoreline Management Planning at Hydropower Projects. Online. [URL]: <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/smpbook.pdf>.
- Federal Energy Regulatory Commission (FERC). 2001. Order Approving Land use and Shoreline Management Plan. June 4, 2001. 95 FERC ¶ 61,351.

SHORELINE MANAGEMENT HANDBOOK AND PERMITTING GUIDELINES

MONTICELLO AND PARR RESERVOIRS

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

Prepared for:

**South Carolina Electric & Gas Company
Cayce, South Carolina**

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtGroup.com

[Date]

SHORELINE MANAGEMENT HANDBOOK AND PERMITTING GUIDELINES

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MONTICELLO AND PARR RESERVOIRS**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	MONTICELLO RESERVOIR	3
2.1	LAND USE CLASSIFICATIONS AND PRESCRIPTIONS	3
2.1.1	PROJECT OPERATIONS	3
2.1.2	NUCLEAR EXCLUSION ZONE	3
2.1.3	SHORELINE PERMITTING	4
2.1.4	PUBLIC RECREATION	4
2.1.4.1	ISLANDS	5
2.1.4.2	RECREATION LAKE	5
2.1.5	NON-DEVELOPMENT AREAS	5
2.2	ENVIRONMENTAL POLICIES AND PRACTICES	6
2.2.1	NON-DISTURBANCE POLICY	6
2.2.2	AQUATIC PLANTS	6
2.2.3	WOODY DEBRIS & STUMP MANAGEMENT	7
2.2.4	FOREST MANAGEMENT PRACTICES	7
2.3	PUBLIC ACCESS AREAS	7
2.4	SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING	8
2.4.1	DOCKS	8
2.4.1.1	PRIVATE INDIVIDUAL DOCKS	9
2.4.1.2	PRIVATE COMMON DOCKS	10
2.4.1.3	DOCK MODIFICATIONS	10
2.4.2	SHORELINE VEGETATION MANAGEMENT	11
2.4.3	ACCESS PATH	11
2.4.3.1	MONTICELLO RESERVOIR	11
2.4.3.2	RECREATION LAKE	12
2.4.4	SHORELINE STABILIZATION	12
2.5	PROHIBITED STRUCTURES AND ACTIVITIES	13
3.0	PARR RESERVOIR	15
3.1	LAND USE CLASSIFICATIONS AND PRESCRIPTIONS	15
3.1.1	PROJECT OPERATIONS	15
3.1.2	PUBLIC RECREATION	15
3.1.2.1	PEARSON'S ISLAND AND SHOALS	16
3.1.2.2	WILDLIFE MANAGEMENT AREAS	16
3.1.3	NON-DEVELOPMENT AREAS	17
3.2	ENVIRONMENTAL POLICIES AND PRACTICES	18

TABLE OF CONTENTS (CONT'D)

3.2.1 NON-DISTURBANCE POLICY18
3.2.2 FOREST MANAGEMENT PRACTICES.....18
3.3 PUBLIC ACCESS AREAS.....18
3.4 SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING19
3.4.1 SHORELINE VEGETATION MANAGEMENT19
3.4.2 ACCESS PATH20
3.5 PROHIBITED STRUCTURES AND ACTIVITIES20
4.0 WATER WITHDRAWAL23
5.0 PERMITTING APPLICATION PROCEDURE24
5.1 PERMITTING FEES24
5.2 PERMITTING ENFORCEMENT AND VIOLATIONS25
5.3 MISCELLANEOUS25

LIST OF FIGURES

FIGURE 1: PROJECT BOUNDARY
FIGURE 2: SHORELINE CLASSIFICATIONS MAPS
FIGURE 3: PUBLIC ACCESS AREAS
FIGURE 4: MONTICELLO RESERVOIR HUNTING AREAS MAP
~~FIGURE 5:~~ PERMITTED BOAT DOCK DESIGNS
FIGURE ~~5~~6: NARROW COVE EXAMPLE
FIGURE ~~6~~7: LAND MANAGEMENT PRESCRIPTIONS FOR PRIVATE INDIVIDUAL DOCK -
MONTICELLO RESERVOIR
FIGURE ~~7~~8: PRIVATE COMMON DOCK LAYOUT EXAMPLE
FIGURE ~~8~~9: MONTICELLO RESERVOIR PERMITTED ACCESS PATH EXAMPLE
FIGURE ~~9~~10: RECREATION LAKE PERMITTED ACCESS PATH EXAMPLE
FIGURE ~~10~~11: PARR RESERVOIR HUNTING AREAS MAP
~~FIGURE 12:~~ PARR RESERVOIR PERMITTED ACCESS PATH EXAMPLE

LIST OF APPENDICES

APPENDIX A: PERMITTING FIGURES AND EXAMPLES
APPENDIX B: SHORELINE PERMIT APPLICATION
APPENDIX C: CONDITIONS OF PERMIT
APPENDIX D: VEGETATION AGREEMENT
APPENDIX E: SHORELINE MANAGEMENT AGREEMENT

**SHORELINE MANAGEMENT HANDBOOK AND PERMITTING GUIDELINES
MONTICELLO AND PARR RESERVOIRS**

**PARR HYDROELECTRIC PROJECT
(FERC No. 1894)**

SOUTH CAROLINA ELECTRIC & GAS COMPANY

1.0 INTRODUCTION

South Carolina Electric & Gas Company ("SCE&G") is the Licensee of the Parr Hydroelectric Project (Federal Energy Regulatory Commission [FERC] No. 1894) ("Project"). The Project consists of the Parr Shoals Development ("Parr Development") and the Fairfield Pumped Storage Development ("Fairfield Development"). The developments are located along the Broad River in Fairfield and Newberry Counties, South Carolina.

The Project developments form two distinct Project reservoirs. Monticello Reservoir is located adjacent to the Broad River and functions as the upper reservoir for the Fairfield Development. Parr Reservoir is located along the Broad River, as impounded by Parr Shoals Dam, and functions as the lower reservoir for the Fairfield Development. Both Project reservoirs serve as popular recreation destinations and are used and enjoyed by local residents, as well as visitors to the state.

This Shoreline Management Handbook and Permitting Guidelines (Permitting Handbook) has been developed in consultation with governmental, non-governmental, and individual stakeholders to specifically address and guide activities along the Monticello and Parr shorelines that require consultation with and/or permits from SCE&G. These activities include construction, maintenance, and placement of docks, shoreline stabilization, lake access pathways and other shoreline activities.

Additionally, this Permitting Handbook has been designed to work in conjunction with the Shoreline Management Plans ("SMPs") for the Monticello and Parr reservoirs (included under separate covers). The SMPs are comprehensive, overarching documents that discuss the management of Project land and adjoining water resources and their uses, consistent with FERC License requirements and broad Project purposes. The SMPs are available from SCE&G's Lake Management Department (Lake Management).

Although this Permitting Handbook provides guidance for shoreline activities, it is important to contact Lake Management prior to conducting any activity along the shorelines of Monticello or Parr reservoirs, (803) 217-9221. Lake Management is responsible for enforcing FERC directives regarding authorized and unauthorized uses of Monticello and Parr waters and land within the FERC Project boundary. FERC directives require SCE&G to prevent or halt unauthorized actions by taking measures to stop such actions.

2.0 MONTICELLO RESERVOIR

2.1 LAND USE CLASSIFICATIONS AND PRESCRIPTIONS

The FERC establishes a boundary line encompassing the lands surrounding hydroelectric projects that are needed for project purposes. Licensees are required by FERC to own, or have easement rights to, those lands included in the Project Boundary¹. SCE&G manages company-owned lands within the Parr Hydroelectric Project Boundary (Figure 1) through land use classifications and prescriptions. Land use classifications distinguish distinct areas of land for specific purposes. Land use prescriptions define the activities that may take place on lands within those classifications.

Five distinct land use classifications have been developed for the shorelines surrounding Monticello Reservoir. These land use classifications are as follows: Project Operations; Nuclear Exclusion Zone; Shoreline Permitting; Public Recreation; and, Non-Development Areas (Figure 2). Land use classifications and their associated prescriptions for Monticello reservoir are discussed below.

2.1.1 PROJECT OPERATIONS

CLASSIFICATION: This classification includes SCE&G-owned and managed lands required for operation of the Fairfield Development.

PRESCRIPTION: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

2.1.2 NUCLEAR EXCLUSION ZONE

CLASSIFICATION: The Nuclear Exclusion Zone consists of the area surrounding the V.C. Summer Nuclear Station² between the Project Boundary Line and shoreline and a specified area within Monticello Reservoir where SCE&G as the reactor licensee has the authority to determine

¹ The Project Boundary Line also serves as the common property line between Project No. 1894 property and adjacent lands, whether owned by SCE&G or another back property owner.

² Monticello Reservoir provides cooling water for the V.C. Summer Nuclear Station located on its shore. However, the V.C. Summer Nuclear Station is a separate project from the Parr Hydroelectric Project and is licensed through the Nuclear Regulatory Commission.

all activities, including exclusion or removal of personnel and property. This area is designated by warning signs on the landward side and by buoys on the lakeward side.

PRESCRIPTION: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

2.1.3 SHORELINE PERMITTING

CLASSIFICATION: Areas within the Shoreline Permitting Classification may be eligible for certain private residential uses upon approval by SCE&G. These uses include a single, meandering path and a dock, shoreline stabilization, and water withdrawals. This classification does not allow for commercial activities (other than commercial water withdrawals).

PRESCRIPTION: Residential landowners whose property adjoins lands within the Shoreline Permitting classification may be eligible for certain permitted structures only upon written consent from Lake Management. SCE&G strictly regulates the placement and construction of permitted structures. Specific information relating to permitted structures is included within this Permitting Handbook.

2.1.4 PUBLIC RECREATION

CLASSIFICATION: Lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Project lands devoted to public recreation include developed park sites, public boat launches, the Recreation Lake, properties set aside for future recreational development, and islands on Monticello Reservoir owned by SCE&G.

PRESCRIPTION: With the exception of the islands, which are maintained in their natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including swimming, fishing, picnicking, and boat launching. Public hunting is not allowed on Project lands surrounding Monticello Reservoir³. SCE&G developed and maintained access areas on Monticello Reservoir are depicted in Figure 3. Private permitted activities, other

³ The waters of Monticello Reservoir, excluding the Recreation Lake, and Monticello Reservoir islands are available for public waterfowl hunting in accordance with the state hunting regulations as discussed under Section 4.0 in accordance with SCDNR WMA regulations. Moreover, public hunting is allowed on Parr Reservoir and certain Project lands surrounding Parr Reservoir, as discussed under Section 3.1.

than those noted under the Recreation Lake (Section 2.1.4.2), are prohibited on lands classified as Recreation.

2.1.4.1 ISLANDS

SCE&G owns all of the islands on Monticello Reservoir and they are available for ~~passive~~-public recreational use, as described within the prescription below.

PRESCRIPTION: The islands on Monticello Reservoir are available for ~~passive~~⁴-public recreational use, which includes activities such as bank fishing, walking and bird watching. Hunting is ~~prohibited~~-permitted on the islands in accordance with state hunting regulations pertaining to WMA lands. Please see Figure 4 depicting WMA areas on Monticello Reservoir. See SCDNR website for state hunting regulations (<http://dnr.sc.gov>).

2.1.4.2 RECREATION LAKE

The Recreation Lake is located at the north end of Monticello Reservoir and is approximately 300 acres with 10 miles of shoreline. The Recreation Lake was constructed to provide stable water for fisheries and recreation opportunities.

PRESCRIPTION: The park area at the Recreation Lake offers fishing, swimming and picnic facilities. Regulations for its use are posted at the park site. The swimming/beach area is closed October through March. The boat launch area is open every day, all year long. No private docks ~~will be~~ permitted on the shoreline of the Recreation Lake. Meandering paths and water withdrawals may be considered on a case-by-case basis.

2.1.5 NON-DEVELOPMENT AREAS

CLASSIFICATION: Lands under this classification warrant special protection because they may provide important habitat, aesthetic values, or other significant Project characteristics.

PRESCRIPTION: SCE&G will not permit private shoreline development for Project lands under this classification. These areas are available for ~~passive~~⁵ public recreational use.

⁴ Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilities, and/or have a minimal environmental impact.

⁵ Passive recreation use can be defined as those recreation activities that are generally non-consumptive in nature, require a minimum of facilities, and/or have a minimal environmental impact.

2.2 ENVIRONMENTAL POLICIES AND PRACTICES

The purpose of the Shoreline Management Handbook and Permitting Guidelines is to maintain, balance and conserve the Project's natural and human-made resources, recreational opportunities, and energy production while complying with the terms of the Project's FERC license. SCE&G implements certain environmental policies and practices to achieve the purpose described above.

2.2.1 NON-DISTURBANCE POLICY

Trees, bushes, and other vegetation growing on Project property play an important role in protecting the environmental, scenic and recreational values of Monticello Reservoir. Protection of the shoreline and Project property is important to ensure and maintain a sound, healthy lake environment.

Clearing or removal of trees or vegetative cover by back-property owners and/or non-SCE&G personnel is strictly prohibited except within a permitted access path. Any unauthorized removal of shoreline vegetation will result in the immediate cancellation of dock and other permits issued by SCE&G. Violators will be required to replant and restore the disturbed area with such plantings and/or other measures as SCE&G determines is necessary to mitigate and correct the situation.

SCE&G may implement sound forest management practices on Project property as determined appropriate. SCE&G implements these practices in accordance with South Carolina State Best Management Practices as discussed in the Shoreline Management Plan (included under separate cover).

2.2.2 AQUATIC PLANTS

Lake Management, in cooperation with the South Carolina Aquatic Plant Management Council, manages the Aquatic Weed Program on Monticello Reservoir. Management includes periodic monitoring of Monticello Reservoir for hydrilla by SCE&G. Because some aquatic weed control techniques can harm fish and native plant species if improperly used, it is unlawful, per state and federal regulations, for individuals to spray or treat aquatic growth in the waters of Monticello Reservoir.

2.2.3 WOODY DEBRIS & STUMP MANAGEMENT

Woody debris consists of both large and small woody vegetation that is floating or submerged, stationary or transitory, exposed or transported by lake fluctuations and flows and is subject to decay. Monticello Reservoir does not have a significant source of woody debris; however, as a baseline, SCE&G maintains a policy of no disturbance for any and all woody debris and stumps on Project property unless its removal by SCE&G is necessary for reasons of health and human safety, or the debris is so minimal that it is insignificant in the provision of fish or wildlife habitat. SCE&G may partner with SCDNR to enhance fisheries habitat, as discussed in Section 11.0 of the Monticello Reservoir SMP.

2.2.4 FOREST MANAGEMENT PRACTICES

SCE&G will manage timber within the Monticello Project boundary line in accordance with South Carolina's Best Management Practices for Forestry publication.

2.3 PUBLIC ACCESS AREAS

SCE&G has developed and maintains four public parks and one informal fishing area on Monticello Reservoir. These include the following:

- Highway 99 Public Access Area
- Recreation Lake Access Area
- Highway 215 Boat Ramp
- Scenic Overlook
- Highway 99 Informal Fishing Area

Each park provides facilities for boat launching, courtesy dock(s), and/or picnic facilities for public use. The Recreation Lake also provides opportunities for swimming⁶. The Scenic Overlook is part of a multiple use recreation area that is maintained in conjunction with Fairfield County Recreation Commission. The scenic overlook area includes picnicking facilities and a fishing facility for those persons with disabilities (maintained exclusively by SCE&G). Additional amenities, maintained by others, include a baseball field, tennis courts, a basketball court, and trails.

⁶ Please note that no lifeguard is on duty. Swim at your own risk.

The Recreation Lake Beach Area is open from sunrise to sunset: April 1 through September 30. The Beach Area is closed October 1 through March 31. All other recreation facilities at Monticello Reservoir are open from sunrise to sunset, year-round.

Alcoholic beverages, hunting and pets are prohibited on SCE&G Project property surrounding Monticello Reservoir. Primitive ~~or~~ overnight camping is only allowed at the Highway 99 Public Access Area and on the islands, and is prohibited on all other Project property. Park rules and regulations are posted at each developed location. In addition, all ~~islands on Monticello Reservoir and~~ SCE&G Project property along the Monticello Reservoir shoreline (except those lands classified as Project Operations or Nuclear Exclusion) are available for passive public recreation activities. Islands on Monticello Reservoir are available for public recreation, including waterfowl hunting in accordance with WMA regulations. Please see Figure 3 for an identification of recreation areas on Monticello Reservoir.

2.4 SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING

It is the policy of Lake Management to authorize certain private uses of and/or acts upon Project lands by permit when such uses or acts are compatible with the public interest and comply with the requirements of the FERC license for the Project. SCE&G reserves the right to approve final design and placement of docks, access paths, and other permitted activities, as described below⁷. Any activity not in compliance with the shoreline parameters outlined below may constitute a trespass.

2.4.1 DOCKS

A permit must be obtained from Lake Management for the construction, installation, replacement of, or addition to any dock. Any adjacent landowner interested in construction, installation, replacement of, or addition to any dock *must* contact SCE&G *prior* to the start of the activity. The configuration and location of a dock will then be determined during a site visit by an SCE&G representative. Only then may the adjacent landowner proceed with construction activities in compliance with this Permitting Handbook.

⁷ Permitted water withdrawals are discussed under Section 5.0.

General boat dock design may involve either fixed or a combination of fixed and floating structures (Figure 45). Additional dock construction requirements are as follows:

- Dock construction material must consist of approved, treated lumber only. Steel and other building materials will be evaluated on an individual basis. All building materials must be approved for outdoor use.
- All dock floatation must consist of encased or encapsulated Styrofoam billets. No exposed foam billets or metal or plastic drums will be permitted. Floatation which sinks when punctured or becomes waterlogged is prohibited.
- Docks must have reflectors. Reflectors must be placed on each corner of the dock and be visible to boating traffic.
- All permanent, fixed docks must be built one foot above the maximum high water mark (425-foot contour).
- SCE&G prohibits the placement of sinks, toilets, showers, etc. or any type of equipment or construction on docks, or SCE&G property, which will create, cause, or allow any liquid or solid waste to be discharged into the waters of Monticello Reservoir.

Upon completion of dock construction, SCE&G will inspect each dock to ensure compliance and assign an inventory number to compliant docks. Only then will a dock be deemed permitted.

No dock will be permitted in narrow cove areas, which are defined to be areas where the distance across the water from one shoreline to the other at the 425-foot contour (normal high water level) is less than 200 feet (Figure 56). Additionally, docks will not be permitted on shoreline affected by significant erosion or steep slopes unless the applicant agrees to provide approved shoreline erosion control devices. This must be accomplished without the clearing of vegetation or disturbance of shallow water habitat. Use of common docks will be encouraged where practical.

2.4.1.1 PRIVATE INDIVIDUAL DOCKS

Please review the information included in Section 2.4.1, above, before proceeding. To be eligible for a private individual dock, a lot for a single family dwelling first must have a minimum of 200 feet along the Project Boundary Line (Figure 67). Additionally, the distance from the Project Boundary Line to the high water mark (425-foot contour) may not be greater than 200 feet in depth in the vicinity of the proposed dock. Only one dock will be permitted on a single-family

lot⁸. One approximately 10-foot wide meandering path will be permitted from the adjacent property owner through Project property for dock access.

Docks may generally be up to 750 square feet in overall size (surface area) and 75 feet in length. Exact dock length may vary depending on curvature or slope of the shoreline. However, in no case may they interfere with navigation or adjoining property access. If an interference does exist, size and length may be restricted, or a permit may be denied.

2.4.1.2 PRIVATE COMMON DOCKS

Please review the information included in Section 2.4.1, above, before proceeding. Common docks provide lake access for two single-family adjacent property owners. The combined adjoining lots must have a minimum of 200 feet on the Project Boundary Line (Figure 78). Both property owners must have at least 100 feet on the Project Boundary Line in order to participate in a common dock permit. Additionally, the distance from the Project Boundary Line to the high water mark (425-foot contour) may not be greater than 200 feet in depth in the vicinity of the proposed dock. One approximately 10-foot wide dock access path will be permitted in the vicinity of the common property line between the two adjacent property owners. Property owners must share the one path.

Common docks are encouraged and may be mandated for all adjacent property owners as an alternative to individual docks and will be required on property with inadequate property line frontage or in such other circumstances that SCE&G deems appropriate.

2.4.1.3 DOCK MODIFICATIONS

Prior to initiating any project, property owners should contact Lake Management. Dock modifications that may temporarily or permanently affect the land or water of the shoreline require submittal of a permit application to SCE&G and approval of the application prior to the commencement of any such modifications. However, general maintenance and repairs of docks, such as replacing boards, may not require permitting. Dock owners must contact Lake

⁸ SCE&G does not guarantee usable water access to the waters of Monticello Reservoir at any time. Each lot along the shoreline will have different slopes and contours that will determine water depth in front of the lot. The Monticello Reservoir is a pumped storage project that can fluctuate vertically up to 4.5 feet over a 10 to 12 hour period during generation and pumping phases. The fluctuation of the reservoir will, at times, limit or restrict the use of most docks on the Monticello shoreline.

Management for more information and guidance regarding the need for a permit to conduct dock work.

2.4.2 SHORELINE VEGETATION MANAGEMENT

No clearing or removal of trees or vegetative cover within the Project boundary will be permitted except directly within a permitted access path (see Section 2.4.3 for a discussion of access paths). Permission to remove vegetation within a permitted access path will only be granted by Lake Management after a site visit with the applicant. Once clearing of the access path is completed according to the permit, the applicant may maintain the path in the permitted condition utilizing hand held tools and without the use of herbicides.

Any unauthorized removal of shoreline vegetation may result in the cancellation of dock and other permits issued by SCE&G, as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or other measures as SCE&G determines is necessary to mitigate and correct the situation.

2.4.3 ACCESS PATH

A single access path may be cleared with hand held tools and without the use of herbicides from the adjacent property owner's land upon approval of SCE&G. A SCE&G Lake Management representative will identify and designate the location of all access paths. Access path restrictions vary dependent upon whether the path will be permitted on Monticello Reservoir or the Recreation Lake. The adjacent property owner must have a minimum of 200 feet on the Project Boundary Line (Figure [67](#)). Additionally, the distance from the Project Boundary Line to the high water mark (425-foot contour) may not be greater than 200 feet in depth in the area of the proposed access path. Examples of a permitted access path are included as Figures [8-9](#) for Monticello Reservoir and Figure [9-10](#) for the Recreation Lake.

2.4.3.1 MONTICELLO RESERVOIR

Please review the information included in Section 2.4.3, above, before proceeding. An approximately 10-foot wide access path may be permitted through SCE&G property to the shoreline of Monticello Reservoir. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path.

2.4.3.2 RECREATION LAKE

Please review the information included in Section 2.4.3, above, before proceeding. An approximately 5-foot wide access path may be permitted through SCE&G property to the shoreline of the Recreation Lake. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path.

2.4.4 SHORELINE STABILIZATION

SCE&G supports voluntary efforts to address shoreline erosion in the immediate area of docks or access paths for adjacent property owners. Additionally, SCE&G may require an adjacent property owner to provide approved shoreline erosion control devices if the adjacent property owner submits a permit application for a dock and/or access path on shoreline affected by significant erosion or steep slopes.

To ensure that appropriate, effective techniques and materials are used, SCE&G monitors and controls erosion control projects on or directly affecting Project Property. Erosion control measures on or affecting Project Property must use SCE&G shoreline stabilization practices appropriate for the specific situation. SCE&G prefers to see employment of vegetative shoreline stabilization techniques (bioengineering) to address soil erosion problems, whenever possible. However, bioengineering techniques are least effective at sites with significant and prolonged exposure to strong currents or wind-generated waves. Stabilization of areas experiencing strong erosion pressure may also require the use of structural erosion control methods such as rip-rap. Areas with high-gradient banks or those in advanced stages of erosion may also benefit from structural components. Bricks, blocks, telephone poles, tires, or materials other than rip-rap are prohibited as alternative shoreline stabilization material.

2.5 PROHIBITED STRUCTURES AND ACTIVITIES

The following structures and activities are prohibited on SCE&G Project property and on the waters of Monticello Reservoir and the Recreation Lake. These prohibitions will be enforced by SCE&G or an appropriate state or federal agency.

Prohibited Structures:

- Roofs or covers over docks;
- Boat lifts;
- Boat slips;
- Boathouses;
- Fueling facilities on a dock;
- Private boat ramps;
- Houseboats;
- Watercraft exceeding 30 feet in length;
- Watercraft with marine sanitation devices ("MSD");
- Commercial marinas;
- Marine rails;
- Sea walls;
- Fences;
- Electrical service;
- Permanent structures other than permitted docks;
- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, camper trailers, canoes or other watercraft, motor homes or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Water skiing;
- Jet Skiing;
- Parasailing;
- Paragliding;
- Mooring;

- Excavations/dredging;
- Effluent discharges;
- Planting of grass except as a permitted bioengineering erosion control measure;
- Storage or stockpiling of construction material;
- Livestock access to reservoir⁹
- Primitive or overnight camping on Project property, except at Highway 99 Public Access Area [and the islands](#);
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Use of herbicides; and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

⁹ Unless grandfathered through deed reservations.

3.0 PARR RESERVOIR

3.1 LAND USE CLASSIFICATIONS AND PRESCRIPTIONS

Three distinct land management classifications have been developed for the shorelines surrounding Parr Reservoir. These land management classifications are as follows: Project Operations; Public Recreation; and, Non-Development Areas.

3.1.1 PROJECT OPERATIONS

CLASSIFICATION: This classification includes SCE&G-owned and managed lands required for operation of the Parr Shoals Development.

PRESCRIPTION: Public access to, and activities upon, these lands is restricted to ensure public safety and security.

3.1.2 PUBLIC RECREATION

CLASSIFICATION: Lands under this classification serve as recreational resources for the public and include areas managed expressly for recreation as well as those with recreation as a secondary usage. Project lands devoted to public recreation include developed park sites, public boat launches, ~~Wildlife Management Areas (WMA),~~ properties set aside for ~~future~~ recreational development, ~~and Pearson's Islands and shoals, and shoals on Parr Reservoir owned by SCE&G, as described in each prescription below. Public hunting¹⁰ may be allowed on specific Public Recreation lands in accordance with state hunting regulations, as expressly discussed under each prescription below and depicted on Figure 11. Hunting is enforced by SCDNR in accordance with regulations applicable to private lands and WMA, depending on the land classification. It is up to the individual to become familiar with Project land classifications and SCDNR hunting regulations. See SCDNR's website for regulations and WMA maps.~~

Commented [AWR2]: Match with Parr SMP

Commented [AWR3]: Add DNR website

¹⁰ Parr Reservoir is open for public waterfowl hunting during specified days and times during state waterfowl seasons. Portions of Parr Reservoir are included under SCDNR's statewide WMA program. Separate regulations apply to hunting in areas included in the WMA program and it is imperative that the individual check WMA regulations and maps prior to hunting.

3.1.2.1 PUBLIC ACCESS AREAS

PRESCRIPTION: SCE&G maintains three public access areas and one canoe portage on Parr Reservoir. These areas are depicted in Figure 3. Primitive overnight camping is allowed at the three park sites (Cannon's Creek Access Area, Heller's Creek Access Area, and Highway 34 Primitive Ramp). Private permitted activities are excluded under this classification. Public hunting and shooting are not allowed at SCE&G Public Access Areas. With the exception of Pearson's Island and shoals within Parr Reservoir, which are maintained in their natural condition, SCE&G manages the areas based on the specific, designated recreational activities for each, including hunting⁴⁴, fishing, picnicking, primitive and overnight camping (at Cannon's Creek, Heller's Creek and Hwy 34 Park Sites) and boat launching. SCE&G developed and maintained access areas on Parr Reservoir are depicted in Figure 3. Private permitted activities are excluded from areas under this classification.

Commented [AWR4]: Match up with Section 3.3 and Parr SMP.

3.1.2.13, 1.2.2 PEARSON'S ISLAND AND SHOALS

PRESCRIPTION: Pearson's Islands and shoals is located on Parr Reservoir and is are open for passive public recreational use, such as bank fishing, walking, and bird watching. Hunting is prohibited permitted on SCE&G property with the exception of those areas designated under South Carolina Department Natural Resource's (SCDNR) WMA Program Pearson's Islands and shoals in accordance with WMA state hunting regulations. Due to the fluctuation of Parr Reservoir resulting from the Fairfield Development's pumped storage operations, shoals (areas of exposed or nearly exposed, shallow lake bottom) in Parr Reservoir may be dewatered and are open for passive recreational activities.

FUTURE RECREATION AREAS

PRESCRIPTION: Project lands set aside for future recreational development are available for public recreation. Unless otherwise posted, public hunting is allowed on lands classified as Future Recreation in accordance with state hunting regulations.

⁴⁴ Certain portions of Parr Reservoir are available for public waterfowl hunting as discussed under Section 4.0.

3.1.2.2 ~~WILDLIFE MANAGEMENT AREAS~~

~~Portions of Project lands are included in the SCDNR statewide WMA Program. These areas are open to the public for hunting and other recreational activities (visit <http://dnr.sc.gov/wma/> for additional information). The Broad River and Enoree River WMA's are open to public hunting only on specified days. Additionally, portions of Parr Reservoir are designated as a waterfowl management area under the WMA program. Hunting is not allowed on SCE&G property or Parr Reservoir unless designated under SCDNR's Wildlife Management Areas (WMA) Program. For additional information on these areas, please visit the SCDNR website at <http://dnr.sc.gov/wma/>.~~

~~**PRESCRIPTION:** Project lands within the WMA Program may be available for hunting of waterfowl, small game and/or deer. Hunting is not allowed on SCE&G property in accordance with specific WMA regulations, unless designated under SCDNR's WMA Program. WMA Program areas may be available for hunting of waterfowl, small game and/or deer. Other recreational activities are allowed on WMA lands, including passive activities and fishing. See SCDNR website for regulations and WMA maps.~~

3.1.3 NON-DEVELOPMENT AREAS

CLASSIFICATION: Project lands under this classification are protected from private development. This is done for the protection of the environmental and aesthetic integrity of the shoreline.

PRESCRIPTION: SCE&G will generally not permit private shoreline development for Project lands under this classification. An exception to this may be made for meandering access paths and water withdrawals on a case-by-case basis upon written approval of SCE&G. Unless otherwise posted, public hunting is allowed in non-development areas in accordance with state hunting regulations.

3.2 ENVIRONMENTAL POLICIES AND PRACTICES

As discussed in Section 2.2, SCE&G implements certain environmental policies and practices to maintain, balance and conserve the area’s natural and human-made resources, recreational opportunities, and energy production while complying with the terms of the Project’s FERC license.

3.2.1 NON-DISTURBANCE POLICY

As discussed regarding Monticello Reservoir, trees, bushes, and other vegetation growing on Project property along Parr Reservoir play an important role in protecting the environmental, scenic and recreational values.

Clearing or removal of trees or vegetative cover by back-property owners and/or non-SCE&G personnel is strictly prohibited except within a permitted access path. Any unauthorized removal of shoreline vegetation will result in the immediate cancellation of permits issued by SCE&G. Violators will be required to replant and restore the disturbed area with such plantings and/or measures as SCE&G determines is necessary to mitigate and correct the situation.

SCE&G may implement sound forest management practices on Project property as determined appropriate. SCE&G implements these practices in accordance with South Carolina State Best Management Practices as discussed in the Shoreline Management Plan (included under separate cover).

3.2.2 FOREST MANAGEMENT PRACTICES

SCE&G will manage timber within the Parr Project boundary line in accordance with South Carolina’s Best Management Practices for Forestry publication.

3.3 PUBLIC ACCESS AREAS

SCE&G has developed and maintains two public parks and one primitive boat ramp on Parr Reservoir. These include the following:

- Cannon's Creek Public Access Area
- Heller's Creek Public Access Area
- Highway 34 Primitive Ramp

Commented [AWR5]: Move to Section 3.1.2.1 under Public Recreation to match the SMP.

Each park provides facilities for boat launching, courtesy dock(s), and/or picnic facilities for public use. Additionally, Pearson's Island is located within Parr Reservoir, is owned by SCE&G and is available for passive public recreational use and waterfowl hunting in accordance with WMA regulations.

Commented [AWR6]: Wait for results of the recreation plan

As discussed under Section 3.1, the Broad and Enoree Waterfowl Areas are included in the SCDNR statewide WMA Program. These areas are open to the public for hunting and other recreational activities (visit <http://dnr.sc.gov/wma/> for additional information). The Broad River and Enoree River WMA's are open to public hunting only on specified days. For additional information on these areas, please visit the SCDNR website at <http://dnr.sc.gov/wma/>.

Alcoholic beverages, ~~public hunting (with the exception of the Broad River and Enoree Waterfowl Areas)~~ and pets (except hunting dogs ~~at the Broad River and Enoree Waterfowl Areas~~) are prohibited on Project property. Park rules and regulations are posted at each developed location. SCE&G Project property along the Parr Reservoir shoreline (except those lands classified as Project Operations) are available for ~~passive~~ public recreation activities. Please see Figure 3 for an identification of recreation areas on Parr Reservoir.

3.4 SHORELINE ACTIVITIES/DEVELOPMENT PERMITTING

It is the policy of the SCE&G Lake Management Department to authorize certain private uses of and/or acts upon Project lands by permit when such uses or acts are compatible with the public interest and comply with the requirements of the license for the Project. SCE&G reserves the right to approve final design and placement of access paths, and other permitted activities, as described below¹². Any activity not in compliance with the shoreline parameters outlined below may constitute a trespass.

3.4.1 SHORELINE VEGETATION MANAGEMENT

No clearing or removal of trees or vegetative cover within the Project boundary will be permitted except directly within a permitted access path (see Section 3.4.2 for a discussion of access paths). Permission to remove vegetation within a permitted access path will only be granted by Lake Management after a site visit with the applicant. Once clearing of the access path is completed

¹² Permitted water withdrawals are discussed under Section 5.0.

according to the permit, the applicant may maintain the path in the permitted condition utilizing hand held tools and without the use of herbicides.

Any unauthorized removal of shoreline vegetation may result in the cancellation of permits issued by SCE&G, as well as legal action. Violators may be required to replant and restore the disturbed area with such plantings and/or measures as SCE&G determines is necessary to mitigate and correct the situation.

3.4.2 ACCESS PATH

A single access path approximately 5-foot wide may be cleared with hand held tools and without the use of herbicides from the adjacent property owner's land to the edge of Parr Reservoir upon approval of SCE&G (Figure ~~+012~~). A Lake Management representative will identify and designate the location of all access paths. The access path must follow a meandering route to prevent erosion and to protect the aesthetics of the shoreline. No trees larger than 10-inches in diameter at breast height may be removed within the access path. The distance from the Project Boundary Line to the high water mark (266-foot contour) may not be greater than 200 feet in depth, with exceptions on a case by case basis, in the area of the proposed access path.

3.5 PROHIBITED STRUCTURES AND ACTIVITIES

The following structures and activities area prohibited on SCE&G Project property and on the waters of Parr Reservoir. These prohibitions will be enforced by SCE&G or an appropriate state or federal agency.

Prohibited Structures:

- Private boat docks;
- Private shoreline stabilization;
- Boathouses;
- Private boat ramps;
- Commercial marinas;
- Marine rails;
- Sea walls;
- Fences;
- Electrical service;

- Permanent structures;

- Land-based structures, storage buildings, shelters, patios, gazebos, fences, swimming pools, satellite dishes, signs, storage of boats, canoes or other watercraft or automobiles;
- Septic tanks and/or drain fields;

Prohibited Activities:

- Jet skiing;
- Water skiing;
- Parasailing;
- Paragliding;
- Mooring;
- Excavations/dredging (except commercial operations permitted by the state);
- Effluent discharges;
- Storage or stockpiling of construction material;
- Livestock access to reservoir¹³
- Vegetation removal of any type except in a permitted access path to the shoreline;
- Primitive or overnight camping on Project property, except at Cannon's Creek Access Area, Heller's Creek Access Area, ~~and~~ Highway 34 Primitive Ramp;
- Use of herbicides; and,
- Limbing or trimming of vegetation on Project property to create views or visual corridors.

¹³ Unless grandfathered through deed reservations.

4.0 WATER WITHDRAWAL

Piping and other transportation/delivery equipment to be placed on Project property necessary for water withdrawals require a permit from SCE&G. Water withdrawals may be permitted on Monticello Reservoir, the Recreation Lake and Parr Reservoir as deemed appropriate by Lake Management. Water withdrawal for residential property must be for irrigation purposes only. Requests for withdrawal of up to one million gallons per day (MGD) may also require state and federal agency consultation prior to approval by SCE&G. SCE&G may impose additional limits in granting permits for state and/or federally approved applications. Associated pumps and electrical service must be located outside SCE&G property. SCE&G reserves the right to prohibit withdrawal during times of drought or low water conditions.

Water withdrawal applications for commercial use may be treated differently than those for residential irrigation purposes. Water withdrawal applications for greater than one MGD must be forwarded to the FERC for approval. The applicant for a water withdrawal of greater than one MGD may be required to bear the expenses of filing the application and will be required to compensate SCE&G for water withdrawn. An application to withdraw water from Monticello or Parr reservoirs for commercial purposes must include the following information:

- a complete description of the purpose for the removal;
- removal processes to be used;
- volumes to be withdrawn;
- design plans;
- copies of all required local, state, and federal permits and reports;
- the required fee; and
- any additional information as required by SCE&G.

Applications for a permit to remove water must be submitted to SCE&G for review. Applicants should contact Lake Management for permit applications and additional information.

5.0 PERMITTING APPLICATION PROCEDURE

Requests for permits for docks, access paths, water withdrawals, and shoreline stabilization must be submitted to SCE&G's Lake Management Department in writing and on forms provided by SCE&G. Information will be furnished to the applicant concerning the requirement for formal approval of shoreline requests. For permitting information call or write:

SCE&G Lake Management Department
6248 Bush River Road
Columbia, SC 29212
803-217-9221

You may also visit the SCE&G website for permitting information: <https://www.sceg.com/about-us/lakes-and-recreation#monticello-par-reservoirs>.

Commented [AWR7]: Check this website link.

5.1 PERMITTING FEES

SCE&G charges individual processing fees for its efforts in managing various permitting activities around the reservoirs. Permit fees are listed below and are due at the time of application submission to SCE&G. If an application is denied the permit fee will be returned.

- Docks \$100
- Access Paths \$100
- Water Withdrawals for Residential Irrigation¹⁴ \$100
- Shoreline Stabilization \$100

An annual Administrative Fee may be implemented, as FERC allows SCE&G the right to charge a reasonable fee to cover the costs of administering its Shoreline Permitting Program, which adds significant management responsibilities and costs to SCE&G's operation. SCE&G will give adequate public notice through appropriate communication avenues before changing the fee structure. Failure to comply with this policy may result in the revocation of existing permits, fines, or legal action, as well as loss of consideration for future permits.

¹⁴ Fees for water withdrawals for commercial applications will be determined in consultation with SCE&G Lake Management.

5.2 PERMITTING ENFORCEMENT AND VIOLATIONS

SCE&G will conduct periodic shoreline inspections to ensure compliance with the SMP and Permitting Handbook. Dock applicants are responsible for maintaining their structures in good repair and safe condition. If at any time a dock is determined by a SCE&G Lake Management representative to be in disrepair or a hazardous condition, it must be repaired or removed from Monticello Reservoir waters immediately. SCE&G reserves the right to remove any dock on its property as conditions warrant.

SCE&G also makes note of unauthorized structures during its surveys, and urges residents and other lake visitors to report what they believe may be unauthorized activity on Monticello and Parr reservoirs, the Recreation Lake and other Project property. SCE&G Lake Management representatives will issue Stop Work Directives for any violations that are detected on SCE&G property. Any unauthorized clearing of the trees or underbrush will result in the immediate cancellation of permits, as well as action to require re-vegetation of the affected area. Removal of merchantable timber will require reimbursement to SCE&G subject to valuation of the SCE&G Forestry Operations Department. Additional, consequences for violations may include loss of consideration for future permits, fines, and/or legal action.

5.3 MISCELLANEOUS

- Deeds, permits, or other instruments affecting Project lands and waters will contain all standard covenants customarily imposed upon Project property and such other covenants as in the sole discretion of SCE&G may be desirable or appropriate. The instrument may contain indemnity clauses and insurance provisions.
- Permitting fees do not constitute a charge for admission to Project lands.
- SCE&G retains the right to vary the amount of application fees.
- No vested right or rights enforceable by third parties are created by SCE&G's Policies or Procedures.

APPENDIX A
PERMITTING FIGURES AND EXAMPLES

APPENDIX B
SHORELINE PERMIT APPLICATION

APPENDIX C
CONDITIONS OF PERMIT

APPENDIX D
VEGETATION AGREEMENT

APPENDIX E
SHORELINE MANAGEMENT AGREEMENT



**South Carolina Electric & Gas Company
Lake Management Department
6248 Bush River Road
Columbia, South Carolina 29212**

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Published

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Water Quality TWC Meeting

December 14, 2016

Final KMK 1-23-17

ATTENDEES:

Bill Argentieri (SCE&G)	Rusty Wenerick (SCDHEC)
Ray Ammarell (SCE&G)	Dick Christie (SCDNR)
Randy Mahan (SCE&G)	Bill Marshall (SCDNR)
Caleb Gaston (SCANA)	Ron Ahle (SCDNR)
Tom McCoy (USFWS) via conf. call	Alex Pellett (SCDNR) via conf. call
Melanie Olds (USFWS) via conf. call	Henry Mealing (Kleinschmidt)
Fritz Rohde (NOAA) via conf. call	Jason Moak (Kleinschmidt)
Bill Stangler (Congaree Riverkeeper)	Jordan Johnson (Kleinschmidt)
Gerrit Jobsis (American Rivers)	Kelly Kirven (Kleinschmidt)

These notes are 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 reviewed the agenda. The purpose of this meeting was to discuss the results of the 2016 West Channel Water Quality Study, discuss any associated potential protection, mitigation and enhancement (PM&E) measures, and for SCE&G to give updates on the TWC request for downstream flow spawning stabilization periods.

2016 West Channel Water Quality Study Discussion

Henry gave a presentation to the TWC on the results from the 2016 West Channel Water Quality Study (PowerPoint is attached to these notes). Henry explained that Kleinschmidt did a field verification of pulse flows of approximately 24 acre-feet, which equates to a 3 hour spill. On August 6-7 and August 10-11, unplanned spill events also occurred during early August. Ron asked if randomized YSI samples were taken, using a method where a grid is overlaid on the study area and random sections are chosen for sampling. He said this is the only way to prevent bias when selecting sample sites. Henry said no, this method was not used. Kleinschmidt chose YSI sample locations in an attempt to best characterize the area while they were in the field.

Henry mentioned that Kleinschmidt noticed that large amounts of Hydrilla are located downstream of the Parr Shoals Dam now compared to the summer of 2015. Tom asked if SCE&G is going to try and do anything to get rid of the Hydrilla located downstream of the dam. Henry said he doesn't know how you can get rid of it. Tom noted that the USFWS is concerned about the potential for avian vacuolar myelinopathy (AVM), often associated with Hydrilla in the southeast, to impact local populations of bald eagles. Henry said although Hydrilla is located downstream of the dam now, he doesn't believe it is in Lake Monticello yet, although it likely will be in the future. Ron

said it would be extremely difficult to remove Hydrilla from the river and the only way to successfully do it (by introducing grass carp) would likely have catastrophic results to the river. Henry said he thinks the high flow events in October 2015 and January 2016 likely introduced Hydrilla to the area. He thinks it will move to Bookman Island and maybe Monticello Reservoir, but it probably won't become established in Parr Reservoir due in part to the fluctuations.

Henry noted that our observations did confirm that there is flow that moves from the tailrace into the West Channel. The amount varies based on tailwater elevation. Our study documented flows from 0 to approximately 100 cfs under the current conditions. Ron said that a higher minimum flow requirement combined with some channel excavation along the northern tip of Hampton Island might solve the water quality issue in the west channel and pulsing or continuous flows from the spillway gates may not be needed. Pulse flows might could be used only during a drought contingency plan, such as a low flow protocol. Gerrit asked what Ron means when he says channel excavation. Ron said SCE&G could deepen the natural channel or clean out debris to encourage water flow. Gerrit asked if we think a relatively small amount of flow would be enough. He thinks we would need a substantial opening in the channel to get flows high enough to keep the west channel area flushed out. Bill A. noted that whatever flows are diverted to the west channel will be subtracted from the east channel, which is currently functioning nicely. Ron said that he believes the new minimum flow requirement will be higher than it currently is today, so removing some of this flow from the east channel and diverting it to the west channel will likely make little to no impact on the east channel. He believes a small amount of flow to the west channel will make a vast improvement. Gerrit believes that we might need more flow in the West Channel to make a difference, but if it can be done, it would be better than using periodic pulse flows.

Bill S. asked if the channel modification will take place at the location of the YSI 8 sampling. Henry said yes, this is the area we should consider. Bill S. asked if this will help anything farther west past the middle rock ledge. Henry said no and Jordan explained that depending on tailwater elevations, the most western channel tends to have higher flows anyways, so improvements are needed to help the middle western channel. The most western area doesn't need as much additional flow because water runs along the face of the dam keeping this area flushed out.

Ron commented that the IFIM study could be really important to the decisions made about the west channel and transects will allow us to calculate additional flow coming into the area.

Dick said that he doesn't see how a 24 acre-feet pulse could affect DO over several days. Henry said that it could be flushing nutrients out and flushing spirogyra and phytoplankton out. Dick said that on a 95 degree day, hot water takes over pretty fast again. Flow from the tailrace coming across to the west channel could also be helping out. Dick said when he looks at the diurnal swings, he's having a hard time seeing the effect of the pulse and Gerrit agreed. Gerrit said he thinks it's questionable if we are seeing a benefit from the pulsing and if there is one, it's minor.

Ron said that vegetation plays a significant role in DO and having a large flushing flow might flush vegetation out. Ray pointed out that during the first week of the study, there was a high flushing pulse that didn't significantly move vegetation. Henry added that we are trying to move away from heavy downstream fluctuation flows, so the occurrence of heavy flushing flows downstream may be less in the new operating license.

Dick said that he believes DNR is open to keeping pulsing flows as an option, especially for use during critical periods of low inflow. He doesn't see pulsing flows as the "silver bullet" but it might help during specific times.

Henry noted that fouling was a big issue in 2015 and keeping the meters clean had a big effect in the 2016 study. Dissolved oxygen swings were still apparent in 2016, but to a much lesser degree. Jordan noted that fouling occurred during the first week at the middle west channel site. He will add this narrative to the report.

The group then began to discuss PM&E measures for the West Channel. Henry noted that there are two general TWC goals for that area: increase wetted habitat and meet state DO standards. The group agreed that implementing an Adaptive Management Plan (AMP) will likely be the best option for improving the West Channel. The following items were noted regarding the development of an AMP:

- 5 year plan, with framework included with the license application
- Encourage a continuous flow by expanding the notch already located at the northern tip of Hampton Island to increase flow from east channel
 - Check out flow from east to west channel during IFIM verification – see if increased minimum flow changes these natural flows prior to excavating a notch
 - Do a field test with a higher minimum flow, set up a transect, measure flow in two spots (test shoot WSEL)
- Incorporate pulsing during certain times (such as critical times of low inflow)
- Timing of monitoring – from late July into early September?
 - Do spot monitoring first to determine final timing of monitoring – May through September using YSI to collect temp/DO, morning/evening, once a week/every two weeks
 - Include stratified random sampling from grid – stratified toward upper portion of river, include some in middle area (Note – DNR will provide the stratified grid sites for TWC to consider for monitoring)
- Install a level logger to measure stage at “notch” area – leave in place – rated transect
- Conduct two meetings a year during the term of the AMP – include a spring meeting to determine what field work will be performed during the year, and a fall meeting to give a summary of what happened during the study – file meeting notes with FERC
- Identify what stakeholders will be involved in the process – SCDNR, SCDHEC, USFWS, Congaree Riverkeeper, American Rivers, etc.
- Timeline for developing the AMP –
 - Minimum flow range to be determined by February 2017
 - Strawman AMP – end of February 2017
 - IFIM verification of flow delivery with current channel (determine amount of flow available to go to west channel) – May-July 2017
 - Identify “east” and “west” flow split as part of IFIM verification – August 2017
- Ron/DNR may conduct baseline fish sampling for a few years, then do monitoring following the close of the AMP to determine success

Rusty noted that DHEC could overlook periodic state standard excursions if biological factors improve (such as fish species moving into the area).

Stabilization Flows Discussion

Ray offered the group a slideshow on downstream flow stabilization, which is attached to these notes. The TWC requested that SCE&G implement stabilization flows for shortnose sturgeon spawning (14 days during March 15-31) and striped bass, American shad, and robust redhorse spawning (two 7-day blocks sometime from April 1 through May 10). SCE&G cannot completely cease Fairfield Pumped Storage operations during these periods. SCE&G has proposed the following measures to reduce fluctuations, including generator upgrades, operators on site to control gates 24 hours a day, and modification of inventory management spills. During the four weeks of stabilization periods, SCE&G can manipulate the crest gates to track Parr Reservoir and maintain constant discharge when spilling while Fairfield operates. Ray looked at hourly inflow and outflow data during the months of March-May for years 2000-2016. He used historical deviations under the current license as a baseline to determine when fluctuations could be reduced. He suggested that annual target reductions in mean deviation be set in the new license. SCE&G could track mean inflow and mean deviation as a running measure each year to guide operations to reduce fluctuations below historical levels.

Ray noted that as inflow increases, backwater restrictions will limit how far gates can be raised as Parr Reservoir rises. Also, at some level of inflow, Fairfield operations will need to be curtailed, similar to the current 40,000 cfs limit but lower during the stabilization periods. Gerrit said that a 50 percent increase in flows is not a huge impact when overall river inflows are higher but it is a big impact when inflows are lower. Targeting efforts on lower river inflows will produce a greater impact.

The group agreed that an AMP could be developed for this issue since SCE&G is not quite sure how they will reduce the spikes in flow yet. Higher continuous minimum flows may cut down on inventory releases and may change operations in other ways that we don't know yet.

Henry asked how we will pull habitat data into the analysis. Should we look at WUA tables? Gerrit said one consideration to include is how these downstream flows affect sturgeon within the Congaree. Dick said that anything we do to address these spikes in flow in the Broad River will be observed downstream as well. Henry added that Bill Post may be able to help with this issue as well.

The group discussed the next steps for this issue. Dick said that someone will need to sit down and look at preferred flows for certain species. Gerrit suggested that this be included in the IFIM analysis. Henry said this will be added to the agenda for the January 24th Instream Flows TWC meeting.

With this, the meeting ended. Action items are included below.

ACTION ITEMS:

- Jordan will add narrative to the 2016 West Channel Water Quality Study regarding fouling that occurred during the first week at the middle west channel site.

- Kleinschmidt will begin to develop a strawman for the AMP and distribute to the WQ TWC for review.
- Ron will develop a stratified random sampling grid for inclusion in the AMP.
- TWC will include some of these discussions on preferred species flows at the January 24, 2017 IFIM TWC meeting.



West Channel Water Quality 2016 Second Year Study

Parr Hydro Project

FERC No. 1894

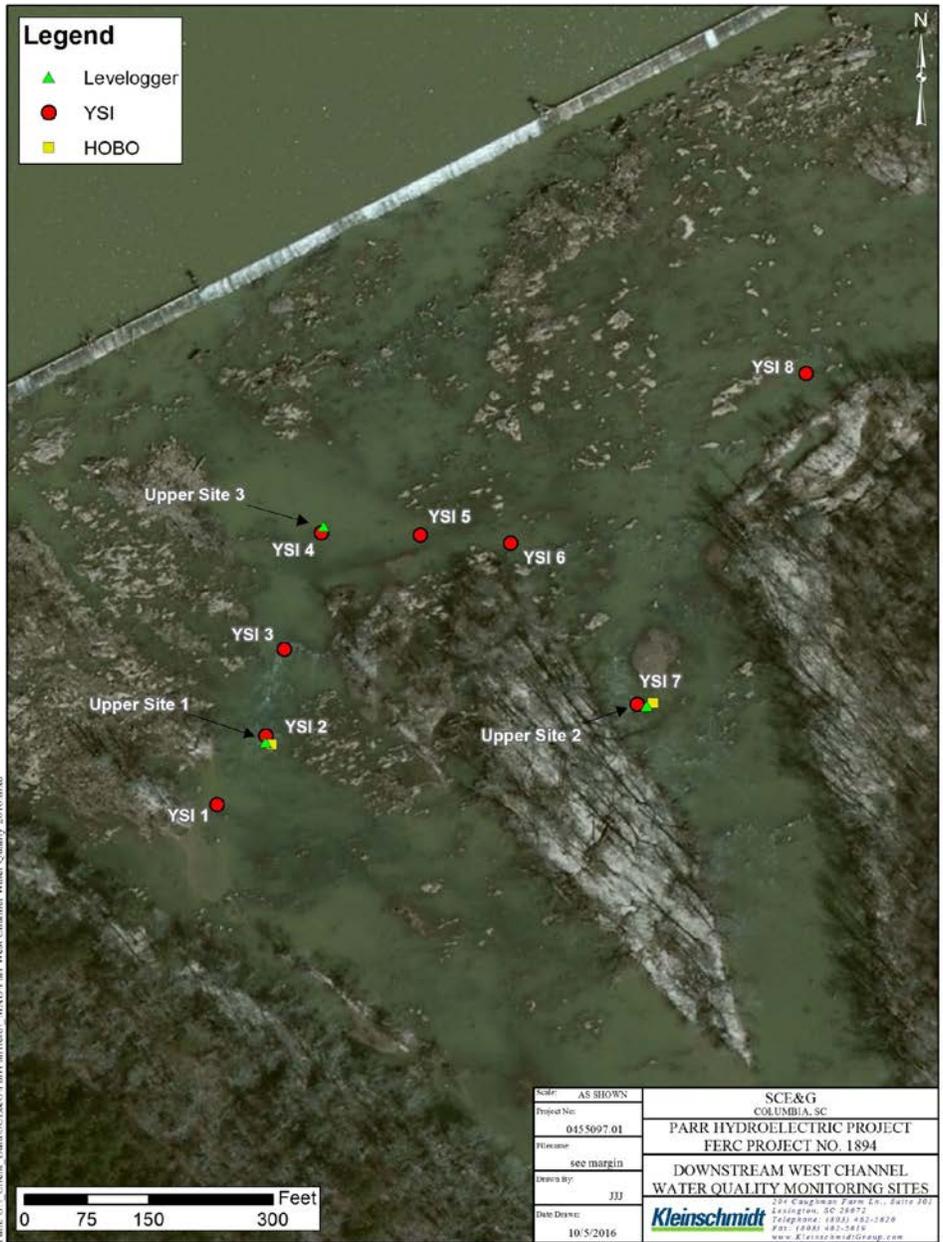
Kleinschmidt

Methods

- Continuous temperature and DO data collected using HOBO U26 DO loggers
 - Meters serviced once per week
- Point temperature and DO data collected using handheld YSI DO logger
 - Additional sites in Upper West Channel
- Water level data collected using Levelloggers in Upper West Channel
 - Multiple sites for collection
- Discrete pulse flows released from Spillway gates 1 and 2
 - Approximately 3 hours & 24 acre-ft
- Streamflow collected using conventional USGS methods
 - Upper Site 1 and Upper Site 2

Study Schedule

- August 1, 2016 deploy monitors – baseline data, no pulse
- August 6, 2016 unplanned spill event, approximately 15,000 cfs peak flow
- August 7, 2016 unplanned spill event, approximately 7,500 cfs peak flow
- August 8, 2016 download data, clean, and redeploy monitors – pulse flow
- August 10, 2016 unplanned spill event, approximately 16,500 cfs peak flow
- August 11, 2016 unplanned spill event, approximately 9,000 cfs peak flow
- August 15, 2016 download data, clean, and redeploy monitors – pulse flow
- August 18, 2016 pulse flow
- August 22, 2016 download data, clean, and redeploy monitors – baseline data
no pulse
- August 29, 2016 download data – remove all monitors



Path: G:\Client Data\SCE&G\ParrFairfield\MXD\Parr West Channel Water Quality 2016.mxd

Source: Kleinschmidt, ESRI

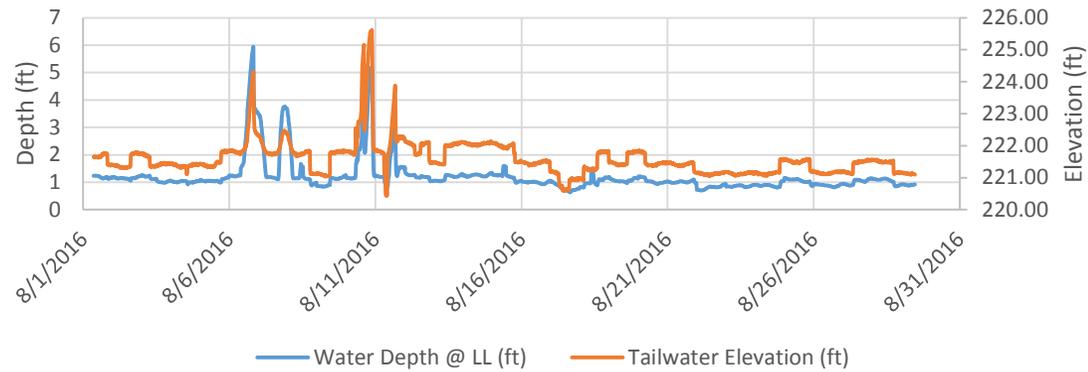


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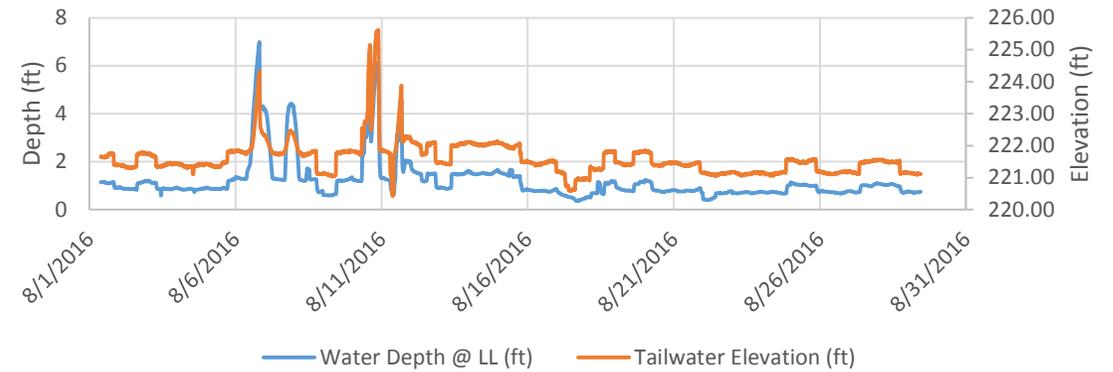
Source: Kleinschmidt, ESRI

Powerhouse Effect on West Channel

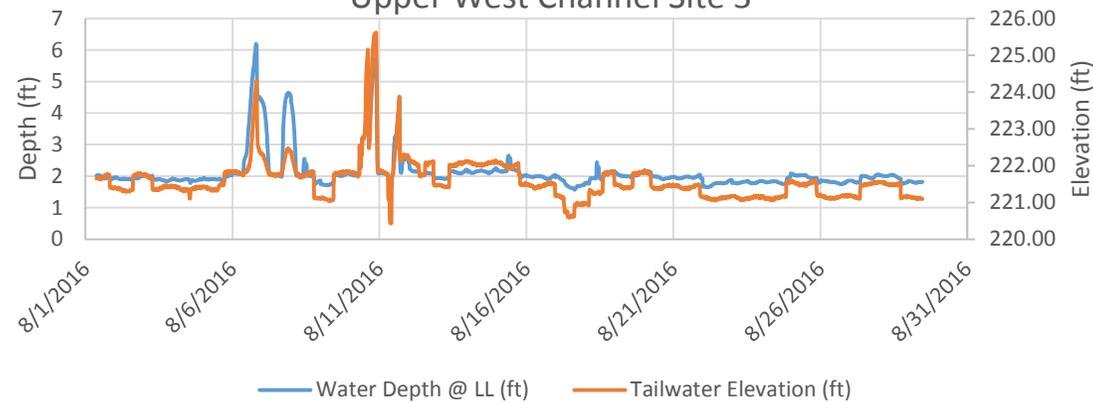
Upper West Channel Site 1



Upper West Channel Site 2



Upper West Channel Site 3



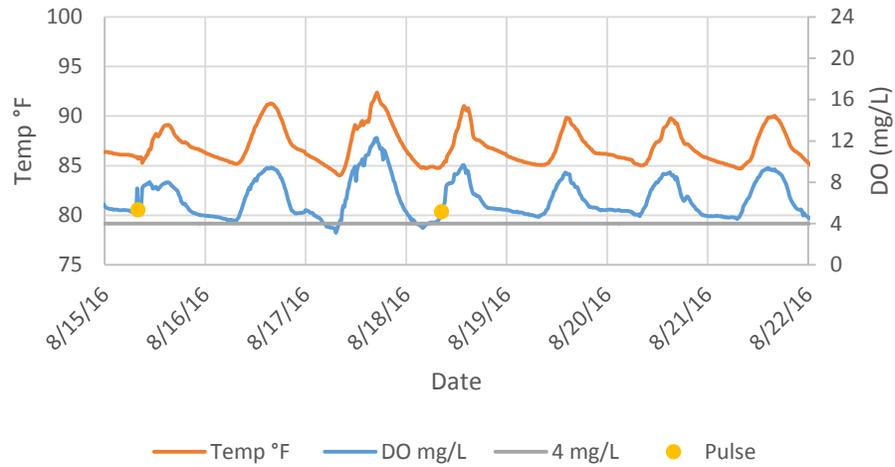
Streamflow Estimates

UPPER SITE 1		
FLOW (CFS)	LEVEL LOGGER DEPTH (FT)	TAILWATER ELEV. (FT)
16	1.13	221.34
20	1.15	221.70
40	1.25	221.85
60	1.35	222.00
80	1.45	222.10
89	1.50	222.20

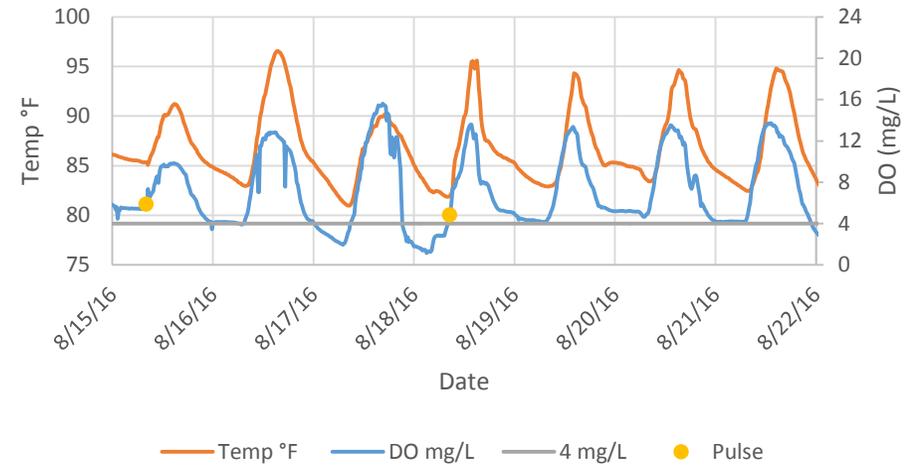
UPPER SITE 2		
FLOW (CFS)	LEVEL LOGGER DEPTH (FT)	TAILWATER ELEV. (FT)
3	0.88	221.36
20	1.00	221.60
40	1.15	221.70
60	1.30	221.80
80	1.45	221.95
100	1.60	222.00

Pulse Flow Effect on DO

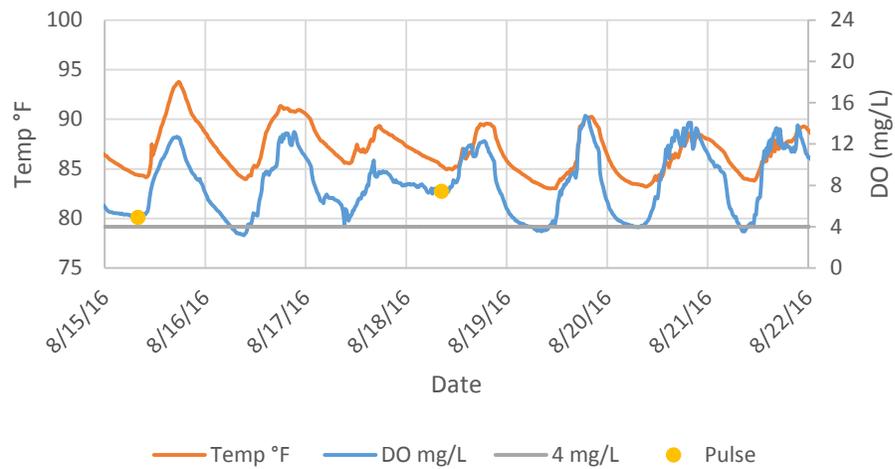
Upper West Channel Site 1: August 15-21



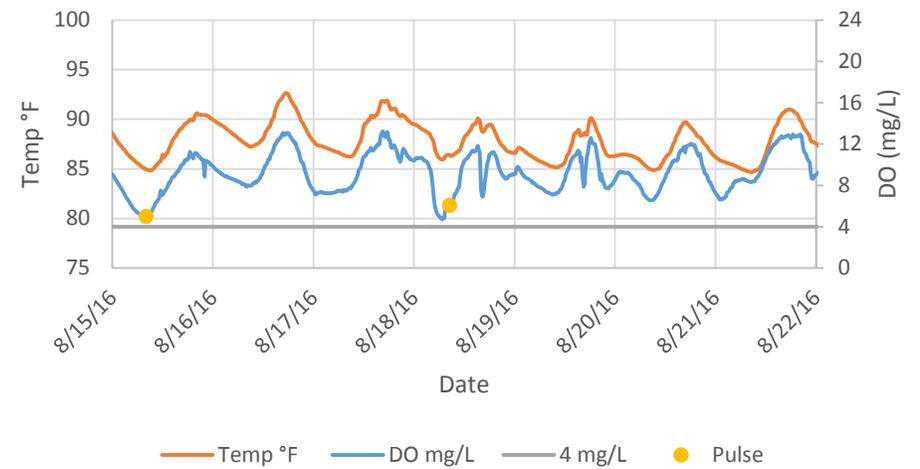
Upper West Channel Site 2: August 15-21



Middle West Channel: August 15-21

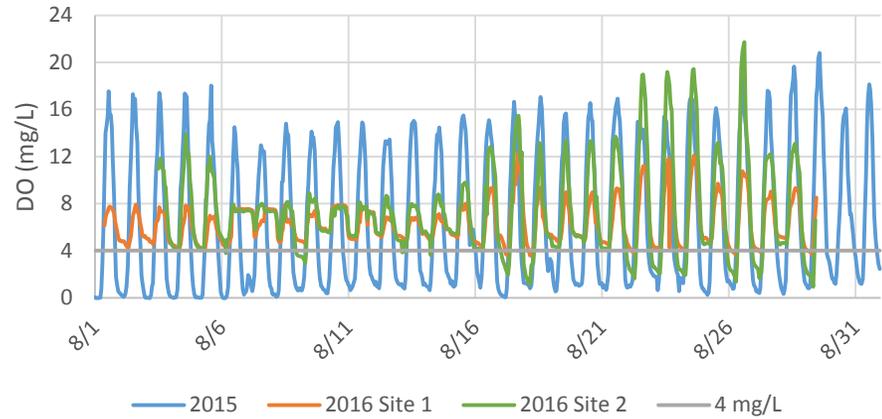


Lower West Channel: August 15-21

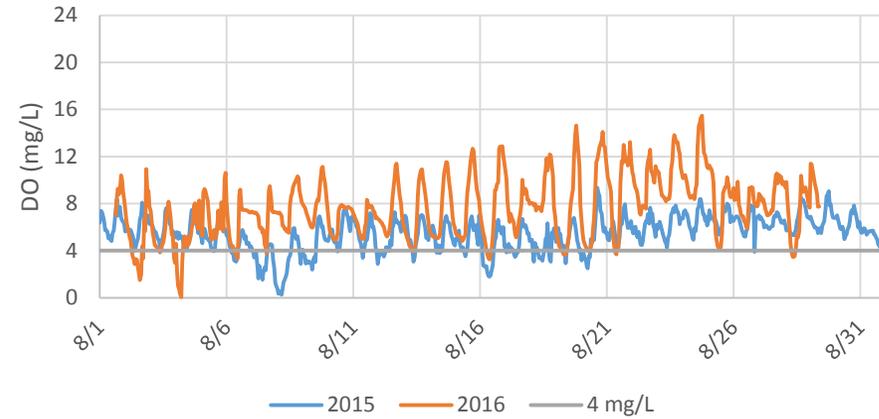


2015 and 2016 Comparison

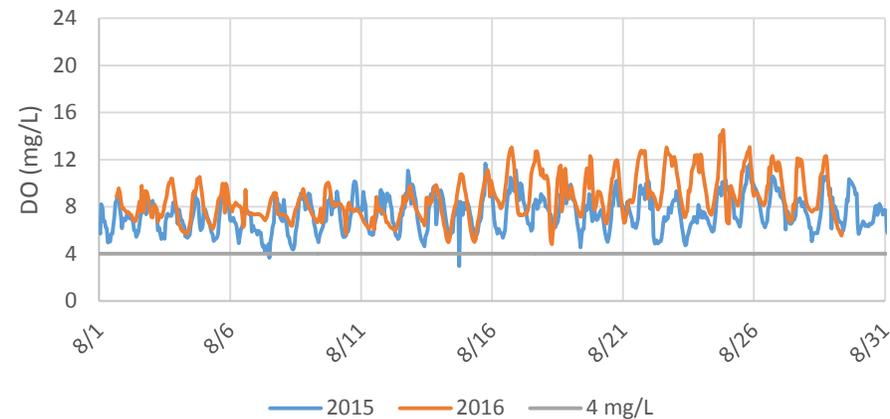
Upper West Channel: 2015 and 2016 DO Comparison



Middle West Channel: 2015 and 2016 DO Comparison



Lower West Channel: 2015 and 2016 DO Comparison



Upper West Channel Aquatic Vegetation



Parr Hydro Downstream Flow Fluctuations Update

December 14, 2016

Stakeholder Request

- Shortnose sturgeon spawning – for 14 days (March 15 – March 31);
- Striped bass, American shad, and Robust redhorse (and other species) spawning - Two 7 day blocks during April 1 – May 10:
- SCE&G is being asked to greatly regulate or remove effects of FFPS operations (generating and pumping) from Parr Shoals dam discharge.
- FFPS may be used for reserve purposes and when project inflow is less than hydraulic capacity of Parr Shoals powerhouse.

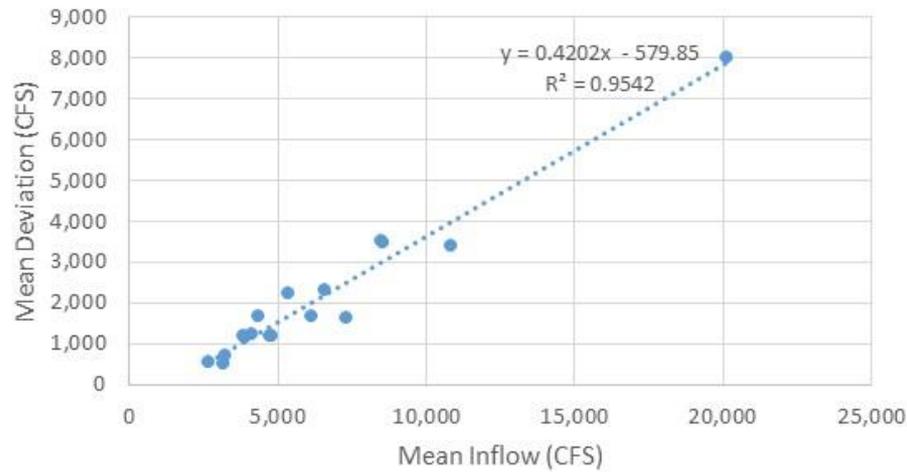
SCE&G Issues

- Having a total curtailment of FFPS operations for these periods is not practical.
- SCE&G has proposed measures to reduce fluctuations and spikes year round:
 - Generator upgrades at Parr Hydro
 - Give operators control of some crest gates 24/7
 - Modify inventory management spills
- In addition, during flow stabilization periods, will manipulate crest gates to track Parr Reservoir and maintain more constant discharge when spilling with FFPS operating.
- Have looked at inflow v. outflow under current license to see how to evaluate fluctuations.

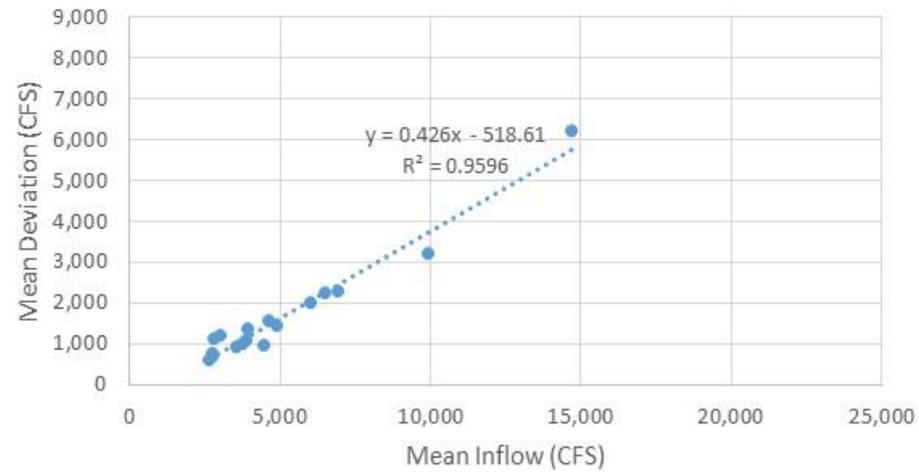
Baseline Data

- Looked at hourly inflow and outflow data for March – May period for years 2000 - 2016.
- Computed absolute value of hourly deviation of outflow from inflow:
 - Deviation = $\text{Abs}(\text{Outflow} - \text{Inflow})$.
- Plotted each year's mean inflow vs. mean deviation from inflow for March 15 – March 31 & April 1 – May 10.
- There is a fairly tight linear relationship between mean inflow and mean deviation from inflow.

Mean Deviation v. Inflow 3/15-3/31



Mean Deviation v. Inflow 4/1-5/10

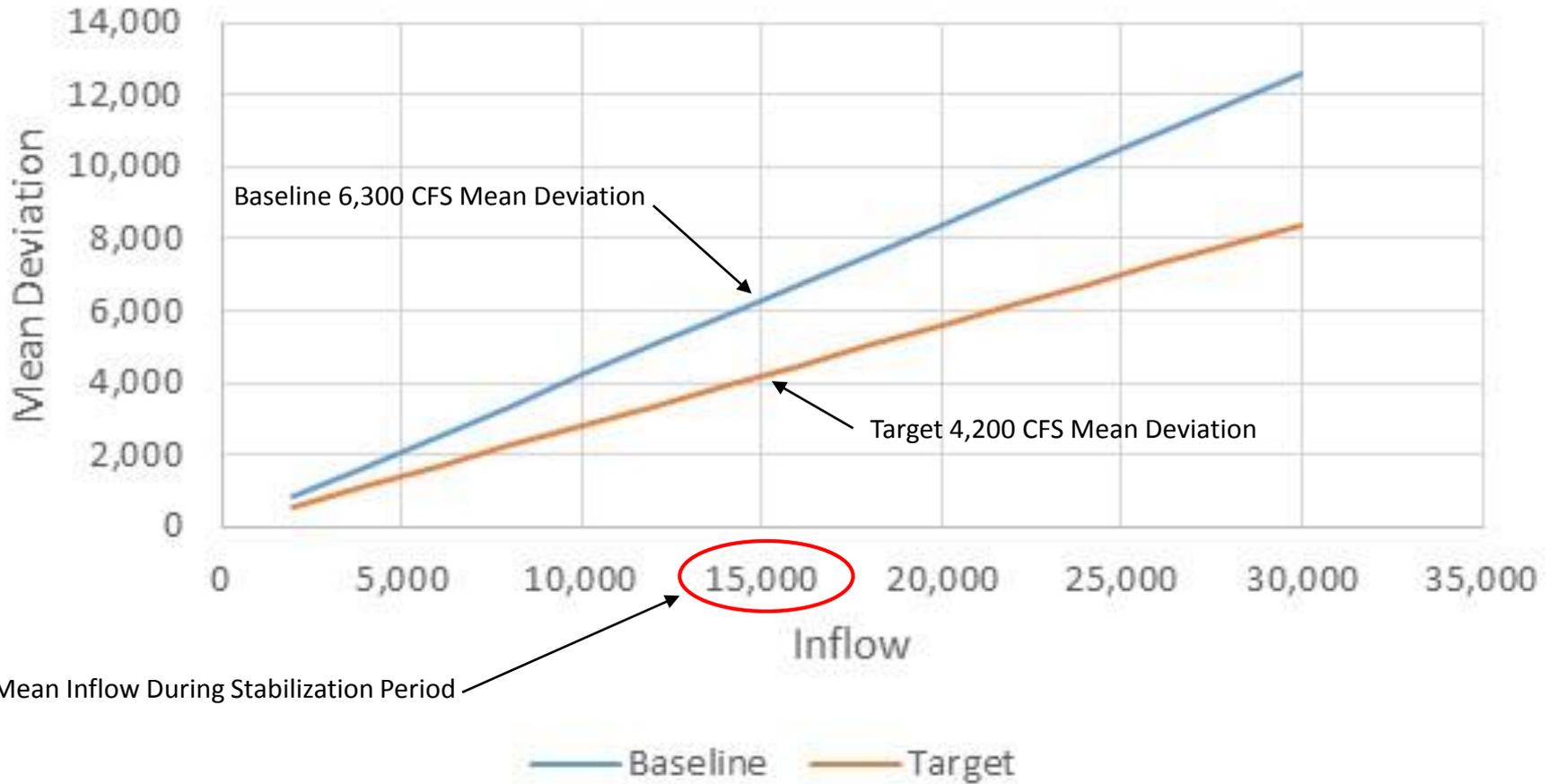


Year	Mean Inflow 3/15-3/31	Mean Deviation 3/15-3/31	% of Inflow	Mean Inflow 4/1-5/10	Mean Deviation 4/1-5/10	% of Inflow
2000	8,553	3,483	41%	3,943	1,343	34%
2001	8,491	3,506	41%	3,034	1,207	40%
2002	4,127	1,215	29%	2,817	1,091	39%
2003	20,161	8,018	40%	14,730	6,227	42%
2004	3,240	720	22%	3,808	994	26%
2005	10,841	3,384	31%	6,047	2,003	33%
2006	3,146	494	16%	2,777	678	24%
2007	4,327	1,655	38%	3,573	911	25%
2008	3,917	1,154	29%	2,789	753	27%
2009	6,158	1,667	27%	4,931	1,428	29%
2010	7,307	1,641	22%	4,465	931	21%
2011	4,780	1,194	25%	3,917	1,061	27%
2012	2,667	567	21%	2,647	595	22%
2013	4,750	1,202	25%	9,943	3,190	32%
2014	6,588	2,326	35%	6,936	2,274	33%
2015	3,845	1,181	31%	6,542	2,235	34%
2016	5,334	2,215	42%	4,630	1,557	34%

Adaptive Management

- Use historical mean deviation under current license as a baseline.
- Set annual target reductions in mean deviation under new license.
- SCE&G could track mean inflow and mean deviation as a running measure each year to guide operations to reduce fluctuations below historical levels.
- Annual meeting to review results, set targets, develop operating guidelines.
- Adaptive management will allow SCE&G to develop operating guidelines and limits for different flow ranges, while keeping some FFPS availability.

Baseline and Target Example - 33% Reduction



Some Thoughts

- Some deviation is present even when gates are up, due to lag of outflow v. inflow – one is low when other is high. Present level of deviation when gates are up may be acceptable?
- Manipulation of crest gates to maintain a more constant outflow as Parr Reservoir fluctuates will require plant to be staffed 24/7 during flow stabilization periods.
- As inflow increases, backwater restrictions will limit how far gates can be raised as Parr Reservoir rises.
- At some level of inflow, FFPS will likely need to be curtailed, similar to current 40,000 CFS limit but lower during stabilization periods.

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Recreation TWC Meeting**

January 4, 2017

Final KMK 2-2-17

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Beth Trump (SCE&G)
Brandon Stutts (SCANA)
Caleb Gaston (SCANA)
Randy Mahan (SCE&G)
Dan Adams (SCE&G)
Brandon McCartha (SCE&G)
Tommy Boozer (SCE&G)

Bill Marshall (SCDNR)
Dick Christie (SCDNR)
Gerrit Jobsis (American Rivers)
John Fantry (Town of Winnsboro)
Henry Mealing (Kleinschmidt)
Alison Jakupca (Kleinschmidt)
Kelly Kirven (Kleinschmidt)

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

Alison opened the meeting and stated that the goal of the meeting is to review SCE&G's proposed recreation enhancements and move closer to a final proposal of enhancements for inclusion in the Recreation Management Plan (RMP). Prior to the meeting, Alison distributed a list of SCE&G's proposed recreation enhancements for the TWC to review. This list is attached to the end of these notes.

Alison directed the group to look at the first recreation site on the list, Cannon's Creek, and its associated proposed enhancements. The group also looked at Google maps to see where the proposed enhancements would be located at the site. Dick said that he noticed that boat ramp expansion, which was requested by the TWC, was not proposed by SCE&G at Cannon's Creek and at Heller's Creek and he wanted to know their reasoning for this. Ray said that it didn't look like a boat ramp expansion would be feasible at Heller's Creek because the cove is very shallow. Tommy added that the existing boat ramps are functional and in good shape at Cannon's Creek, so there didn't seem to be a need to upgrade. Alison said this request came from the open ended questions on the Recreation Use and Needs Study (RUNS) surveys. Some people suggested boat ramp expansion at all sites. Dick asked why a courtesy dock was not proposed by SCE&G at Cannon's Creek. Tommy said that part of the reason is due to the fluctuation in the reservoir. Due to flooding and fluctuations, a stationary or floating dock would be hard to manage and make durable. Bill M. said he has heard from the public that they are interested in seeing a courtesy dock at Cannon's Creek. Tommy said a courtesy dock could also introduce safety issues and in particular, might encourage kids to swim in the area although swimming isn't allowed at the site. Alison asked if the fishing pier could be used as a courtesy dock – a problem experienced at SCE&G dock sites on other reservoirs. And the dangers associated with jumping and diving from docks is especially

significant on reservoirs with frequent and significant water level fluctuations, as would be the case here. Henry said the fishing pier is going to be stationary and will have rails for safety, making it difficult to use as a courtesy dock. Dick said the fishing pier might be a good test for installing a stationary courtesy dock in the future and can be revisited 10 or 15 years down the road. Dick said he thinks the ADA proposals at Cannon's Creek are good.

Henry reminded the group that all of the proposed enhancements were the results of the RUNS survey findings. All of the enhancements suggested by the public were listed and then SCE&G visited each site and looked to see what made sense to add. They also made sure enhancements would be consistent with their safety plans.

The group then discussed the Heller's Creek site. SCE&G is not proposing any enhancements at this site. Bill M. asked if SCE&G had difficulty maintaining the boat ramp at this site. Tommy said the ramp extends a long way into the water, but the end stays covered in muck.

The group then discussed the proposed recreation enhancements at the Highway 34 primitive site. Alison said this site served purposes including providing access to duck hunters, canoers and kayakers. SCE&G is proposing to install all enhancements that were suggested by the public. Gerrit asked if graveling the parking lot after grading it is part of the plan. Tommy said yes. Gerrit asked that a gravel parking area be added to the list of enhancements. He also asked how much of the area around the recreation site is subject to fluctuations. He is concerned that the site remain accessible when the reservoir is down. Bill A. said they will need to bring more land into the Project boundary, since the site currently extends beyond the Project boundary line (PBL). This will also ensure that should the site be expanded in the future, the land already will be within the PBL, thereby avoiding having to make a separate application to FERC, potentially delaying plans to implement an expansion. Gerrit mentioned that this site would be a good location for primitive camping, especially with the additional land added to the PBL. This area would provide a place where people canoeing or kayaking down the Broad River could pull off and camp.

The group then discussed the Enoree River Informal Access Area. SCE&G is proposing to install all of the suggested enhancements except the turn-around area and parking for 6 vehicles. The area needed for these enhancements is outside of the PBL and SCE&G would need to gain permission from the US Forest Service and Department of Transportation to bring this land into the PBL for building the parking area. Henry added that should FERC approve the site and require a parking area, SCE&G might consider a phased approach, installing the step-down area first, and then working on parking later during the new license.

Gerrit asked if part of the proposal for the Enoree River and Hwy 34 informal sites is to install signage. He said that many people don't know the sites are there, especially Enoree. Henry said that these sites would become "formal" sites and Part 8 signage would likely be required by FERC at all of the recreation sites.

At the Broad River and Enoree River Waterfowl Areas, no changes are being proposed. These sites are largely outside of SCE&G's control, since they are managed by SCDNR.

The group then discussed the proposed enhancements at the Scenic Overlook. Alison said SCE&G plans to modify the existing fishing pier to make it ADA compliant. Bill A. said that a principal reason SCE&G isn't building an additional fishing pier is that the existing one already is quite large

and thus able to accommodate more usage than presently occurs. SCE&G believes the better direction to go is towards making the pier ADA accessible. Henry noted that as part of the Monticello Reservoir Fish Habitat Enhancement Plan, fish attractors will be added in that area of the reservoir, in an effort to enhance fishing opportunities at the pier. Dick said that he was pleased with these suggested improvements. Ray noted that the pier would be altered to include ADA improvements.

At the Hwy 215 site, Bill said that although the addition of lighting was suggested by the public through the RUNS surveys, lighting is already installed at the site. Therefore, they are not suggesting any improvements at this site.

At the Hwy 99 Informal Access Area, SCE&G is proposing to install a fishing pier, benches, picnic tables and lights but not a restroom. Through the Monticello Reservoir Habitat Enhancement Program, fish attractors will also be installed in this area of the reservoir in an effort to enhance fishing opportunities.

At the Hwy 99 boat ramp, SCE&G is proposing to install all of the suggested improvements, including a fishing pier, improvements to the existing boat ramp, lighting on the boat ramp, and year round access to the restrooms. The group agreed that all of these proposed enhancements were sufficient.

SCE&G is not proposing any improvements at the Recreation Lake. This site is already well used and provides many facilities to the public. When the public was questioned about the need for additional facilities at this site, they indicated that no additional facilities were needed.

Henry said that ADA improvements will be made at Cannon's Creek, the Hwy 99 boat ramp and the Scenic Overlook. He said that ADA improvements will be made according to current ADA guidelines.

The group discussed the need to develop a schedule for installing the enhancements and maps that indicate where the proposed enhancements will be installed. This information will be used in the Recreation Management Plan. SCE&G suggested that since they are proposing to enhance 6 sites, they would like to be able to enhance one site every two years, resulting in all site enhancements being completed in 12 years. SCE&G proposes that the stakeholders decide site enhancement priority. Dick said he would also like to see another RUNS completed at some point during the new license, and if not a full RUNS, then a recreation study more thorough than the data collection associated with the FERC Form 80.

The group took a break and the stakeholders met separately to discuss the enhancements, schedule and site priority.

When the group reconvened, Dick said that they agree with everything that SCE&G has proposed, but in addition, they would like SCE&G to reconsider adding a courtesy dock to Cannon's Creek. Gerrit said that Rosewood Landing, located on the Congaree River, has a floating dock that accommodates changing elevations and flows. Something similar to that dock could be implemented at Cannon's Creek. Henry said that there is still the safety issue with the courtesy dock at this location – with fluctuating water levels and people potentially jumping or diving off the

end of the dock into an unknown depth of water, to tragic effect. It might also be difficult to keep in place and protect from significant damage during high water events.

The group then discussed the stakeholders suggested schedule and priority ranking. Dick said the stakeholders agree to completing one site every two years but would like to see the Enoree River site and Hwy 34 site be completed at the same time. Their site priority is as follows:

1. Hwy 34 and Enoree River
2. Cannon's Creek
3. Hwy 99 Boat Ramp
4. Hwy 99 Informal Site
5. Scenic Overlook

Dick said that if SCE&G does not agree to completing Hwy 34 and Enoree River at the same time, then Hwy 34 would be priority 1 and Enoree River would be priority 2. (After the meeting, Gerrit stated in an email that American Rivers does not support SCE&G completing these sites separately.)

Dick said they would also like to see a new RUNS be completed approximately 12 years after the license is issued. It will take 10 years to complete all of the site enhancements and the study can be initiated two years after that. When SCE&G does the RUNS, Dick suggests that a stakeholder group convene and discuss the results and the RMP. He suggested that this cycle repeat itself every 12 years, synching up with the Form 80 cycle, throughout the license term.

Bill A. said that they currently do a Recreation Assessment at the Neal Shoals Project, which is a slightly less intense study than a RUNS. The license states that a Recreation Assessment be performed on year 10 and year 20 of the 40 year license. Is this something the stakeholders think could work for the Parr Project? Dick said that the most recent RUNS was completed at Parr in 2015 and he would like to limit how long it will be before another RUNS is done. The group discussed the timing of the next RUNS and how it would depend on how long it takes to receive the new license from FERC. They also discussed the need for a RUNS versus a Recreation Assessment. Dick suggested that a Recreation Assessment be completed soon after the enhancements are completed and then a bigger RUNS be completed further into the license term. The group agreed to perform a Recreation Assessment 2 years after the final improvements are implemented and include an Adaptive Management Plan (AMP) section in the RMP including a second and possibly third assessment depending on the length of the license.

Gerrit asked that a maintenance schedule be created to ensure the proposed Hwy 34 improvements are maintained. He said this site can be greatly affected by flooding events and he wants to ensure that the site remain operational throughout the new license term. Tommy said that it will be added to the list of other sites that are monitored each month. Gerrit said he would like for the site studied beyond just monthly monitoring. He would like to see data collected, including measuring sediment buildup with a rod and documenting the site with pictures. Henry said this could be addressed in the site design and within the first year after construction to determine if there are going to be problems maintaining this site.

SCE&G and Kleinschmidt will develop a strawman of the RMP for the group to review. The strawman will include the proposed recreation enhancements, timeline, draft maps of each site with proposed enhancements, maintenance schedule for each site, and AMP wording.

Henry asked, if SCE&G management does not approve building a courtesy dock at Cannon's Creek - will this be a "deal breaker" for SCDNR. Bill M. said they just want the improvement to be reconsidered because he believes the public could find use in this addition, however he doesn't see it as a deal breaker.

After discussion of the recreation enhancements wrapped up, Alison said there were a few outstanding items regarding the Project Shoreline Management Plans that she would like to discuss. Alison said that she would incorporate wording into the Parr SMP on camping at recreation sites. She also asked if SCDNR had come to a decision regarding the parcel of land adjacent to the Fairfield tailrace. Bill M. and Dick said they have discussed this piece of land and between the two of them, they are okay keeping this parcel classified as future recreation. There would be no public hunting on this land, but it would continue to be classified as future recreation. They said they would need to get a final decision from Bob Perry however and Bill M. said he would try to get an answer from him by the end of January.

Alison said she would also edit the SMP maps to include the Enoree River Informal Access Area. Gerrit asked if there should be an exclusion zone for camping at the recreation sites. He thought that camping should not be done near parking lots or boat ramps. Alison said she would add wording to the SMPs to limit camping at the sites to not longer than 7 days and not within 100 feet of a boat ramp.

Action items from the meeting are listed below.

ACTION ITEMS:

- Kleinschmidt will prepare meeting notes for distribution to the TWC.
- Alison will add a gravel parking area to the list of proposed enhancements for the Hwy 34 site.
- Kleinschmidt and SCE&G will work together to develop a strawman RMP to include the proposed recreation enhancements, timeline, draft maps of each site with proposed enhancements, maintenance schedule for each site, and AMP wording for periodic assessments.
- SCE&G will discuss with their management adding a courtesy dock at Cannon's Creek and combining the Enoree River Informal Site and Hwy 34 site for improvements during the same year.
- Alison will edit the Parr SMP to include wording on camping at the recreation sites, including how long camping is allowed (no longer than 7 days) and how far camp sites must be from boat ramps (100 feet).
- Alison will edit the Parr SMP map to include the Enoree River Informal Access site.

Recreation Plan Proposal

The following are recommendations from the Recreation Technical Working Committee and what SCE&G recommends offering as a counter proposal. These are presented for your consideration. The stakeholders did not provide specific recommendations for ADA improvements. They were leaving that up to SCE&G to propose. **Our proposal does not include the requested improvements highlighted in yellow.**

<u>Recreation TWC Recommendation</u>	<u>SCE&G Proposed Offering</u>
<u>Parr Reservoir:</u>	
Cannon's Creek: <ul style="list-style-type: none"> • Boat ramp expansion and/or improvement to make more useful at low water • Restroom improvements • Fishing pier • Courtesy dock • Additional lighting 	<ul style="list-style-type: none"> • Install one (1) fishing pier • Install two (2) additional lights, one (1) near road and one (1) near restroom • ADA – pave two (2) ADA parking spaces and access paths to picnic area, fishing pier and restrooms, upgrade restroom to ADA standards with new handle on men's room door and install new proper height toilet seats General comment: <ul style="list-style-type: none"> • Parking area is currently gravel
Heller's Creek: <ul style="list-style-type: none"> • Boat ramp expansion or improvement to make more useful at low water • Restroom improvements • Fishing pier • Courtesy dock • Add lighting 	<ul style="list-style-type: none"> • We do not recommend any improvements • We do not recommend any ADA improvements General comment: <ul style="list-style-type: none"> • Parking area is currently gravel
Highway 34 Primitive Ramp: <ul style="list-style-type: none"> • Improve grading and boat launch • Parking area improvements • Remove large trees that hinder vehicle access to ramp 	<ul style="list-style-type: none"> • Improve boat ramp - install geogrid and stabilize bank • Grade <u>and gravel</u> to improve parking area • Remove large trees that hinder vehicle access to ramp • Bring into Project boundary, properties 211 <u>parcel E (8.23 acres)</u> and 285 <u>parcel C (9.9 acres to Railroad tracks)</u> on Exhibit K-14 drawing

Commented [AWR1]: DNR would like SCE&G to consider installing a courtesy dock at Cannon's Creek.

	<ul style="list-style-type: none"> • We do not recommend any ADA improvements • Install Recreation Sign on Highway 34 per FERC regulations <p>General comment:</p> <ul style="list-style-type: none"> • Parking area is currently dirt
<p>Enoree River Bridge Informal Access Area (non-Project):</p> <ul style="list-style-type: none"> • SCE&G to determine where Project boundary ends and work with the USFS to see if there are ways to improve access • Non-motorized boat access - canoe/kayak step down access • Turn-around area • Parking for 6 vehicles 	<ul style="list-style-type: none"> • Project boundary is on the edge of the river bank • Build canoe/kayak step down access within the PBL • SCE&G does not propose to obtain permission from USFS and/or SCDOT for improvements outside of the PBL • We do not recommend any ADA improvements • Install Recreation Sign on Highway 34 per FERC regulations <p>General comment:</p> <ul style="list-style-type: none"> • Parking area is outside PBL and is currently dirt
<p>Broad and Enoree River Waterfowl Areas:</p> <ul style="list-style-type: none"> • No new facilities or improvements recommended 	<p>We do not recommend any changes</p>
<u>Monticello Reservoir:</u>	
<p>Scenic Overlook:</p> <ul style="list-style-type: none"> • Lighting • Additional Fishing Pier • Additional Picnic Tables 	<p>Fishing pier area:</p> <ul style="list-style-type: none"> • Add one (1) light at existing fishing pier • ADA - modify existing fishing pier for ADA use, pave two (2) ADA parking spaces and access path(s) to fishing pier <p>Picnic area:</p> <ul style="list-style-type: none"> • Add two (2) new picnic tables • ADA - Build one (1) ADA shelter with one (1) ADA picnic table, pave one (1) ADA parking space and access path to new ADA shelter <p>Restroom area:</p> <ul style="list-style-type: none"> • ADA - pave one (1) ADA parking space and access path (SCE&G will

	<p>need to coordinate this improvement with County)</p> <p>General comment:</p> <ul style="list-style-type: none"> • Parking areas at fishing pier and picnic areas are currently gravel
<p>Highway 215 Boat Ramp:</p> <ul style="list-style-type: none"> • Lighting on/near the dock and boat ramp • Improve or repair existing boat dock 	<ul style="list-style-type: none"> • We do not recommend any changes • We do not recommend any ADA improvements <p>General comment:</p> <ul style="list-style-type: none"> • Parking lot is currently paved
<p>Highway 99 Informal Access Area:</p> <ul style="list-style-type: none"> • Fishing Pier • Benches • Picnic Tables • Restroom • Lighting 	<ul style="list-style-type: none"> • Add one (1) fishing pier • Add two (2) benches • Add two (2) picnic tables • Add two (2) lights, one (1) near fishing pier and one (1) near parking area • We do not recommend any ADA improvements <p>General comment:</p> <ul style="list-style-type: none"> • Parking area is currently gravel
<p>Highway 99 Boat Ramp</p> <ul style="list-style-type: none"> • Improvement to boat ramp in cove – lower end of boat ramp drops off • Year-round access to restrooms • Lighting on ramp • Fishing pier (SCDNR recommendation) 	<ul style="list-style-type: none"> • Add one (1) fishing pier • Improve boat ramp in cove so it doesn't drop off • Add two (2) lights, one (1) near boat ramp/courtesy dock and one (1) near new fishing pier • ADA – pave access paths or build ramps and platforms to courtesy dock, fishing pier & restrooms; and modify three (3) parking spaces for ADA use • Modify restrooms to allow year-round access - electricity exists in restrooms, so heat could be added in restroom and/or water pump room <p>General comment:</p> <ul style="list-style-type: none"> • Parking lot is currently paved
<p>Recreation Lake:</p> <ul style="list-style-type: none"> • Regular maintenance and upkeep • No new facilities or improvements recommended 	<ul style="list-style-type: none"> • We do not recommend any improvements • We do not recommend any ADA improvements <p>General comment:</p>

	<ul style="list-style-type: none"> • Parking area is currently gravel

TWC additional Recommendations:

Schedule for improvements:

1. Improve Hwy 34 and Enoree River together as first site improvements within two years of license issuance.
2. Cannon's Creek - improve between 2nd and 4th year after license issuance.
3. Hwy 99 Boat Ramp - improve between 4th and 6th year after license issuance.
4. Hwy 99 Informal Access Area - improve between 6th and 8th year after license issuance.
5. Scenic Overlook - improve between 8th and 10th year after license issuance.

As part of the Settlement Agreement we should develop a Recreation Management Plan with an adaptive management approach to address future recreation needs within the new license period. As part of the adaptive management approach they would like for us to conduct a recreation assessment study (similar to what we are currently doing for Neal Shoals) in consultation with DNR during the 12th year after license issuance. And depending on length of new license conduct a second (30 year license) and if necessary third (40 or 50 year license) recreation assessment study as determined by consultation with DNR. These assessments will be used to assist in filling out the FERC Form 80 submittals which are due on six year intervals and determine if new park site amenities are needed before the end of that license period.

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We propose to make the following park sites ADA compliant:

Parr Reservoir (1) – Cannons Creek

Monticello Reservoir (2) – Highway 99 Boat Ramp and Scenic Overlook

Parr Reservoir ADA issues:

The three public access on Parr Reservoir were surveyed for compliance with ADA guidelines. All three sites have gravel lots and none of the sites contain ADA compliant parking spaces. None of the sites have paved access to bathrooms, picnic areas, bank fishing areas, or camping areas. In addition to the lack of paved access, the bathrooms do not comply with ADA guidelines for toilet seat height, entrance threshold heights, or the ability to operate doors with a closed fist. While the Parr Reservoir recreation sites are not currently ADA compliant, the addition of paved surfaces at the site would eliminate many of the current barriers.

Monticello Reservoir ADA issues:

The five public access sites on Monticello Reservoir were surveyed for compliance with ADA guidelines. The Highway 215 Boat Ramp and Highway 99 Boat Ramp are paved; however neither site contains designated ADA compliant parking spaces. Parking areas at the Scenic Overlook Park, Recreation Lake Access Areas, and Highway 99 Informal Fishing Area are gravel. The Recreation Lake Beach Access Area contains designated ADA parking; however, as

noted, neither of the two designated spaces are paved. Access trails to the facilities and amenities offered at the various Lake Monticello access sites (i.e. picnic areas, camping areas, and bank fishing areas) are unpaved. The Scenic Overlook provides ADA compliant restrooms; however no other permanent restroom facilities at the Monticello Reservoir sites are entirely ADA compliant. This is primarily due to the lack of paved access to restroom facilities. Other common deficiencies with restroom facilities include the inability to operate restroom doors with a closed fist and thresholds greater than 0.25 inches high. The general layout of restrooms and stalls are ADA compliant across all of the sites, with the exception of the Highway 99 Boat Ramp where the lavatories do not have enough clearance beneath them. Boat docks located at the Highway 215 and Highway 99 Boat Ramps are not ADA compliant due to their ramp slopes, missing transition plates between the ramp and dock, lack of two-inch curbs at the dock edges, and lack of paved access. The fishing pier at the Scenic Overlook Park would not be considered ADA compliant due to the lack of paved access, lack of sections of railing that are 34 inches in height, and lack of two-inch curbs around the outside edges of the pier. While the Monticello Reservoir recreation sites are not entirely ADA compliant in their current state, the addition of paved surfaces to the various facilities and amenities offered would eliminate many of the current barriers.

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Instream Flows TWC Meeting

January 24, 2017

Final KMK 2-16-17

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Caleb Gaston (SCANA)
Brandon Stutts (SCANA)
Tom McCoy (USFWS)
Melanie Olds (USFWS)
Dick Christie (SCDNR)
Bill Marshall (SCDNR)
Ron Ahle (SCDNR)
Alex Pellett (SCDNR)

Gerrit Jobsis (American Rivers)
Bill Stangler (Congaree Riverkeeper)
Henry Mealing (Kleinschmidt)
Brandon Kulik (Kleinschmidt) via conf. call
Bret Hoffman (Kleinschmidt)
Jason Moak (Kleinschmidt)
Jordan Johnson (Kleinschmidt)
Kelly Kirven (Kleinschmidt)

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.

Henry opened the meeting with introductions and distributed a memo entitled “Parr IFIM Study – Habitat Duration Analysis and Misc. Action Items” dated January 23, 2017. This memo was an update of the “Habitat Duration” memo distributed in December 2016. Henry then began a PowerPoint presentation, which is attached to the end of these notes along with the January 23rd memo. The goals of the meeting included selecting values for minimum flows, selecting seasonal date ranges for low, mid, and high minimum flows, discussing potential observation dates and discussing methods and transects for observation. Regarding the timing for the observation flows, Henry suggested that there will likely be three separate outings to view the flows; one in early spring, one in May, and one in August. Henry then reviewed the action items from the previous meeting. The corrected WUA tables from the IFIM report are included in Attachment A of the memo, the new figures and tables of WUA by target species and life-stage are in Attachment B of the memo, and the Habitat Duration Analysis is in Attachment C of the memo. The WUA data weighted by mesohabitat is presented in the body of the memo.

Henry then turned the presentation over to Bret, who discussed the Habitat Duration Analysis. He explained that seasonal hydrologic availability was compared to WUA and to the seasonal minimum flow ranges that were proposed at the previous TWC meeting (held on September 27, 2016). Bret explained that there was an inflection point in the prorated data around 3,900 cfs, which resulted in overestimation of inflows below this point and underestimation of inflows above it. Because of this, he used non-prorated data to complete the habitat duration analysis. Also, in order to tailor the effort during this analysis, he focused on select months, species/life stages and study sites that were noted as having the greatest interest or importance. Bret said the exceedance

percentages, which are in Table 2 of the memo, display how often the low, transitional, and high flows are exceeded. For example, a flow of 1,800 cfs in June is available 74 percent of the time and not available 26 percent of the time. Henry added that this Project is not a storage reservoir, so outflows are totally dependent on inflow. SCE&G is not able to hold back excess water in the spring for release in the summer. Ray said that since SCE&G will try to avoid dropping gates as part of a parallel effort to dampen downstream flow fluctuations, this will drive water through the powerhouse more consistently.

Gerrit began discussing a potential Low Inflow Protocol (LIP). He said that, for example, if Flow A is the minimum flow and inflow decreases to a certain point, then Flow B will become the minimum flow. If inflow decreases to within 200 cfs of the minimum flow, then the minimum flow can be reduced and act as a buffer. Gerrit asked how SCE&G currently operates when they are at inflow now. Ray said when they are at inflow, they release inflow minus evaporation. He said he finds that losses are greater in the system as a whole than what is calculated for inflow, so they can still operate Fairfield, just a little less each day. Monticello Reservoir starts dropping each day during a drought or period of low flows, so the maximum amount you can release is constantly decreasing. He said in extreme periods of low flows, which may have more impact on Parr Hydro in the future due to the two new nuclear units at V.C. Summer, Fairfield operations are limited. When a storm comes and flows increase, SCE&G attempts to make up losses in the reservoir that occurred over the low flow period until Monticello is restored to full pool. The group agreed that this recovery mechanism for Monticello Reservoir should be incorporated into the LIP.

Henry said that he wants to ensure SCE&G has some flexibility in their operations so that they can meet their minimum flows and consistently stay within compliance. He also noted that a change in philosophy on how the Project is run, including removing downstream pulses and no longer operating with a daily average minimum flow, will affect the new minimum flows in a positive way.

The group refocused on the presentation and Jordan began explaining the representative reach analysis and methods for weighting WUA. He explained that this analysis focuses on Reach 2 of the IFIM study because this reach is hydraulically linked unlike Reach 1, which is split into east and west channels by Hampton Island and because Reach 2 includes critical study sites that were identified by the TWC. He then explained that the total linear feet for each mesohabitat type within Reach 2 was measured using ArcGIS. Study sites 6, 7, and 8 were assessed separately from Bookman Island because they contained different types of habitat and were modeled using different methods. The two areas were weighted based on their individual linear lengths and then the weighted values were summed to provide WUA for the entire Reach 2. Graphs were reviewed that compare WUA availability by species for low flows, high flows and transitional flows.

One conclusion from the analysis that Henry noted is that a low flow of 700 cfs provides 79-120 percent of the suitability of a flow of 1,200 cfs. Ron noted that the 700 cfs flow only reach 120 percent suitability when small mouth bass fry are included. He said that the fry stage lasts for a very short period of time and shouldn't be taken into account for low flows.

The stakeholders held a breakout session to review and discuss the data presented in the memo.

After lunch, the group reconvened. Gerrit acted as the spokesperson for the stakeholder group and explained what they had discussed and the recommendation they were proposing. He said that there

were two important things they looked at regarding their flow recommendations. First, they identified certain species that were most affected by flows. Second, they identified Study Site 3 as being important since whatever flows are released in that area, a portion will be diverted to the west channel. They also identified Bookman Shoals and Haltiwanger Island as important areas. Gerrit said they also looked at the exceedance flows and took into account how often certain flows would be available in the river. They identified a flow duration exceedance (not a WUA score) of 75-80 percent as acceptable.

Gerrit said the minimum flows that the stakeholders are recommending are as follows:

- Low Flows – June 1-November 30 – base flow of 1,200 cfs – drivers are adult smallmouth bass habitat, Study Site 3 (West Channel)
- Transitional Flows – January, May, December – base flow of 2,250 cfs – drivers are adult smallmouth bass habitat, robust redhorse spawning (deep fast guild), Study Site 3
- High Flows – February, March, April – base flow of 3,000 cfs – drivers are robust redhorse spawning, American shad spawning, Study Site 3

Gerrit added that they also discussed having a step down mechanism built into the LIP. They identified 200 cfs as a reasonable buffer flow. For example, during the minimum flow period when inflow reaches 1,400 cfs, the minimum flow released from the Project will drop from 1,200 cfs to 1,000 cfs. Then, when inflow drops below 1,000 cfs, outflow will equal inflow. The same consideration will apply to transitional and high flows. When inflow is 3,200 cfs, the minimum flow will drop to 2,800 cfs (for high flow periods) and when inflow is 2,450 cfs, the minimum flow will drop to 2,050 cfs (for transitional flow periods). Stakeholders also agree to include a recovery period to allow Monticello Reservoir to recover to full pool after periods of low flows.

Ray said that these proposed minimum flows are higher than what the stakeholders proposed at the previous meeting. He said that including June in the low flow period and removing it from the transitional period seems reasonable. He said that a base flow of 1,200 cfs will be difficult to accomplish in August. SCE&G already struggles to meet the current minimum flow in August, which is a daily average of 800 cfs. Ron asked what years of data were included in the monthly exceedance percentages shown in Table 2 of the memo. Henry said that those numbers were developed using 35 years of data. Ron said that if the exceedance percentages were calculated using only the last 10 years or so, they may drop down. Kleinschmidt will redo the table using only data from the last 15 years, to possibly give a clearer image of recent flows.

Ray said that the suggested low flows are concerning and will be difficult to comply with since the Project doesn't have a storage reservoir. Ray asked if the stakeholders are okay with subtracting evaporation from inflow. Gerrit said yes. Ray said that an instantaneous minimum flow of 1,200 cfs versus a daily average of 800 cfs will be difficult and inflow may be what's passed very often, since summer flows are often below 1,200 cfs. Bill A. asked if they are open to having these numbers be daily averages. Gerrit said no, these numbers are instantaneous minimums.

Bill A. asked how long flows should be low before they step down to a lower minimum flow per the LIP. Gerrit said one 15 minute reading shouldn't cause an issue, but when the whole river drops down to a new level, then the LIP should be initiated.

Bill S. said that they had to consider moving flows to the west channel and how this would affect the east channel in Study Site 3. Caleb asked how much flow do stakeholders envision being diverted to the west channel. Bill S. said around 200 cfs. Henry said he was surprised by the proposed minimum flows and he thought they would move closer to the 20/30/40 % numbers identified in the state recommendations for minimum flows.

Ron said they didn't separate spawning and adult habitats for robust redhorse. Henry asked if the deep/fast guild was a driver in the proposed flows. Gerrit said that adults were a driver and they are in the deep/fast guild. He said that American shad and robust redhorse were drivers during high flows and the west channel was a driver for all flows. Henry reminded the group that the robust redhorse spawn in shallow fast habitats. After the meeting KA reviewed the record and robust redhorse juvenile and fry stages were originally placed in the deep slow guild based on studies on the Pee Dee River, which had been omitted in previous meetings. The deep fast habitat is likely linked only with adult habitat and not linked to spawning and recruitment.

Gerrit said he doesn't envision many long periods where only the minimum flow is passed. He thinks the outcome will be better if SCE&G doesn't focus on what the minimum flow is as much as they focus on better flow management. He said he doesn't want to close the book on coming up with something creative that addresses American Rivers' interest, which is having flows mimic natural river flows.

Henry asked if all transects and all species were considered. Ron said that with all of the transects put together, they will get 66 percent of the smallmouth bass habitat at 1,200 cfs. By ensuring water is there for smallmouth bass, they won't be taking anything away from other species. The stakeholders agree that smallmouth bass is an especially important species for recreation.

Henry noted that the higher the minimum flows, the more chances SCE&G could have deviations because the Project will be in the "or inflow" mode of operation. Henry said SCE&G has agreed to do several operational changes during the new license including diverting water to the west channel, stop or minimize downstream fluctuation flows, and implement new minimum flows. Henry asked if the stakeholders would consider allowing for a minimum flow adaptive management plan to test the new minimum flows over several years and see how easy or difficult it is to comply with the other operational changes being proposed. They can show progress each year on how they are meeting this goal and even submit reports to FERC. Gerrit said this is a reasonable request and might be possible.

Melanie asked if a gliding minimum flow could be set up, using a percentage of inflow from the previous day minus evaporation. The group agrees this is a good idea and Henry said we will explore this idea further. Henry said that something similar to this was agreed to at an Entergy Project on the Ouachita River and one of the Coosa Developments in Alabama. They use percentages of inflow to adjust outflows on a frequent basis.

Bill A. noted that based on this new set of flows proposed by the stakeholders, observation flow dates would not be scheduled at this time since the stakeholder flows had increased from their previous proposal.

Following this discussion, the meeting adjourned. Action items from the meeting are listed below.

ACTION ITEMS:

- Kleinschmidt will put together meeting notes and distribute to the group.
- Kleinschmidt will recalculate the exceedance percentages on Table 2 of the memo, using only data from the last 15 years.
- SCE&G will discuss the new proposed minimum flows with management and they will work with Kleinschmidt to come up with other possible options.
- Kleinschmidt and SCE&G will review the TWC recommendation and perform additional hydrologic and biological analysis for minimum flows more in line with the proposal from the last meeting.

Parr IFIM – Additional Analyses

01-24-2017

Parr Hydro Project

FERC No. 1894

Kleinschmidt

Meeting Goals

- Select values for minimum flows
- Select seasonal date ranges for low, mid, high minimum flows
- Discuss potential observation dates
- Discuss methods/transects for observation

Action Items from Last Meeting

- Correct WUA tables presented in IFIM report
 - Attachment A
- Create figures and tables of WUA by target species/life-stage
 - Attachment B
- Habitat Duration Analysis
 - Attachment C
- Representative Reach Analysis
 - Weighting of WUA data by mesohabitat

Habitat Duration Analysis

- Compare seasonal hydrologic availability vs. WUA
 - Also compare availability with proposed seasonal minimum flow ranges from IFIM TWC meeting (9/27).
- Facilitate selection of minimum flow values based on hydrologic availability and habitat benefits in the affected reach downstream of Parr Shoals Dam.

Methods

- Polynomial equations created from WUA curves for each species/life stage, and guild, at select study sites
- Monthly inflow datasets were used to determine flow exceedance percentages
- WUA curves for relevant species/life & guilds were plotted as a function of exceedance
- Also plotted previously discussed seasonal min flow values

Inflow Data Selection

- Non-prorated and prorated daily inflow datasets considered
 - Prorated dataset identical to the Parr HEC ResSim model
 - Non-prorated data based on sum of three upstream USGS gages
 - Broad River near Carlisle, Tyger River near Delta, and Enoree River at Whitmire
- Non-prorated data selected for habitat-duration analysis
 - Prorated flows have a statistical bias above and below 3,900 cfs
 - Low flows are overestimated, little or no additional runoff
 - Hydrologic availability for low flows best represented by non-prorated

Habitat Duration Curves

- Curves were generated for March, May, and August at Study Sites 6, 7, 8, and 10 (Bookman Island)
 - Represent high, transitional, and low flow seasons
- Species/Life Stages – presented in months when applicable
 - Smallmouth Bass – spawning, adult, juvenile and fry
 - Redbreast sunfish – spawning and adult
 - American shad – spawning
 - Shallow – fast guild
 - Deep – fast guild
 - Deep – slow guild
- Months
 - March – high flow
 - May – transitional flow
 - August – low flow

	Feb 15 – May 15 (Spring Spawning Flow)	May 16 – Jun 30, Dec 1 – Feb 14 (Transitional Flow)	Jul 1 – Nov 30 (Summer/Fall Low Flow)
Proposed Flow A	2,500	1,800	1,200
Proposed Flow B	2,000	1,300	700

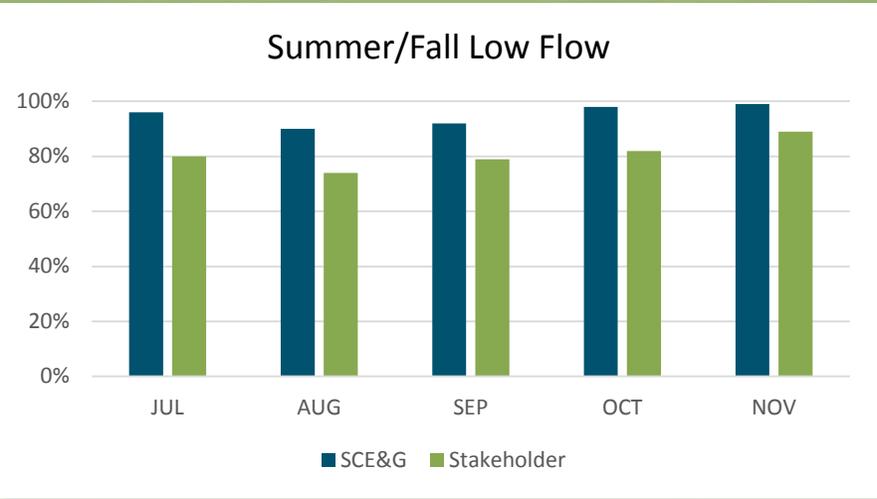
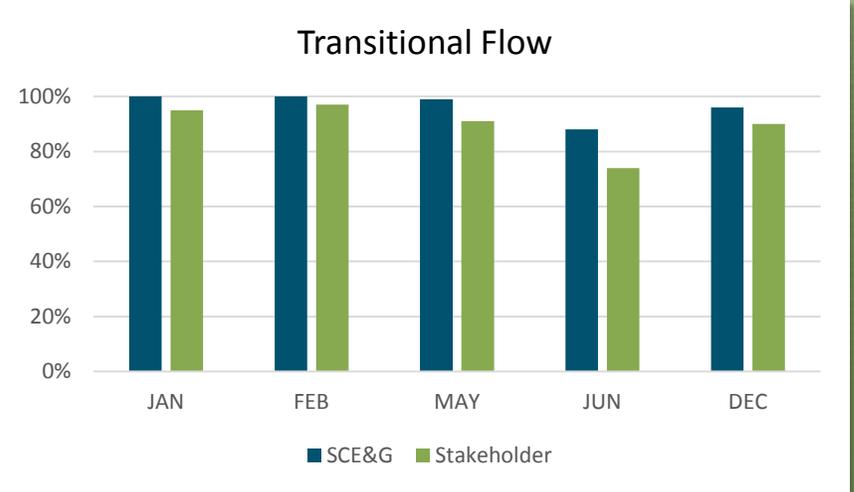
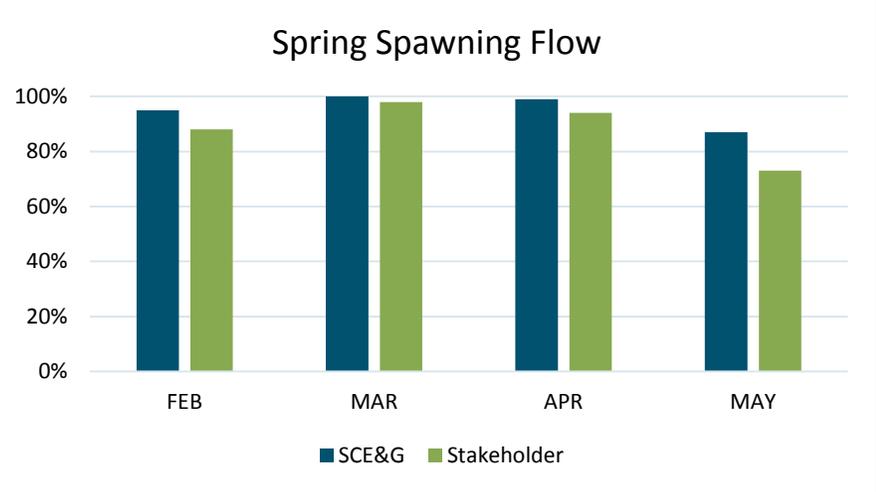
Results

- Provided in Attachment C

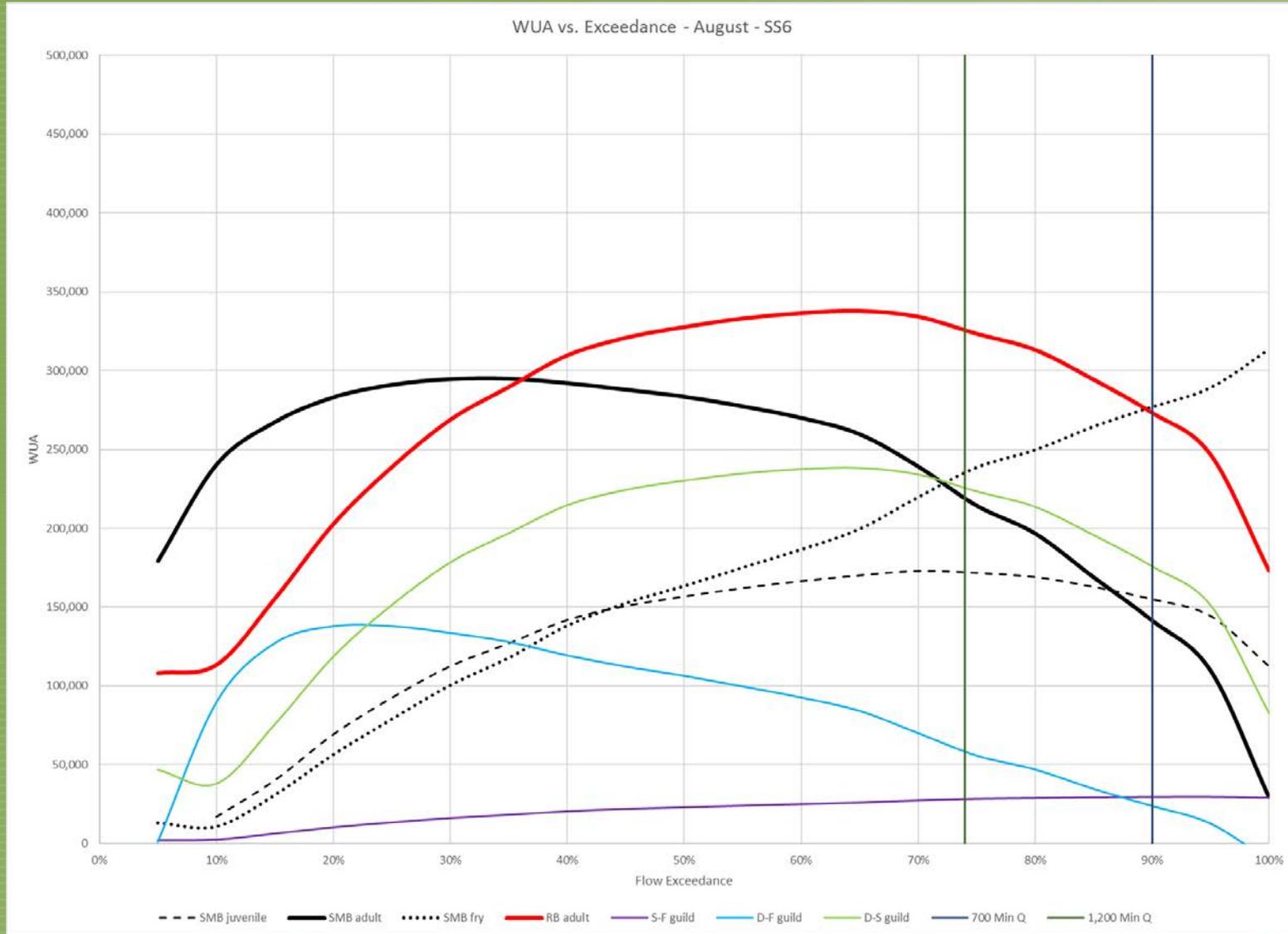
MONTHLY EXCEEDANCE PERCENTAGES FOR PROPOSED MIN Q VALUES

Min Q	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2,000	--	95%	100%	99%	87%	--	--	--	--	--	--	--
2,500	--	88%	98%	94%	73%	--	--	--	--	--	--	--
1,300	100%	100%	--	--	99%	88%	--	--	--	--	--	96%
1,800	95%	97%	--	--	91%	74%	--	--	--	--	--	90%
700	--	--	--	--	--	--	96%	90%	92%	98%	99%	--
1,200	--	--	--	--	--	--	80%	74%	79%	82%	89%	--

Results (cont...)

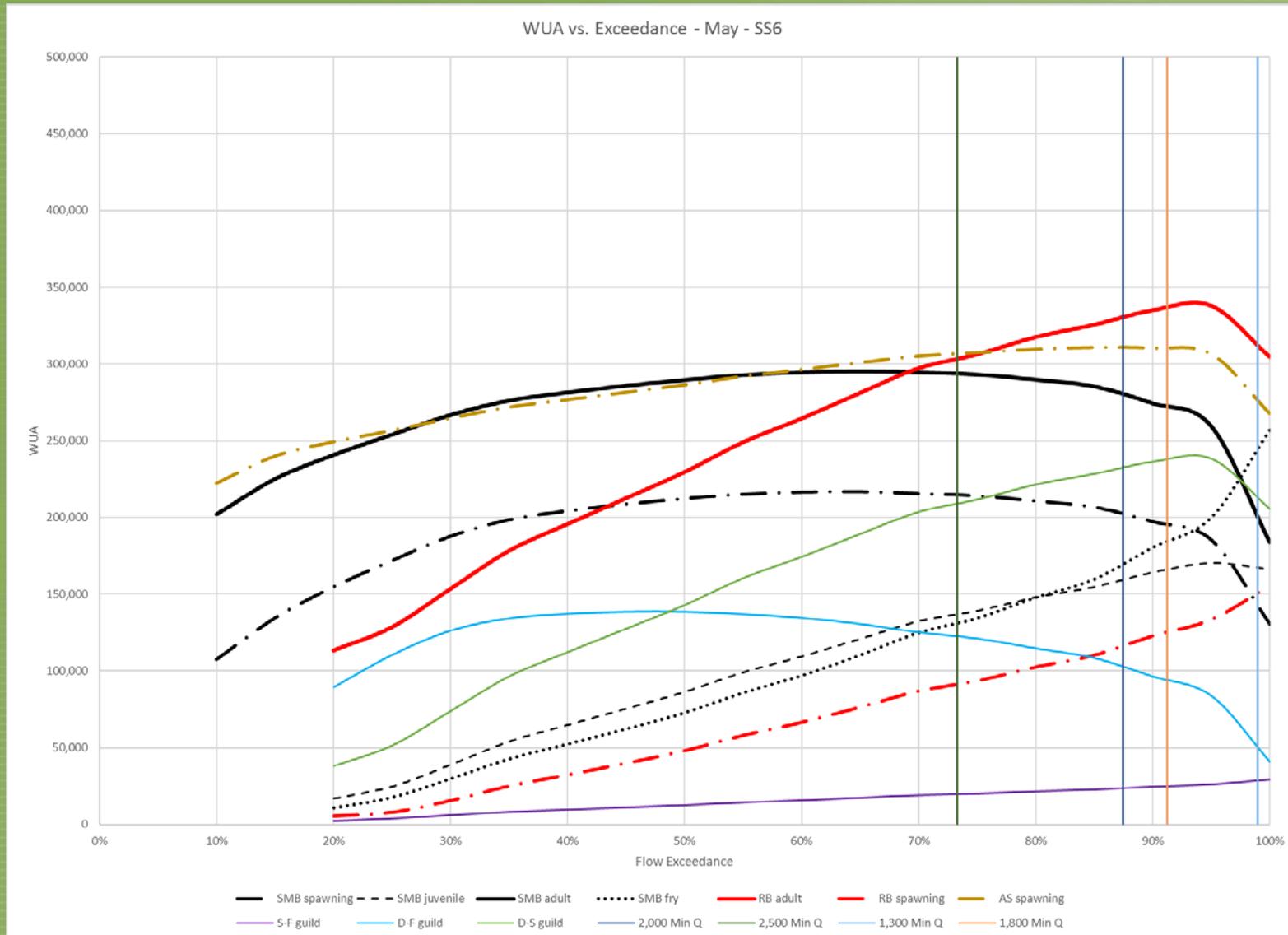


Habitat Duration Examples



- Higher proposed flow has more WUA for most species / life stages
- Lower proposed flow has more WUA for SMB fry

Habitat Duration Examples

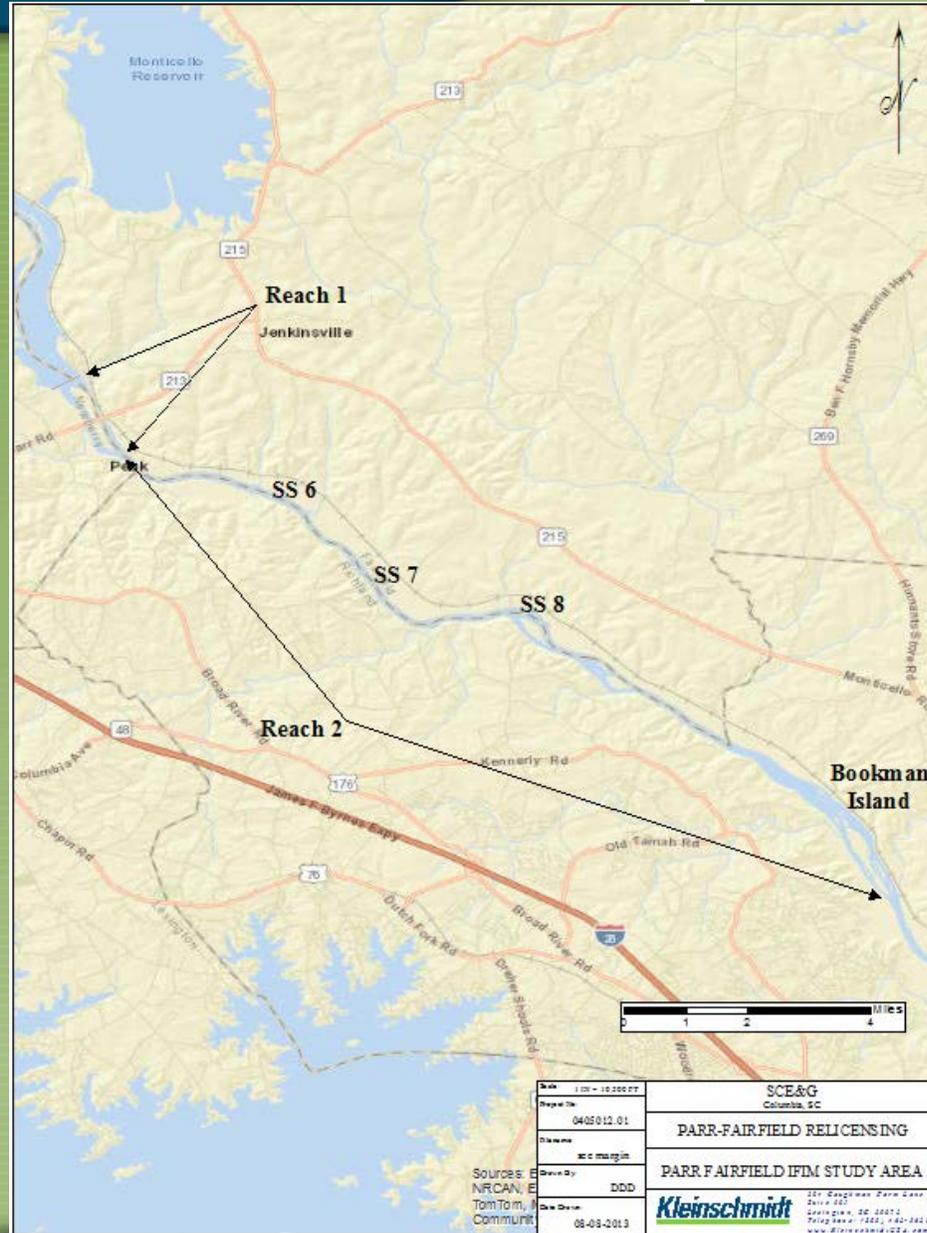


- Higher spring spawning flow has less WUA for most species / life stages
- Higher spring spawning flow has slight benefit for SMB Adult & spawning, deep fast guild

Representative Reach Analysis

- Reach 2 study sites were analyzed
 - Linked hydraulically, from downstream of Hampton Island to Columbia Dam
 - Critical study sites identified by the TWC
- WUA data from each study site was weighted by the linear feet of stream of the applicable mesohabitat
 - Raw unweighted PHABSIM modeling output is in standard WUA/1,000 linear feet of stream
 - Earlier Mesohabitat mapping quantifies relative lengths for each mesohabitat class

Reach Map



Scale	1:00 - 10,000 FT	SCE&G	201 Douglas Park Lane
Project No.	0405012.01	Columbia, SC	29115
Client	SC MAGIST	PARR-FAIRFIELD RELICENSING	
Prepared By	DDD	PARR FAIRFIELD IFIM STUDY AREA	
Source	NRCAN, E	Kleinschmidt	
Drawn By	Tom Tomlin, Community	201 Douglas Park Lane	
Date	08-08-2013	Columbia, SC 29115	
		Tel: 803-742-1122, Fax: 803-742-1124	
		www.kleinschmidt.com	

Methods

- 1. Measure total linear feet for each mesohabitat type within Reach 2 using ArcGIS.
 - Study Sites 6, 7, and 8 were assessed separately from Bookman Island due to differing types of habitat and modeling methods.
- 3. Total length of each mesohabitat summed for Reach 2 (16,272 ft)
 - from beginning of Reach 2 (USGS Gage at Alston) to beginning of Bookman Island complex
- 4. Total length of the modeled area for Bookman Island was measured (13,200 ft)
 - Encompassed all mesohabitat types

Study Site Mesohabitat Types

STUDY SITE	TRANSECT ID	MESOHABITAT
6	6.2	Glide
	6.1	Riffle
7	7.2	Glide
	7.1	Riffle
8	8.2	Riffle
	8.1	Riffle

Mesohabitat Percentages Based on Stream Length

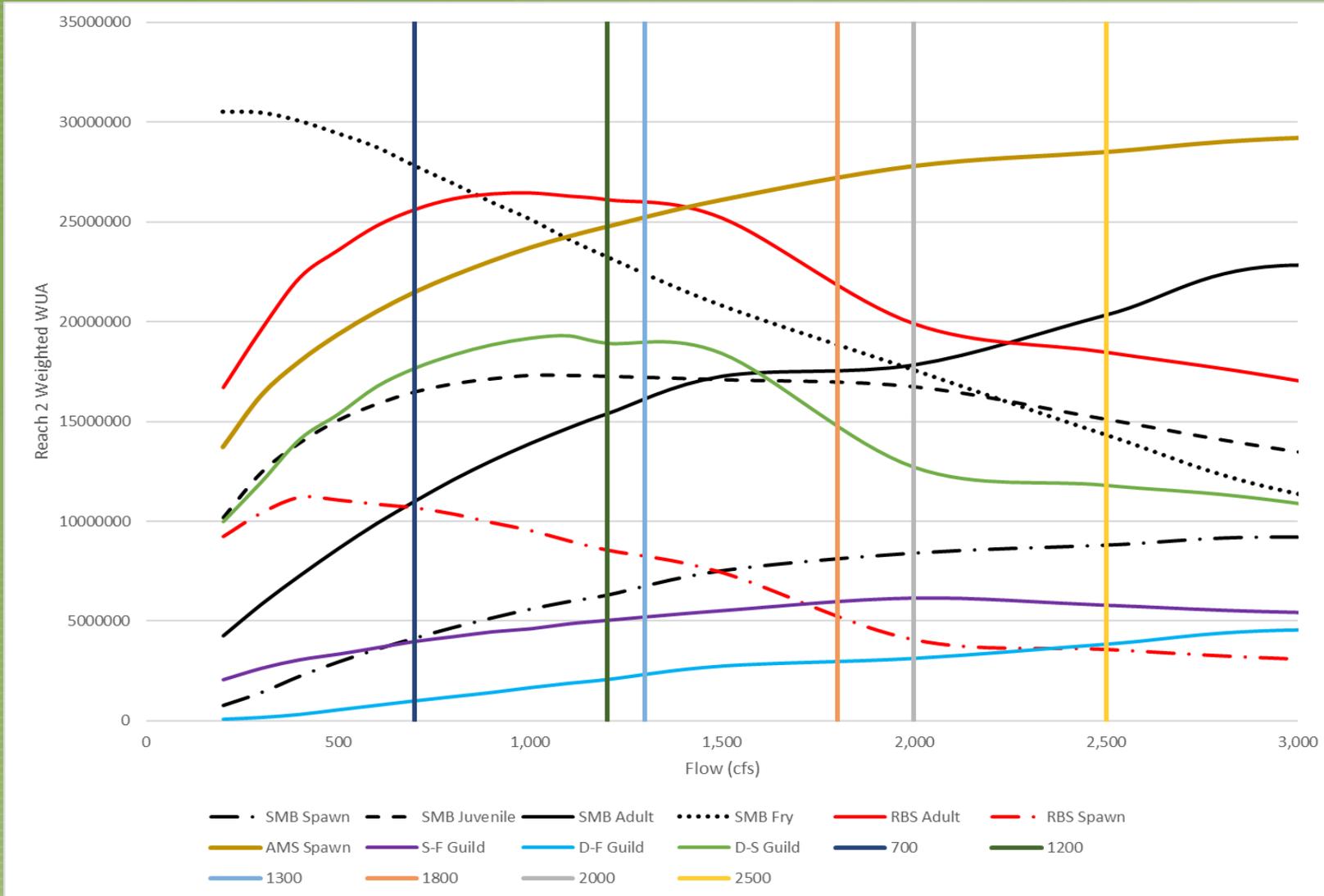
Mesohabitat Weighting		
MESOHABITAT	SS 6-7-8	Bookman
Glide	5.9%	1.1%
Riffle	14.3%	1.7%
Pool	40.2%	17.0%
Shoal	9.1%	48.4%
Run	30.4%	31.8%
Total	100.0%	100.0%

Methods (cont...)

- 4. Reach-level study site weighting
 - WUA results for Study sites 6-8 were summed and weighted by 16.27.
 - WUA results Bookman Island were weighted by 13.20.
 - Weighted values for Study sites 6-8 and Bookman were then summed providing WUA for entire Reach 2

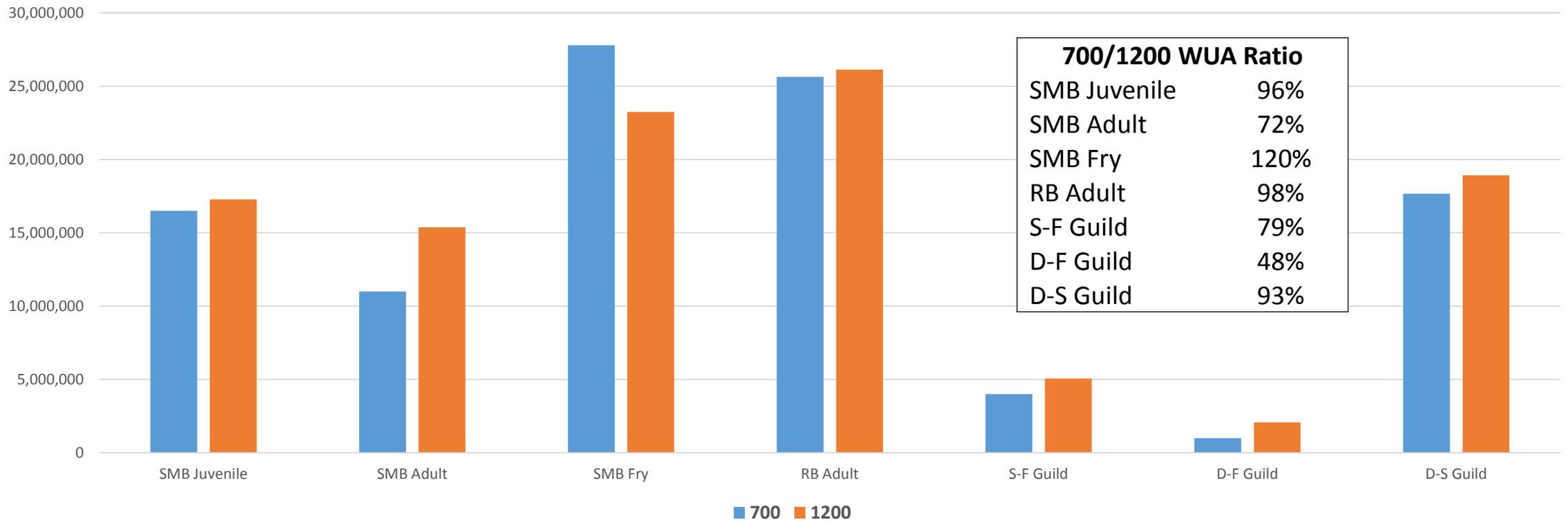
Results

Total Weighted Reach 2 WUA up to 3,000 cfs



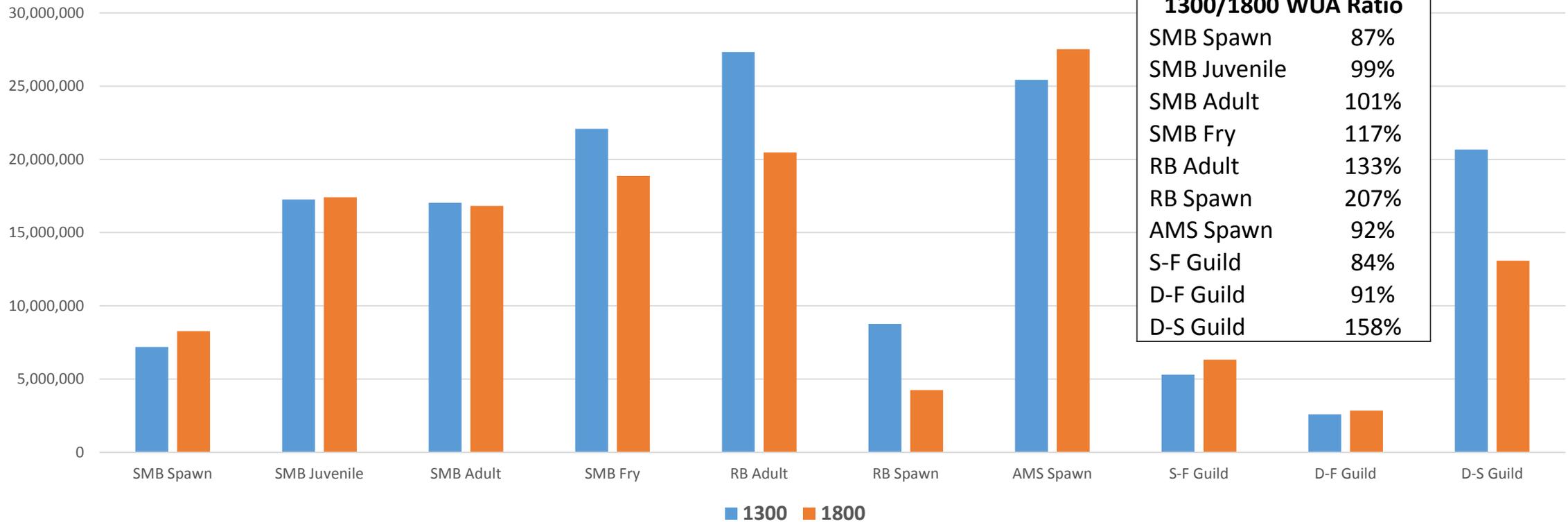
Comparison of Low Min Q WUA

Relative WUA at two summer-early fall seasonal alternatives



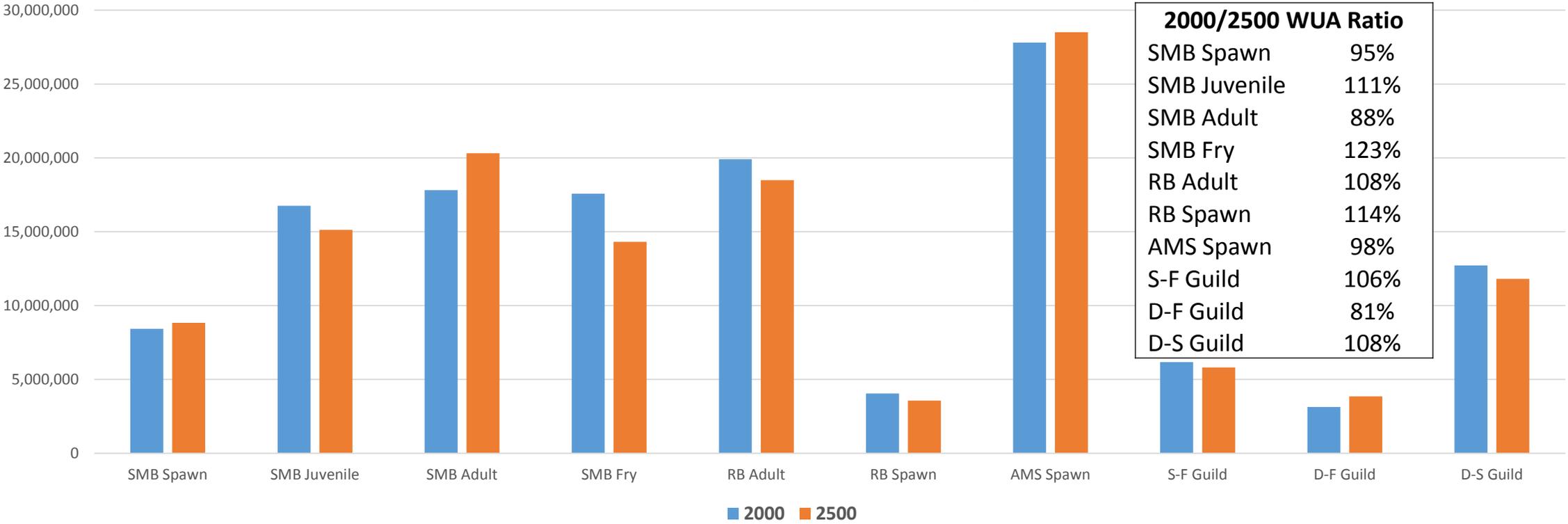
Comparison of Transition Q WUA

Reach 2 Relative WUA at two early winter and late-spring alternatives



Comparison of High Min Q WUA

Reach 2 Relative WUA at two late-winter- early spring flow alternatives



Flows/Time Frames from 9/27 Meeting

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
90% Exceedance	2,435	2,571	3,365	2,978	2,036	1,368	1,045	771	865	1,083	1,235	1,979
50% Exceedance	5,000		6,000	5,000	3,750	3,000	2,500	2,250	2,160	2,300	3,000	4,400
		D/F	AMS	AMS	AMS juv (shallow, fast)							
				RRH	RRH							
			SMB (spawn)	SMB (spawn fry)	SMB (juv/fry)							
				RBS (spawning)	RBS (spawn/fry)	RBS (fry/juv)						
			Striped Bass	Striped Bass								
		2/15			5/15 or 31		6/30					11/30
FLOW	Medium	High Flow Stakeholder -2,500 SCEG-2,000			Medium Flow Stakeholder -1,800 SCEG-1,300			Low Flow Stakeholder-1,200 SCEG-700				

Conclusions

- **Low flow:**
 - 700 cfs provides 79-120% of the suitability of 1200 cfs*
 - **Mid flow:**
 - 1,300 cfs provides 84-207% of the suitability of 1,800 cfs*
 - **High flow:**
 - 2,000 cfs provides 88-123% of the suitability of 2,500 cfs*
- *There is relatively low net habitat suitability for Deep-Fast guild at any flow

Next Steps

- Select values for minimum flows
- Select seasonal date ranges for low, mid, high minimum flows
- Discuss potential observation dates
- Discuss methods/transects for observation
- Low Inflow Protocol

MEMORANDUM

TO: Parr Hydro Relicensing – Instream Flow TWC

FROM: Brandon Kulik, Jordan Johnson, Bret Hoffman, and Henry Mealing

DATE: January 23, 2017

RE: Parr IFIM Study – Habitat Duration Analysis and Misc. Action Items

During the Instream Flow TWC meeting held on September 27, 2016, stakeholders identified several action items that were necessary to wrap up the study and to facilitate development of a well-informed minimum flow recommendation.

WEIGHTED USABLE AREA TABLE UPDATES

Several errors were identified in the IFIM Report tables noting percent of maximum Weighted Usable Area (WUA), which were presented for each study site. These tables have been corrected, are included in Attachment A of this memorandum, and will be included in the Final IFIM Report.

During the meeting, stakeholders discussed the representative reach vs. critical reach approach to analyzing multiple study sites, and also requested that the WUA results be summarized on a target species/life-stage basis. We prepared both tabular and graphical visualization for this request for key transects identified during the meeting: SS3, SS5, SS6, SS7, SS8, and SS10. These tables and graphs are included as Attachment B of this memorandum.

HABITAT – DURATION ANALYSIS

TWC members also requested that a habitat duration analysis be completed to evaluate the seasonal availability of water for fulfilling the range of seasonal flows that were developed during the September 27th meeting. The habitat duration analysis has been completed and is presented below. This memorandum and the Attachments will be incorporated into the Final Parr IFIM Report.

Kleinschmidt developed a series of curves to facilitate evaluating Broad River flows and their effect on WUA in the reach below the Parr Shoals dam. Flow was characterized from the perspective of hydrologic availability, which allows comparison of the frequency with which WUA can be met for each selected species and life-stage of interest, as well as guilds. The purpose of this effort was to facilitate selection of minimum flow values based on hydrologic availability and habitat benefits at select locations in the affected river reach.

Methods

Tabular values relating WUA to flow at select study sites were used to develop polynomial equations. Monthly inflow data were used to determine exceedance percentages. The flow for given exceedance values was then plotted using the polynomial equations, which provided habitat-duration curves.

Inflow Data Selection

Non-prorated and prorated mean daily inflow datasets were both considered for evaluating the hydrologic availability for minimum flow selection. The prorated mean daily data were identical to the dataset created in support of the Parr HEC ResSim model, while the non-prorated dataset was based only on the sum of the same three gages¹, for an identical period of record (1981 – 2015).

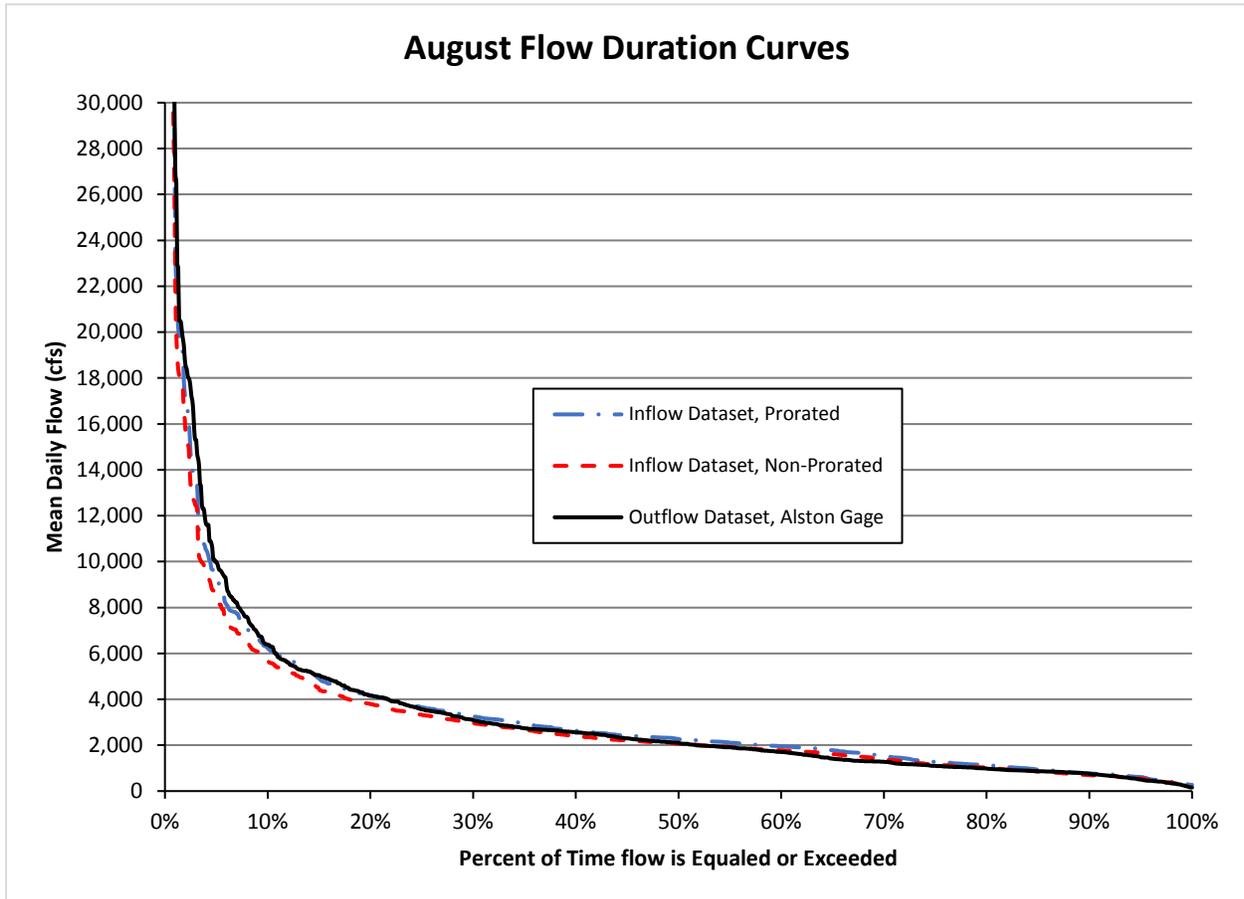


FIGURE 1 **COMPARISON OF FLOW DURATION CURVES**

As outlined in the May 2014 Inflow Dataset Development report, the prorated inflows have a statistical bias above and below 3,900 cfs. Prorated flow above this value are underestimated, while flows below this value are overestimated; this is evident in the comparison of the flow duration curves (Figure 1). Part of the reason for this is that during lower inflow months, precipitation runoff in the ungauged contributing drainage area is more sporadic. With the exception of these infrequent local precipitation events, baseline inflows are more accurately represented by the non-prorated gaged inflows. Local precipitation events simply result in temporarily underestimated inflows. As the Project does not store excess water from high flow events, downstream flows are temporarily increased, until the Project storage is reestablished and normal daily operation resumes.

¹ USGS 02156500, Broad River near Carlisle, SC; USGS 02160105, Tyger River near Delta, SC; and USGS 02160700, Enoree River at Whitmire, SC

If compliance is met using the downstream Alston gage, selecting a minimum flow requirement based upon prorated data would result in a requirement to release more than the actual inflow. As the Project is not a storage facility, this is not possible. Therefore, the minimum flow should be evaluated using the non-prorate sum of the three upstream gages, as opposed to prorated values. Habitat-duration for all flows is more accurately represented by prorated data, but during low flow periods it is more accurately represented by non-prorated data. Because the purpose of this analysis is to evaluate the hydrologic availability to meet minimum flows (which are all below the inflection point of 3,900 cfs), non-prorated flows were used to develop the habitat-duration curves.

Habitat-Duration Curves

Due to the extensive effort associated with developing and analysis for each target species/life-stages and guild at each study site, habitat-duration graphs were only created for key months and study sites of interest. The species/life-stages and guilds represented on each graph were:

- Smallmouth bass – spawning, adult, juvenile and fry;
- Redbreast sunfish – spawning and adult;
- American shad – spawning;
- Shallow – fast guild;
- Deep – fast guild; and
- Deep – slow guild.

The months of March, May and August were selected to represent the high flow, transitional flow (high to low), and low flow months, respectively. Study Sites 6, 7, 8 and 10 were evaluated. These are understood to be locations of best overall habitat in the reach, and therefore would be key locations for selecting a minimum flow. Two sets of seasonally varying minimum flow targets were proposed at the last TWC meeting, with the date ranges and values as follows:

TABLE 1 SEASONAL VALUES FOR TWO PROPOSED MINIMUM FLOW ALTERNATIVES

	Feb 15 – May 15 (Spring Spawning Flow)	May 16 – Jun 30, Dec 1 – Feb 14 (Transitional Flow)	Jul 1 – Nov 30 (Summer/Fall Low Flow)
Proposed Flow A	2,500	1,800	1,200
Proposed Flow B	2,000	1,300	700

RESULTS AND DISCUSSION

Habitat duration curves for each target species/life-stage and guild at each of the key study sites (i.e., Study Sites 6, 7, 8 and 10) are presented in **Attachment C**. Note that the y-axis (WUA) were all set at 500,000 for uniform comparison between sites and months. Due to the large magnitude of WUA provided for American shad during March and May at study sites 8 and 10 tends to compress other species and life-stage curves, and are thus excluded. Graphs including a y-axis illustrating American shad spawning data are provided at the end as a second set of attachments.

For some months at some study sites, the higher of the two proposed minimum flow value result in decreased WUA for some or all of the species and life-stages (e.g., Study Site 6 during August). Other graphs indicate an overall benefit more from the higher proposed minimum flow value (e.g., Study Site 6 during May spring spawning flow). For most of the study sites and months plotted, the slope of the habitat curves between the proposed minimum flow values is not very steep, and the overall change in WUA for each species, life-stage and guild does not greatly increase or decrease. During some months, higher flows may benefit a given species and life-stage at one location, but have the opposite effect at another (e.g., redbreast sunfish adults in August at Study Sites 6 and 7).

The available habitat for the proposed spring spawning flow values during March are very close, as are the flow exceedance percentages. While these vertical lines are very close, note that March is the highest flow month, and the minimum flows during that time of the year are proposed to start in mid-February and extend through mid-May. As indicated on the May graphs, the differential between the two vertical lines representing the proposed upper minimum flow values widens to 14 percent, with the higher flow unavailable 27 percent of the time. This effect is similar in February, albeit less significant, where the 2,500 cfs and 2,000 cfs flow exceedances differ by six percent.

The proposed transitional flow values are met over 90 percent of the time in May. However, the reduction in hydrologic availability by the end of June reduces the higher proposed transitional flow to just 73 percent. The proposed summer low flows have significant gaps in August, with one available over 90 percent of the time, and the other less than 75 percent.

TABLE 2 MONTHLY EXCEEDANCE PERCENTAGES FOR PROPOSED MIN Q VALUES

Min Q	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2,000	--	95%	100%	99%	87%	--	--	--	--	--	--	--
2,500	--	88%	98%	94%	73%	--	--	--	--	--	--	--
1,300	100%	100%	--	--	99%	88%	--	--	--	--	--	96%
1,800	95%	97%	--	--	91%	74%	--	--	--	--	--	90%
700	--	--	--	--	--	--	96%	90%	92%	98%	99%	--
1,200	--	--	--	--	--	--	80%	74%	79%	82%	89%	--

STUDY SITE WEIGHTING OF WUA

In addition to the Habitat Duration analysis, we performed a “Representative Reach” analysis, by weighting the WUA data from each study site by the relative amount (linear feet) of each applicable mesohabitat type. PHABSIM modeling results originally presented were in the standard WUA/1000 linear ft of stream; the mesohabitat mapping analysis quantified the total stream lengths for each of the mesohabitat classes within each of the study reaches. The mapping data allows scaling of the study reaches according to relative amounts of each habitat type. For this analysis, we only analyzed Reach 2 study sites because the study sites are all linked hydrologically; Reach 2 included the largest amount of river; and Reach 2 contained the critical study areas/transsects identified by the TWC at the last meeting.

Mesohabitat Calculation

We reviewed the mesohabitat data for each study site to identify the mesohabitats represented by the WUA results for each study site (Table 1). We then used ArcGIS to analyze the original mesohabitat mapping data to measure the total stream lengths for each mesohabitat type identified within Reach 2 (Table 2). Study sites 6, 7, and 8 were assessed separately from the Bookman Island complex due to the different type of habitat (main channel vs braided transect) and modeling. Stream lengths represented by sites 6 through 8 were measured for each mesohabitat identified from the beginning of Reach 2 to the beginning of the Bookman Island complex and summed to calculate a total length of riffle and glide habitat, which totaled 16,272 ft. The Bookman Island area encompassed all habitats for the entire stream length of 13,200 ft.

TABLE 1 STUDY SITE MESOHABITAT TYPES

STUDY SITE	TRANSECT ID	MESOHABITAT
6	6.2	Glide
	6.1	Riffle
7	7.2	Glide
	7.1	Riffle
8	8.2	Riffle
	8.1	Riffle

TABLE 2 MESOHABITAT PERCENTAGES BASED ON STREAM LENGTH

MESOHABITAT PERCENTAGES		
TYPE	SS 6, 7, 8	BOOKMAN
Glide	5.9%	1.1%
Riffle	14.3%	1.7%
Pool	40.2%	17.0%
Shoal	9.1%	48.4%
Run	30.4%	31.8%
TOTAL	100.0%	100.0%

Reach Weighting

The WUA results were then scaled (weighted) using the stream lengths identified from the mesohabitat analysis. WUA results for each species/guild for study sites 6, 7, and 8 were summed and multiplied by 16.27. WUA results for each species/guild for Bookman Island were multiplied by 13.20. The weighted WUA values for study sites 6-8 and Bookman Island were then summed to represent WUA for the entire Reach 2.

The results of this analysis are illustrated in Figures 1 and 2. Figure 1 displays Reach 2 total WUA curves by species up to 8,000 cfs. Figure 2 illustrates the same results up to 3,000 cfs to provide more detail in the area that the TWC has been considering for a minimum flow recommendation.

This analysis is helpful in looking at a combination of WUA by Species with a weighting factor to account for the amount of habitat covered in Reach 2. Tables of data used to develop the Figures are available for TWC review if requested.

NEXT STEPS

After the TWC has reviewed this information, we plan to schedule a meeting to review the data and answer any questions. Our hope is that we can select a series of minimum flows and time frames that can be put into the Settlement Agreement for the Parr Relicense Final Application.

FIGURE 1 TOTAL WEIGHTED REACH 2 WUA UP TO 8,000 CFS

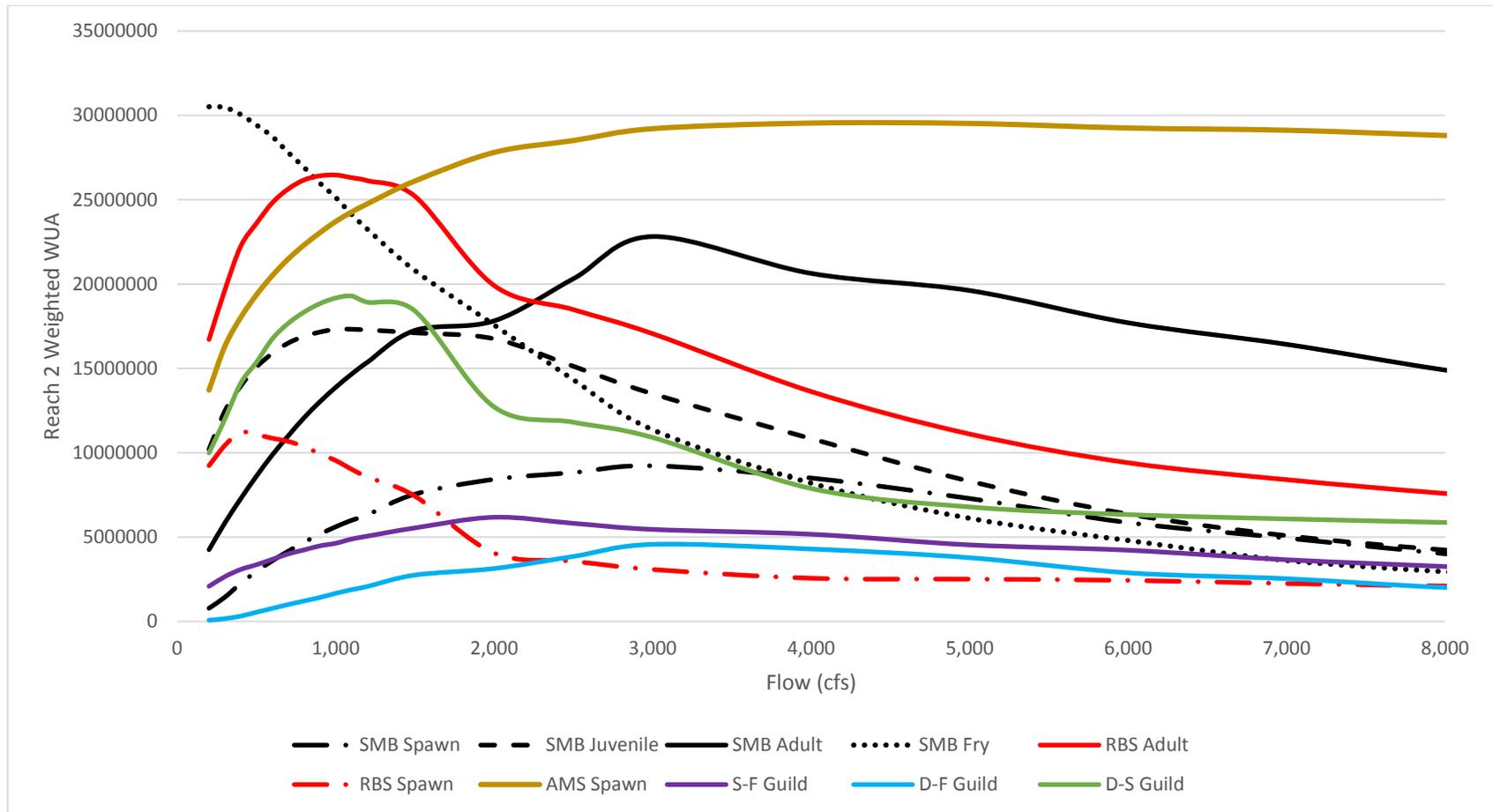
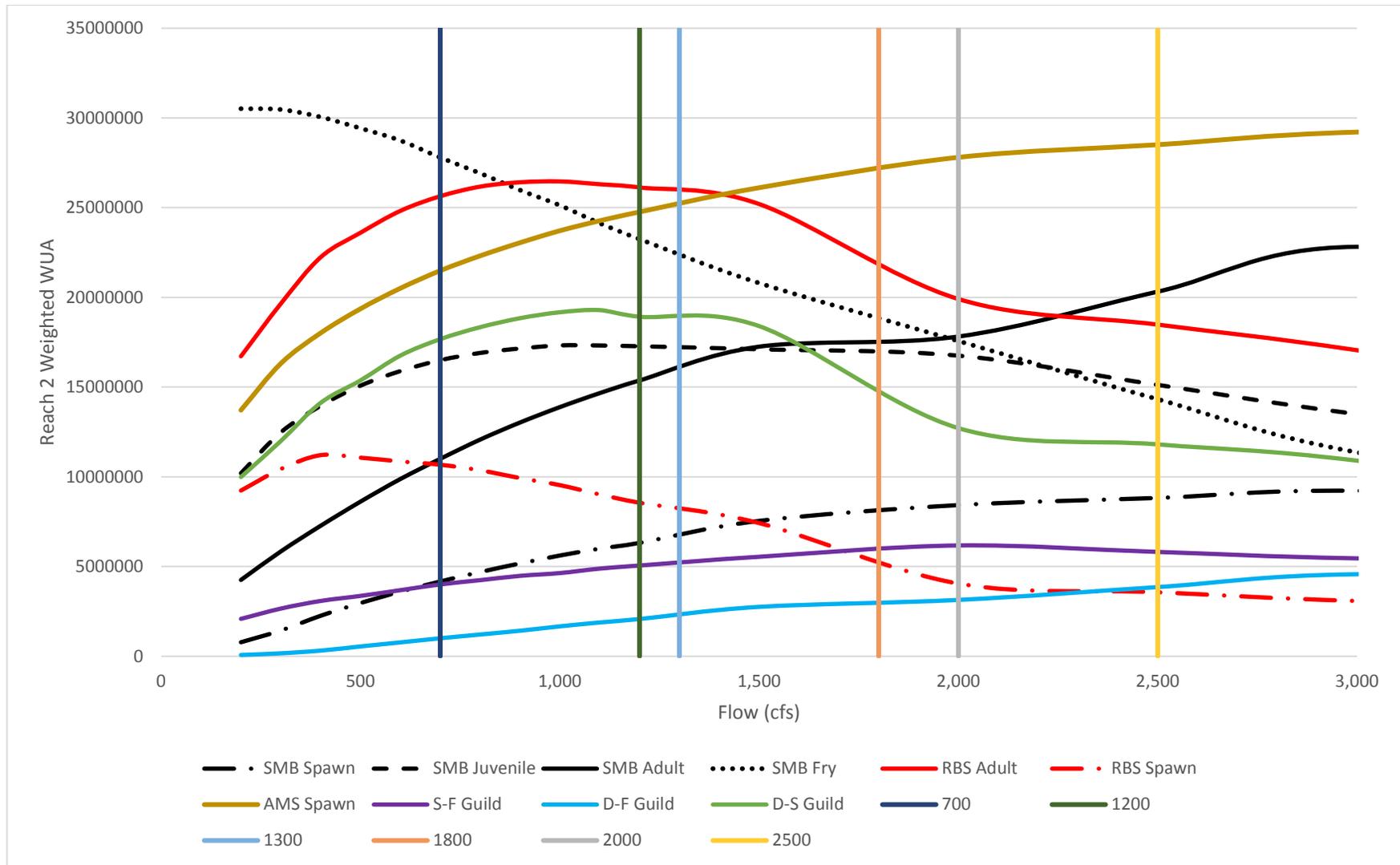


FIGURE 2 TOTAL WEIGHTED REACH 2 WUA UP TO 3,000 CFS



ATTACHMENT A

STUDY SITE 3 HABITAT SUITABILITY

Discharge	SMB spawning		SMB juvenile		SMB adult		SMB fry		RB adult		RB spawning		AS spawning		S-S guild		S-F guild		D-F guild		D-S guild	
200	22,010	10%	35,895	48%	3,245	3%	246,534	100%	44,190	43%	56,194	88%	120,632	41%	20,227	100%	66,201	64%	0	0%	6,155	17%
300	39,568	17%	53,023	71%	8,842	7%	247,519	100%	63,111	62%	64,009	100%	153,920	52%	14,301	71%	83,824	82%	0	0%	11,464	31%
350	49,956	22%	59,398	79%	12,657	10%	243,919	99%	70,590	69%	61,535	96%	167,976	57%	9,857	49%	91,012	89%	0	0%	14,970	41%
400	60,444	27%	63,598	85%	17,079	13%	241,241	97%	75,583	74%	54,781	86%	180,321	61%	15,779	78%	97,020	94%	0	0%	18,557	51%
500	84,153	37%	69,445	93%	27,450	22%	235,249	95%	84,730	83%	52,279	82%	202,960	69%	7,678	38%	102,671	100%	18	0%	26,424	72%
600	108,176	48%	71,675	96%	38,563	30%	220,223	89%	90,492	89%	52,231	82%	218,096	74%	7,989	39%	102,207	100%	1,084	0%	28,182	77%
750	144,211	63%	75,020	100%	55,233	43%	197,685	80%	99,135	97%	52,159	81%	240,800	82%	8,456	42%	101,510	99%	2,683	1%	30,820	84%
900	169,961	75%	74,625	99%	70,526	55%	177,690	72%	100,972	99%	49,417	77%	254,511	86%	6,481	32%	95,779	93%	9,107	4%	32,714	89%
1,000	187,128	82%	74,361	99%	80,722	63%	164,360	66%	102,196	100%	47,588	74%	263,652	90%	5,165	26%	91,959	90%	13,389	5%	33,976	93%
1,100	198,374	87%	72,351	96%	89,180	70%	153,828	62%	100,034	98%	46,805	73%	269,389	91%	5,037	25%	87,850	86%	21,793	9%	35,273	96%
1,200	209,621	92%	70,340	94%	97,638	77%	143,295	58%	97,872	96%	46,021	72%	275,126	93%	4,908	24%	83,741	82%	30,196	12%	36,570	100%
1,300	215,631	95%	67,729	90%	103,323	81%	135,051	55%	94,529	92%	44,706	70%	278,857	95%	4,721	23%	80,277	78%	41,700	17%	36,553	100%
1,400	221,641	97%	65,117	87%	109,007	85%	126,806	51%	91,187	89%	43,392	68%	282,587	96%	4,534	22%	76,813	75%	53,205	22%	36,537	100%
1,500	227,651	100%	62,505	83%	114,691	90%	118,562	48%	87,845	86%	42,077	66%	286,317	97%	4,346	21%	73,349	71%	64,709	26%	36,520	100%
1,600	226,903	100%	59,717	80%	116,507	91%	111,868	45%	84,541	83%	43,188	67%	287,860	98%	3,909	19%	70,025	68%	77,711	32%	34,663	95%
2,000	223,911	98%	48,562	65%	123,771	97%	85,089	34%	71,328	70%	47,632	74%	294,034	100%	2,162	11%	56,730	55%	129,719	53%	27,237	74%
2,250	218,971	96%	43,563	58%	127,623	100%	72,426	29%	67,802	66%	45,587	71%	294,550	100%	2,559	13%	49,660	48%	166,430	68%	23,277	64%
2,400	211,716	93%	40,901	55%	126,207	99%	66,497	27%	65,714	64%	44,409	69%	293,666	100%	2,384	12%	46,342	45%	179,569	73%	21,766	60%
2,600	206,879	91%	39,126	52%	125,263	98%	62,544	25%	64,322	63%	43,624	68%	293,076	99%	2,268	11%	44,130	43%	188,329	77%	20,759	57%
3,000	182,696	80%	30,254	40%	120,543	94%	42,781	17%	57,363	56%	39,697	62%	290,129	98%	1,686	8%	33,070	32%	232,128	95%	15,725	43%
3,500	157,697	69%	23,741	32%	111,904	88%	32,844	13%	52,545	51%	37,521	59%	284,590	97%	1,563	8%	26,136	25%	238,302	97%	14,404	39%
4,000	132,698	58%	17,228	23%	103,264	81%	22,907	9%	47,726	47%	35,346	55%	279,051	95%	1,440	7%	19,202	19%	244,475	100%	13,084	36%
4,500	114,045	50%	13,765	18%	93,499	73%	18,286	7%	45,068	44%	32,764	51%	272,609	93%	1,462	7%	14,954	15%	220,313	90%	11,167	31%
5,000	95,391	42%	10,302	14%	83,733	66%	13,665	6%	42,410	41%	30,183	47%	266,167	90%	1,483	7%	10,706	10%	196,150	80%	9,249	25%
6,000	73,583	32%	7,408	10%	66,396	52%	9,506	4%	40,400	40%	25,129	39%	250,501	85%	1,184	6%	5,364	5%	128,195	52%	6,275	17%
7,000	53,598	24%	6,030	8%	48,860	38%	7,856	3%	38,010	37%	20,758	32%	238,542	81%	721	4%	2,515	2%	69,829	29%	5,693	16%
100%	227,651		75,020		127,623		247,519		102,196		64,009		294,550		20,227		102,671		244,475		36,570	
75%	170,738		56,265		95,717		185,639		76,647		48,007		220,913		15,171		77,004		183,356		27,428	

STUDY SITE 5 HABITAT SUITABILITY

Discharge	SMB spawn		SMB juvenile		SMB adult		SMB fry		RB adult		RB spawning		AS spawning		S-S guild		S-F guild		D-F guild		D-S guild	
200	28,083	54%	53,848	100%	56,543	63%	86,800	100%	136,977	100%	52,055	100%	68,051	85%	7,018	100%	6,342	96%	7,119	16%	136,092	100%
300	34,276	66%	49,561	92%	64,142	72%	67,987	78%	132,491	97%	40,997	79%	71,047	89%	6,160	88%	6,572	100%	17,363	40%	131,583	97%
400	36,049	69%	38,556	72%	66,756	75%	45,721	53%	133,190	97%	39,197	75%	69,047	87%	6,514	93%	5,081	77%	29,183	67%	129,485	95%
500	38,478	74%	39,271	73%	68,494	77%	42,613	49%	124,819	91%	36,520	70%	72,001	90%	6,032	86%	6,393	97%	32,730	75%	116,099	85%
600	43,284	83%	36,677	68%	76,693	86%	37,280	43%	127,556	93%	32,985	63%	75,054	94%	4,695	67%	5,556	85%	37,055	85%	119,861	88%
750	50,493	97%	32,787	61%	88,993	99%	29,282	34%	131,661	96%	27,682	53%	79,632	100%	2,689	38%	4,302	65%	43,541	100%	125,505	92%
900	51,580	99%	28,062	52%	89,268	100%	21,450	25%	121,716	89%	24,781	48%	78,559	99%	2,743	39%	3,989	61%	42,314	97%	112,328	83%
1,000	52,305	100%	24,913	46%	89,452	100%	16,229	19%	115,085	84%	22,847	44%	77,843	98%	2,779	40%	3,780	58%	41,495	95%	103,544	76%
1,150	50,107	96%	23,438	44%	89,140	100%	13,336	15%	106,593	78%	21,608	42%	76,174	96%	2,590	37%	3,268	50%	36,121	83%	95,210	70%
1,350	47,177	90%	21,472	40%	88,725	99%	9,478	11%	95,271	70%	19,956	38%	73,949	93%	2,338	33%	2,586	39%	28,956	67%	84,098	62%
1,500	44,979	86%	19,998	37%	88,413	99%	6,584	8%	86,780	63%	18,717	36%	72,279	91%	2,149	31%	2,075	32%	23,583	54%	75,763	56%
1,650	41,695	80%	18,779	35%	86,552	97%	6,532	8%	81,081	59%	19,116	37%	73,316	92%	2,150	31%	2,219	34%	24,783	57%	68,674	50%
1,850	37,318	71%	17,155	32%	84,070	94%	6,462	7%	73,483	54%	19,647	38%	74,697	94%	2,152	31%	2,411	37%	26,384	61%	59,221	44%
2,000	34,035	65%	15,936	30%	82,209	92%	6,410	7%	67,785	49%	20,045	39%	75,734	95%	2,153	31%	2,555	39%	27,585	63%	52,131	38%
2,500	17,113	33%	14,441	27%	80,148	90%	3,840	4%	54,643	40%	11,662	22%	61,197	77%	4,216	60%	91	1%	1,333	3%	52,594	39%
3,000	10,080	19%	12,385	23%	74,277	83%	3,483	4%	47,300	35%	14,517	28%	57,062	72%	4,976	71%	0	0%	0	0%	50,984	37%
3,500	6,759	13%	10,156	19%	68,334	76%	3,235	4%	42,455	31%	14,154	27%	53,573	67%	4,421	63%	0	0%	0	0%	50,415	37%
4,000	4,938	9%	8,315	15%	62,530	70%	3,046	4%	39,279	29%	13,929	27%	51,134	64%	3,144	45%	0	0%	0	0%	49,753	37%
4,900	2,439	5%	5,211	10%	56,984	64%	2,667	3%	35,760	26%	14,309	27%	47,393	60%	2,098	30%	0	0%	0	0%	50,663	37%
5,000	3,049	6%	5,526	10%	53,526	60%	2,802	3%	35,985	26%	14,020	27%	48,334	61%	1,890	27%	0	0%	0	0%	48,825	36%
6,000	2,213	4%	4,004	7%	42,668	48%	2,604	3%	34,497	25%	14,561	28%	47,419	60%	2,263	32%	0	0%	0	0%	50,155	37%
7,500	1,615	3%	2,883	5%	34,807	39%	2,755	3%	33,855	25%	15,873	30%	47,275	59%	2,690	38%	0	0%	0	0%	50,047	37%
100%	52,305		53,848		89,452		86,800		136,977		52,055		79,632		7,018		6,572		43,541		136,092	
75%	39,229		40,386		67,089		65,100		102,733		39,041		59,724		5,264		4,929		32,656		102,069	

STUDY SITE 6 HABITAT SUITABILITY

Discharge	SMB spawning		SMB juvenile		SMB adult		SMB fry		RB adult		RB spawning		AS spawning		S-S guild		S-F guild		D-F guild		D-S guild	
200	26,585	12%	84,857	49%	24,118	8%	285,437	89%	114,115	34%	113,475	62%	131,577	43%	119,617	100%	27,340	86%	0	0%	49,474	19%
300	42,637	20%	110,798	65%	45,260	15%	306,222	96%	160,968	47%	133,234	73%	165,137	53%	106,635	89%	30,427	96%	0	0%	79,497	30%
400	61,906	28%	137,727	80%	76,247	26%	319,394	100%	230,410	68%	181,637	100%	198,199	64%	77,266	65%	26,471	84%	2,864	2%	136,779	52%
500	72,730	33%	146,876	86%	89,526	31%	305,488	96%	236,882	70%	169,259	93%	213,162	69%	57,169	48%	31,181	99%	5,417	3%	128,920	49%
600	85,471	39%	156,886	91%	112,313	38%	294,903	92%	265,947	78%	167,381	92%	230,434	74%	44,331	37%	31,617	100%	10,954	7%	152,720	58%
700	98,310	45%	163,508	95%	135,068	46%	281,734	88%	290,581	85%	179,292	99%	244,294	79%	37,514	31%	31,491	100%	16,941	10%	176,107	67%
800	111,494	51%	168,086	98%	157,142	54%	270,554	85%	310,409	91%	178,462	98%	255,182	82%	28,297	24%	30,600	97%	23,183	14%	197,806	75%
900	123,595	57%	170,807	100%	176,480	60%	261,320	82%	323,790	95%	169,242	93%	263,953	85%	22,044	18%	29,573	94%	30,634	19%	209,830	79%
1,000	134,345	62%	171,663	100%	194,370	66%	252,831	79%	332,639	98%	162,699	90%	271,192	88%	16,105	13%	28,176	89%	39,037	24%	226,852	86%
1,100	143,613	66%	171,112	100%	210,820	72%	244,155	76%	337,882	99%	155,421	86%	276,775	89%	13,912	12%	26,919	85%	47,747	29%	244,469	92%
1,200	151,615	70%	168,556	98%	225,268	77%	235,503	74%	340,255	100%	146,664	81%	281,595	91%	13,618	11%	25,488	81%	54,830	34%	253,984	96%
1,300	164,134	76%	173,091	101%	231,444	79%	226,229	71%	331,496	97%	145,608	80%	294,630	95%	11,944	10%	27,702	88%	65,221	40%	231,018	87%
1,500	195,308	90%	171,373	100%	268,572	92%	205,111	64%	337,243	99%	125,677	69%	301,792	97%	8,596	7%	24,979	79%	86,147	53%	264,661	100%
2,000	202,531	93%	150,005	87%	268,770	92%	157,825	49%	258,831	76%	84,461	47%	309,582	100%	4,538	4%	27,685	88%	101,722	62%	158,617	60%
2,200	209,216	96%	151,132	88%	287,947	98%	152,866	48%	321,302	94%	105,948	58%	310,388	100%	3,818	3%	21,888	69%	112,206	69%	224,504	85%
2,400	213,372	98%	141,837	83%	292,280	100%	137,972	43%	309,712	91%	96,009	53%	308,210	100%	3,099	3%	20,368	64%	119,576	73%	214,391	81%
3,000	217,358	100%	97,067	57%	293,225	100%	87,967	28%	232,410	68%	48,187	27%	296,949	96%	942	1%	14,045	44%	163,477	100%	145,056	55%
4,000	200,810	92%	54,266	32%	275,050	94%	49,201	15%	182,416	54%	32,379	18%	280,009	90%	204	0%	8,629	27%	146,235	89%	99,247	37%
4,900	175,703	81%	34,291	20%	266,943	91%	22,600	7%	165,653	49%	20,187	11%	251,537	81%	0	0%	3,575	11%	90,326	55%	84,097	32%
5,000	174,226	80%	33,445	19%	255,326	87%	26,829	8%	147,997	43%	21,491	12%	262,462	85%	0	0%	4,891	15%	109,750	67%	71,327	27%
6,000	146,633	67%	25,185	15%	232,790	79%	14,774	5%	122,888	36%	14,915	8%	244,481	79%	0	0%	2,732	9%	72,430	44%	43,378	16%
7,000	121,113	56%	20,946	12%	212,332	72%	8,898	3%	103,098	30%	10,256	6%	227,281	73%	0	0%	1,687	5%	40,786	25%	32,282	12%
8,000	96,921	45%	18,087	11%	192,959	66%	6,637	2%	85,223	25%	7,271	4%	211,218	68%	0	0%	1,055	3%	18,319	11%	29,607	11%
9,000	74,082	34%	15,851	9%	174,016	59%	5,770	2%	68,824	20%	5,035	3%	197,430	64%	0	0%	836	3%	7,838	5%	26,329	10%
10,000	55,106	25%	14,153	8%	157,095	54%	5,083	2%	55,986	16%	3,257	2%	186,297	60%	0	0%	883	3%	3,321	2%	20,375	8%
15,000	20,244	9%	7,050	4%	100,384	34%	2,152	1%	22,933	7%	1,460	1%	158,756	51%	0	0%	863	3%	7,059	4%	7,834	3%
100%	217,358		171,663		293,225		319,394		340,255		181,637		309,582		119,617		31,617		163,477		264,661	
75%	163,019		128,747		219,919		239,546		255,191		136,228		232,186		89,713		23,713		130,782		198,495	

STUDY SITE 7 HABITAT SUITABILITY

Discharge	SMB spawning		SMB juvenile		SMB adult		SMB fry		RB adult		RB spawning		AS spawning		S-S guild		S-F guild		D-F guild		D-S guild	
200	4,778	7%	185,059	57%	106,819	41%	341,484	100%	261,525	79%	79,634	98%	190,039	51%	122,349	100%	28,370	18%	2,170	5%	190,546	74%
300	12,942	18%	227,495	70%	131,731	50%	337,537	99%	290,739	87%	81,168	100%	217,716	58%	79,969	65%	41,312	27%	4,747	11%	208,321	81%
400	22,121	31%	257,381	80%	154,708	59%	331,938	97%	310,815	93%	75,471	93%	238,470	64%	64,989	53%	54,353	35%	7,648	18%	222,996	86%
500	34,302	49%	284,854	88%	181,096	69%	340,459	100%	329,123	99%	79,053	97%	257,465	69%	31,947	26%	54,073	35%	15,931	38%	247,404	96%
600	41,500	59%	301,292	93%	195,795	75%	333,109	98%	332,707	100%	75,154	93%	270,953	73%	18,056	15%	65,422	42%	20,536	49%	258,756	100%
700	47,678	68%	312,857	97%	206,639	79%	319,872	94%	330,990	99%	69,883	86%	283,123	76%	13,759	11%	76,079	49%	24,832	60%	251,728	97%
800	51,975	74%	319,568	99%	216,098	83%	306,876	90%	323,038	97%	59,448	73%	293,809	79%	10,047	8%	86,486	56%	27,215	65%	240,446	93%
900	55,638	79%	322,798	100%	225,065	86%	293,088	86%	309,500	93%	48,517	60%	303,336	81%	8,054	7%	96,392	62%	29,135	70%	236,609	91%
1,000	58,836	84%	321,939	100%	233,257	89%	275,941	81%	293,562	88%	39,499	49%	311,927	84%	7,023	6%	106,071	69%	31,049	75%	223,683	86%
1,100	61,701	88%	319,118	99%	240,484	92%	255,893	75%	277,494	83%	32,494	40%	319,565	86%	5,963	5%	115,004	75%	32,678	79%	202,451	78%
1,200	64,396	92%	314,315	97%	246,780	94%	234,437	69%	263,507	79%	28,756	35%	326,457	87%	5,119	4%	123,672	80%	33,791	81%	171,054	66%
1,300	67,643	96%	315,288	98%	254,726	97%	230,913	68%	263,636	79%	33,511	41%	332,994	89%	4,413	4%	126,117	82%	35,087	84%	179,006	69%
1,500	70,354	100%	296,828	92%	261,265	100%	183,945	54%	223,513	67%	22,186	27%	341,146	91%	3,001	2%	143,933	93%	35,123	84%	109,837	42%
2,000	68,846	98%	246,315	76%	261,421	100%	132,089	39%	155,888	47%	19,335	24%	351,931	94%	1,539	1%	154,310	100%	36,462	88%	72,651	28%
2,200	69,055	98%	226,429	70%	272,572	104%	116,519	34%	144,594	43%	15,107	19%	356,989	96%	1,262	1%	143,123	93%	39,370	95%	68,212	26%
2,400	66,324	94%	204,106	63%	270,189	103%	97,214	28%	122,944	37%	13,673	17%	358,686	96%	985	1%	140,114	91%	39,393	95%	49,752	19%
3,000	56,303	80%	153,774	48%	259,133	99%	73,814	22%	102,887	31%	20,563	25%	365,229	98%	154	0%	106,998	69%	41,599	100%	54,884	21%
5,000	19,731	28%	79,456	25%	185,911	71%	28,076	8%	69,454	21%	19,786	24%	373,297	100%	0	0%	35,689	23%	30,924	74%	31,185	12%
6,000	11,261	16%	65,346	20%	157,747	60%	21,965	6%	62,599	19%	18,668	23%	373,525	100%	0	0%	21,625	14%	23,526	57%	31,344	12%
7,000	7,733	11%	54,310	17%	116,788	45%	17,849	5%	56,946	17%	18,123	22%	373,111	100%	0	0%	13,469	9%	13,985	34%	31,344	12%
8,000	6,028	9%	46,404	14%	92,940	36%	14,344	4%	54,355	16%	16,964	21%	371,234	99%	0	0%	9,784	6%	9,834	24%	27,074	10%
9,000	4,534	6%	40,600	13%	81,702	31%	11,438	3%	53,145	16%	15,861	20%	368,321	99%	0	0%	7,763	5%	9,207	22%	21,086	8%
10,000	3,312	5%	36,778	11%	70,898	27%	9,418	3%	51,921	16%	14,828	18%	364,584	98%	0	0%	6,388	4%	9,782	24%	20,862	8%
100%	70,354		322,798		261,421		341,484		332,707		81,168		373,525		122,349		154,310		41,599		258,756	
75%	52,765		242,098		196,066		256,113		249,530		60,876		280,144		91,762		115,733		31,199		194,067	

STUDY SITE 8 HABITAT SUITABILITY

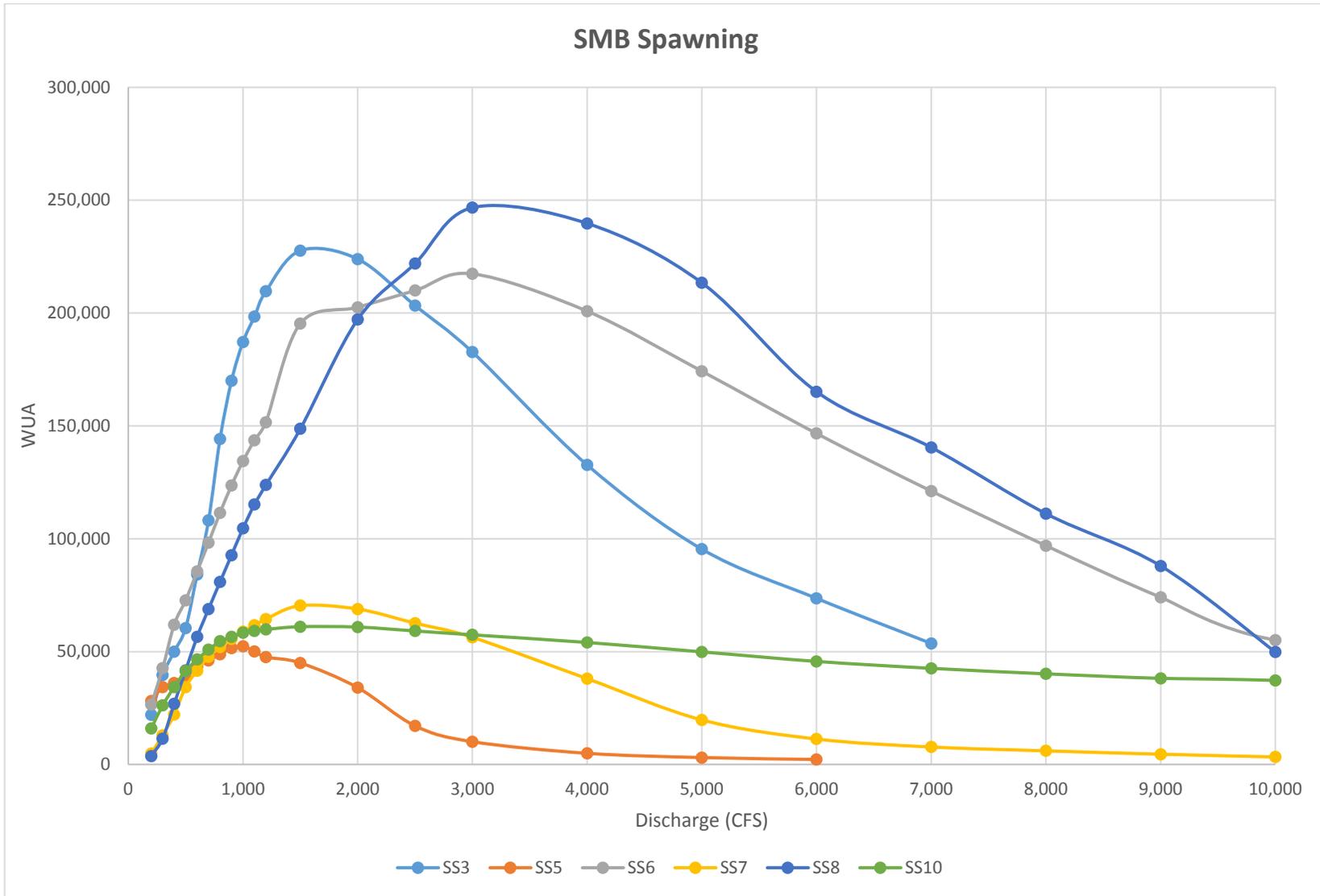
Discharge	SMB spawning		SMB juvenile		SMB adult		SMB fry		RB adult		RB spawning		AS spawning		S-S guild		S-F guild		D-F guild		D-S guild	
200	3,720	2%	195,659	45%	46,839	10%	721,773	98%	356,086	57%	270,665	82%	314,815	40%	414,242	100%	24,760	11%	166	0%	149,560	35%
300	11,454	5%	245,974	57%	75,439	17%	733,279	100%	429,842	69%	324,069	98%	380,288	48%	379,840	92%	32,086	15%	840	1%	192,595	45%
400	26,831	11%	266,697	62%	91,273	20%	727,425	99%	482,042	77%	329,175	99%	407,905	52%	220,601	53%	41,293	19%	1,875	2%	232,315	54%
500	41,634	17%	290,381	67%	115,972	26%	718,183	98%	528,262	84%	331,371	100%	437,285	55%	175,901	42%	48,963	23%	3,065	3%	275,507	65%
600	56,489	23%	308,680	71%	141,045	31%	713,354	97%	561,905	90%	324,021	98%	461,329	58%	147,922	36%	55,300	25%	4,562	5%	314,469	74%
700	68,856	28%	323,788	75%	162,671	36%	702,619	96%	584,088	93%	307,575	93%	481,975	61%	123,687	30%	64,177	30%	5,953	7%	345,334	81%
800	80,862	33%	335,029	77%	184,653	41%	688,045	94%	601,579	96%	299,726	90%	499,479	63%	107,299	26%	70,081	32%	7,639	8%	367,988	86%
900	92,719	38%	343,683	79%	203,627	45%	667,906	91%	615,229	98%	293,642	89%	515,893	65%	95,238	23%	77,859	36%	9,176	10%	384,954	90%
1,000	104,570	42%	350,523	81%	221,233	49%	650,628	89%	622,795	99%	283,118	85%	530,301	67%	84,249	20%	83,585	39%	11,013	12%	398,347	93%
1,100	115,183	47%	357,569	83%	234,509	52%	636,083	87%	626,048	100%	266,684	80%	543,988	69%	74,911	18%	90,937	42%	12,743	14%	408,175	96%
1,200	123,807	50%	362,965	84%	248,852	55%	623,217	85%	627,310	100%	251,980	76%	555,727	70%	67,242	16%	96,478	44%	14,539	16%	407,006	95%
1,300	135,931	55%	381,990	88%	254,726	56%	617,335	84%	610,259	97%	229,004	69%	575,565	73%	62,106	15%	103,656	48%	14,509	16%	388,249	91%
1,500	148,669	60%	370,903	86%	284,722	63%	584,023	80%	615,528	98%	212,865	64%	585,840	74%	51,834	13%	113,087	52%	19,458	22%	426,396	100%
1,750	172,905	70%	401,724	93%	288,049	63%	553,105	75%	530,790	85%	134,574	41%	618,084	78%	26,971	7%	130,762	60%	20,089	22%	323,960	76%
2,000	197,141	80%	432,546	100%	291,377	64%	522,187	71%	446,052	71%	56,283	17%	650,328	82%	2,109	1%	148,437	68%	20,719	23%	221,524	52%
2,200	206,603	84%	418,891	97%	272,572	60%	476,477	65%	477,693	76%	88,042	27%	667,309	84%	1,747	0%	150,509	69%	28,621	32%	256,493	60%
2,400	217,057	88%	418,704	97%	270,189	59%	445,859	61%	441,153	70%	65,300	20%	680,423	86%	1,386	0%	159,173	73%	31,796	35%	219,901	52%
2,500	221,910	90%	420,686	97%	361,574	80%	437,908	60%	408,119	65%	50,305	15%	682,629	86%	1,205	0%	163,054	75%	31,787	35%	183,913	43%
3,000	246,679	100%	408,827	95%	431,772	95%	353,629	48%	370,186	59%	44,326	13%	714,931	90%	301	0%	177,672	82%	42,856	48%	146,301	34%
3,500	243,189	99%	380,938	88%	443,135	97%	298,212	41%	308,111	49%	41,869	13%	728,038	92%	371	0%	193,536	89%	49,060	55%	85,503	20%
4,000	239,700	97%	353,049	82%	454,498	100%	242,795	33%	246,036	39%	39,412	12%	741,146	94%	441	0%	209,400	96%	55,265	61%	24,704	6%
4,500	226,543	92%	314,586	73%	449,830	99%	210,318	29%	203,154	32%	48,211	15%	747,432	94%	354	0%	212,696	98%	64,126	71%	12,632	3%
5,000	213,386	87%	276,123	64%	445,163	98%	177,842	24%	160,272	26%	57,011	17%	753,718	95%	267	0%	215,992	100%	72,986	81%	561	0%
6,000	165,147	67%	195,876	45%	380,246	84%	130,922	18%	101,113	16%	65,215	20%	758,374	96%	105	0%	217,047	100%	67,462	75%	0	0%
7,180	140,433	57%	146,134	34%	366,469	81%	80,343	11%	83,555	13%	64,896	20%	773,326	98%	0	0%	194,347	90%	89,994	100%	0	0%
8,180	111,113	45%	114,875	27%	320,858	71%	53,984	7%	70,642	11%	63,805	19%	777,900	98%	0	0%	176,258	81%	86,345	96%	0	0%
9,170	87,961	36%	93,164	22%	281,520	62%	34,044	5%	63,590	10%	63,553	19%	781,042	99%	0	0%	153,515	71%	81,857	91%	0	0%
10,840	49,805	20%	60,943	14%	233,230	51%	14,076	2%	60,365	10%	63,484	19%	791,919	100%	0	0%	68,001	31%	73,303	81%	0	0%
100%	246,679		432,546		454,498		733,279		627,310		331,371		791,919		414,242		217,047		89,994		426,396	
75%	185,009		324,409		340,873		549,960		470,482		248,528		593,939		310,681		162,785		67,496		319,797	

STUDY SITE 10 HABITAT SUITABILITY

Discharge	SMB spawning		SMB juvenile		SMB adult		SMB fry		RB adult		RB spawning		AS spawning		S-S guild		S-F guild		D-F guild		D-S guild	
200	15,928	26%	199,145	73%	102,985	20%	649,442	100%	364,539	78%	128,007	100%	254,591	49%	161,819	100%	58,679	64%	2,612	6%	276,504	68%
300	26,186	43%	225,022	83%	131,339	25%	611,007	94%	401,820	86%	126,720	99%	295,234	56%	134,449	83%	73,244	80%	5,633	13%	316,376	78%
400	34,282	56%	241,384	89%	153,838	30%	577,108	89%	423,349	91%	126,515	99%	323,861	62%	112,886	70%	82,985	91%	8,648	21%	340,069	83%
500	41,427	68%	252,537	93%	176,506	34%	547,736	84%	439,415	94%	123,901	97%	348,047	66%	99,508	61%	89,424	98%	11,441	27%	361,310	89%
600	46,541	76%	258,908	95%	194,749	38%	523,940	81%	450,035	97%	124,147	97%	366,965	70%	90,537	56%	91,205	100%	14,193	34%	374,690	92%
700	50,821	83%	263,908	97%	211,866	41%	498,166	77%	456,214	98%	122,416	96%	383,823	73%	82,987	51%	91,627	100%	17,128	41%	385,859	95%
800	54,551	89%	266,671	98%	226,999	44%	479,577	74%	460,611	99%	122,401	96%	398,192	76%	76,764	47%	90,558	99%	20,359	48%	395,625	97%
900	56,569	93%	267,506	98%	240,853	47%	461,675	71%	462,315	99%	122,196	95%	410,855	78%	73,243	45%	88,219	96%	22,786	54%	402,553	99%
1,000	58,310	96%	272,046	100%	252,029	49%	450,274	69%	465,506	100%	124,383	97%	424,207	81%	72,492	45%	82,685	90%	26,305	63%	406,112	100%
1,100	59,200	97%	267,211	98%	265,624	52%	427,936	66%	462,794	99%	122,957	96%	433,210	83%	69,395	43%	83,046	91%	27,813	66%	407,510	100%
1,200	59,811	98%	266,324	98%	275,994	54%	413,859	64%	462,037	99%	121,360	95%	441,486	84%	64,222	40%	80,362	88%	29,999	71%	407,904	100%
1,300	58,061	95%	267,766	98%	300,794	58%	408,723	63%	456,080	98%	118,241	92%	443,746	85%	61,746	38%	76,294	83%	31,908	76%	400,966	98%
1,500	61,016	100%	261,923	96%	303,244	59%	376,252	58%	459,447	99%	117,753	92%	463,727	88%	56,794	35%	72,480	79%	35,081	84%	406,762	100%
1,750	60,939	100%	254,760	94%	320,287	62%	353,185	54%	453,329	97%	113,632	89%	476,669	91%	52,762	33%	66,538	73%	38,541	92%	405,882	100%
2,000	60,862	100%	247,598	91%	337,330	65%	330,119	51%	447,210	96%	109,511	86%	489,611	93%	48,730	30%	60,597	66%	42,000	100%	405,001	99%
2,200	64,817	106%	247,375	91%	383,636	74%	308,161	47%	455,121	98%	106,837	83%	504,908	96%	46,407	29%	64,333	70%	40,202	96%	418,976	103%
2,400	64,922	106%	239,629	88%	394,890	77%	292,325	45%	451,911	97%	104,092	81%	512,815	98%	44,084	27%	61,298	67%	40,607	97%	419,468	103%
2,500	59,135	97%	228,452	84%	426,528	83%	298,556	46%	434,926	93%	101,818	80%	502,668	96%	42,923	27%	52,835	58%	41,335	98%	402,054	99%
3,000	57,409	94%	209,306	77%	515,726	100%	266,992	41%	422,641	91%	94,124	74%	515,726	98%	37,115	23%	45,073	49%	40,670	97%	399,108	98%
3,500	55,722	91%	192,263	71%	452,623	88%	246,280	38%	410,404	88%	87,456	68%	520,046	99%	34,156	21%	40,010	44%	36,471	87%	395,051	97%
4,000	54,035	89%	175,220	64%	389,520	76%	225,568	35%	398,166	86%	80,787	63%	524,367	100%	31,196	19%	34,947	38%	32,272	77%	390,995	96%
4,500	51,951	85%	162,609	60%	391,503	76%	211,806	33%	387,110	83%	74,935	59%	524,136	100%	28,958	18%	31,245	34%	27,596	66%	389,029	95%
5,000	49,866	82%	149,997	55%	393,487	76%	198,045	30%	376,055	81%	69,083	54%	523,905	100%	26,720	17%	27,544	30%	22,921	55%	387,064	95%
6,000	45,643	75%	129,004	47%	391,164	76%	176,282	27%	359,215	77%	62,778	49%	519,506	99%	22,182	14%	22,432	24%	16,984	40%	387,711	95%
7,000	42,583	70%	112,357	41%	387,016	75%	157,062	24%	336,321	72%	55,331	43%	512,876	98%	20,562	13%	18,775	20%	13,608	32%	382,017	94%
8,000	40,152	66%	99,624	37%	381,099	74%	142,052	22%	315,493	68%	50,430	39%	505,625	96%	18,433	11%	16,008	17%	11,391	27%	374,653	92%
9,000	38,147	63%	89,761	33%	372,981	72%	130,865	20%	296,073	64%	45,753	36%	498,147	95%	15,818	10%	14,138	15%	10,965	26%	367,839	90%
10,000	37,224	61%	82,577	30%	364,316	71%	119,961	18%	276,451	59%	43,285	34%	490,768	94%	16,374	10%	12,723	14%	11,698	28%	365,756	90%
15,000	28,938	47%	58,283	21%	326,924	63%	87,254	13%	205,152	44%	35,439	28%	460,335	88%	9,615	6%	6,631	7%	16,741	40%	300,232	74%
20,000	26,610	44%	43,863	16%	286,761	56%	67,153	10%	152,602	33%	27,737	22%	438,390	84%	7,585	5%	5,804	6%	19,210	46%	242,391	59%
100%	61,016	100%	272,046	100%	515,726	100%	649,442	100%	465,506	100%	128,007	100%	524,367	100%	161,819	100%	91,627	100%	42,000	100%	407,904	100%
75%	45,762		204,035		386,795		487,082		349,129		96,006		393,275		121,364		68,720		31,500		305,928	

ATTACHMENT B

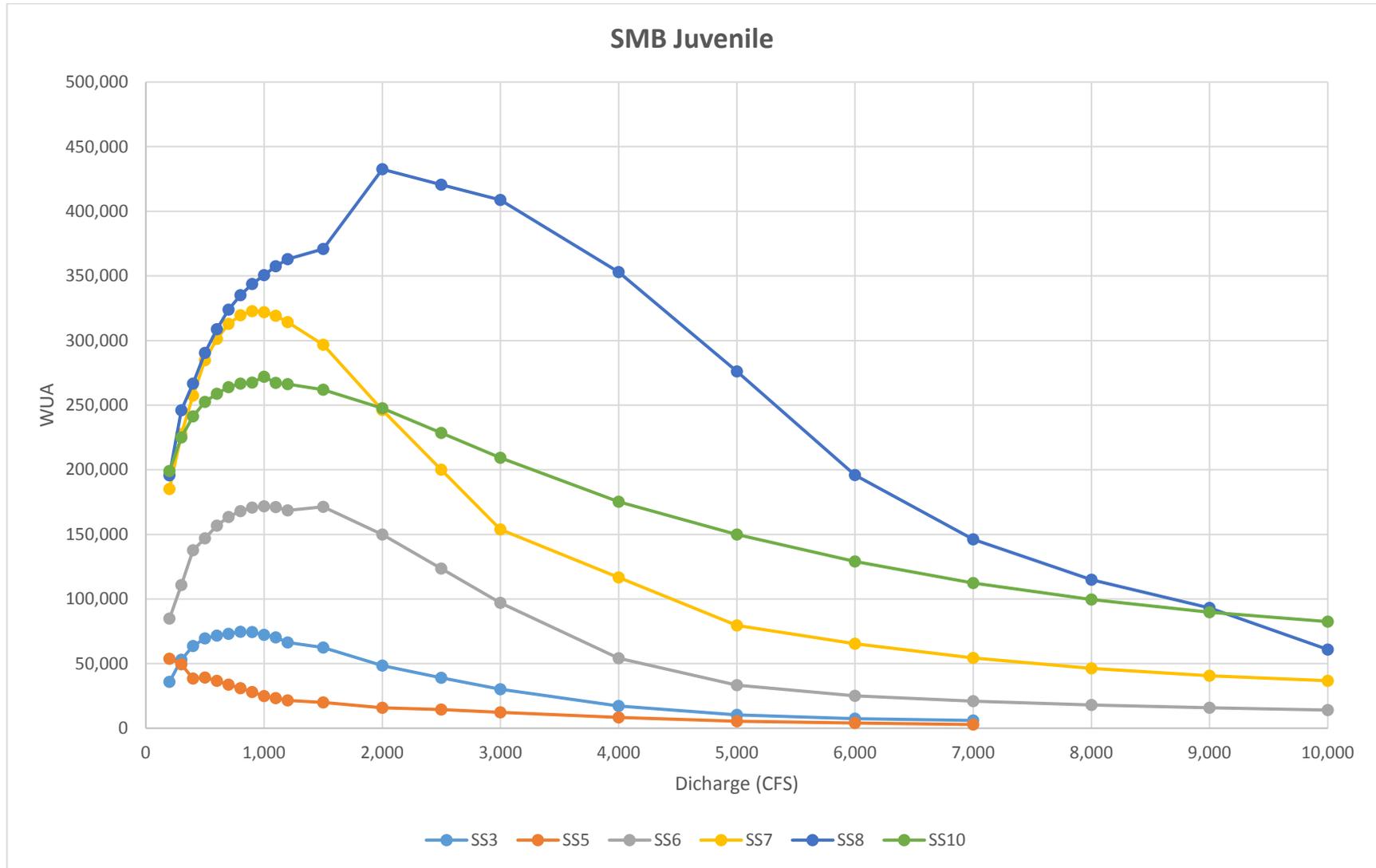
SMB SPAWNING



SMB SPAWNING

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	22,010	10%	28,083	54%	26,585	12%	4,778	7%	3,720	2%	15,928	26%
300	39,568	17%	34,276	66%	42,637	20%	12,942	18%	11,454	5%	26,186	43%
400	49,956	22%	36,049	69%	61,906	28%	22,121	31%	26,831	11%	34,282	56%
500	60,444	27%	38,478	74%	72,730	33%	34,302	49%	41,634	17%	41,427	68%
600	84,153	37%	43,284	83%	85,471	39%	41,500	59%	56,489	23%	46,541	76%
700	108,176	48%	46049.39	88%	98,310	45%	47,678	68%	68,856	28%	50,821	83%
800	144,211	63%	48814.84	93%	111,494	51%	51,975	74%	80,862	33%	54,551	89%
900	169,961	75%	51,580	99%	123,595	57%	55,638	79%	92,719	38%	56,569	93%
1,000	187,128	82%	52,305	100%	134,345	62%	58,836	84%	104,570	42%	58,310	96%
1,100	198,374	87%	50,107	96%	143,613	66%	61,701	88%	115,183	47%	59,200	97%
1,200	209,621	92%	47,543	91%	151,615	70%	64,396	92%	123,807	50%	59,811	98%
1,500	227,651	100%	44,979	86%	195,308	90%	70,354	100%	148,669	60%	61,016	100%
2,000	223,911	98%	34,035	65%	202,531	93%	68,846	98%	197,141	80%	60,862	100%
2,500	203,304	89%	17,113	33%	209,945	97%	62,575	89%	221,910	90%	59,135	97%
3,000	182,696	80%	10,080	19%	217,358	100%	56,303	80%	246,679	100%	57,409	94%
4,000	132,698	58%	4,938	9%	200,810	92%	38,017	54%	239,700	97%	54,035	89%
5,000	95,391	42%	3,049	6%	174,226	80%	19,731	28%	213,386	87%	49,866	82%
6,000	73,583	32%	2,213	4%	146,633	67%	11,261	16%	165,147	67%	45,643	75%
7,000	53,598	24%			121,113	56%	7,733	11%	140,433	57%	42,583	70%
8,000					96,921	45%	6,028	9%	111,113	45%	40,152	66%
9,000					74,082	34%	4,534	6%	87,961	36%	38,147	63%
10,000					55,106	25%	3,312	5%	49,805	20%	37,224	61%
15,000					20,244						28,938	47%
20,000											26,610	44%
100%	227,651		52,305		217,358		70,354		246,679		61,016	
75%	170738.4		39228.86		163018.7325		52765.31		185009.3		45762	

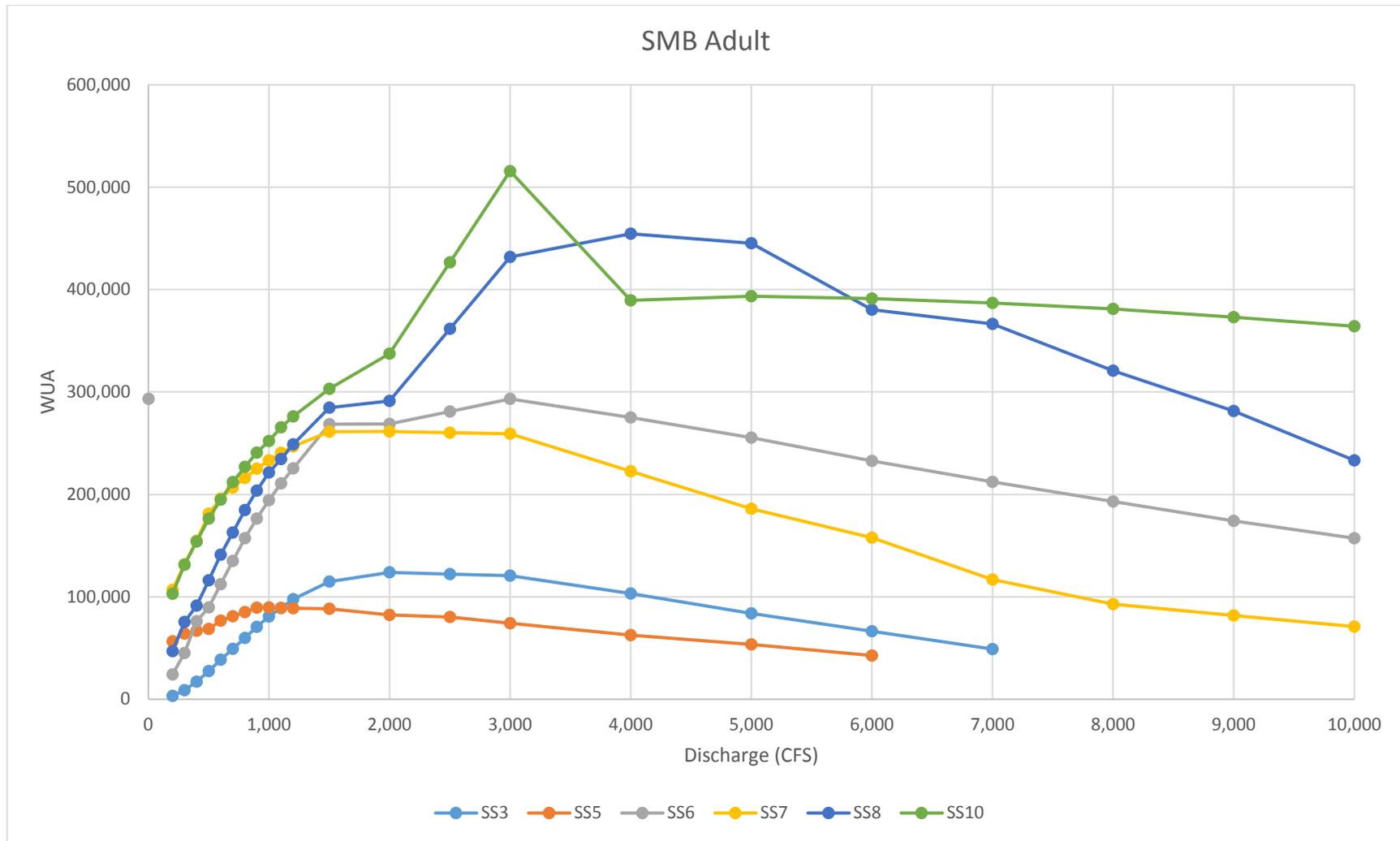
SMB JUVENILE



SMB JUVENILE

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	35,895	48%	53,848	100%	84,857	49%	185,059	57%	195,659	45%	199,145	73%
300	53,023	71%	49,561	92%	110,798	65%	227,495	70%	245,974	57%	225,022	83%
400	63,598	85%	38,556	72%	137,727	80%	257,381	80%	266,697	62%	241,384	89%
500	69,445	93%	39,271	73%	146,876	86%	284,854	88%	290,381	67%	252,537	93%
600	71,675	96%	36,677	68%	156,886	91%	301,292	93%	308,680	71%	258,908	95%
700	73,150	98%	33805.51	63%	163,508	95%	312,857	97%	323,788	75%	263,908	97%
800	74,625	100%	30933.85	57%	168,086	98%	319,568	99%	335,029	77%	266,671	98%
900	74,361	100%	28,062	52%	170,807	100%	322,798	100%	343,683	79%	267,506	98%
1,000	72,351	97%	24,913	46%	171,663	100%	321,939	100%	350,523	81%	272,046	100%
1,100	70,340	94%	23,274	43%	171,112	100%	319,118	99%	357,569	83%	267,211	98%
1,200	66,423	89%	21,636	40%	168,556	98%	314,315	97%	362,965	84%	266,324	98%
1,500	62,505	84%	19,998	37%	171,373	100%	296,828	92%	370,903	86%	261,923	96%
2,000	48,562	65%	15,936	30%	150,005	87%	246,315	76%	432,546	100%	247,598	91%
2,500	39,126	52%	14,441	27%	123,536	72%	200,045	62%	420,686	97%	228,452	84%
3,000	30,254	41%	12,385	23%	97,067	57%	153,774	48%	408,827	95%	209,306	77%
4,000	17,228	23%	8,315	15%	54,266	32%	116,615	36%	353,049	82%	175,220	64%
5,000	10,302	14%	5,526	10%	33,445	19%	79,456	25%	276,123	64%	149,997	55%
6,000	7,408	10%	4,004	7%	25,185	15%	65,346	20%	195,876	45%	129,004	47%
7,000	6,030	8%	2,883	5%	20,946	12%	54,310	17%	146,134	34%	112,357	41%
8,000					18,087	11%	46,404	14%	114,875	27%	99,624	37%
9,000					15,851	9%	40,600	13%	93,164	22%	89,761	33%
10,000					14,153	8%	36,778	11%	60,943	14%	82,577	30%
15,000					7,050	4%					58,283	21%
20,000											43,863	16%
100%	74,625		53,848		171,663		322,798		432,546		272,046	
75%	55968.55		40386.16		128747.2		242098.3		324409.5		204034.5	

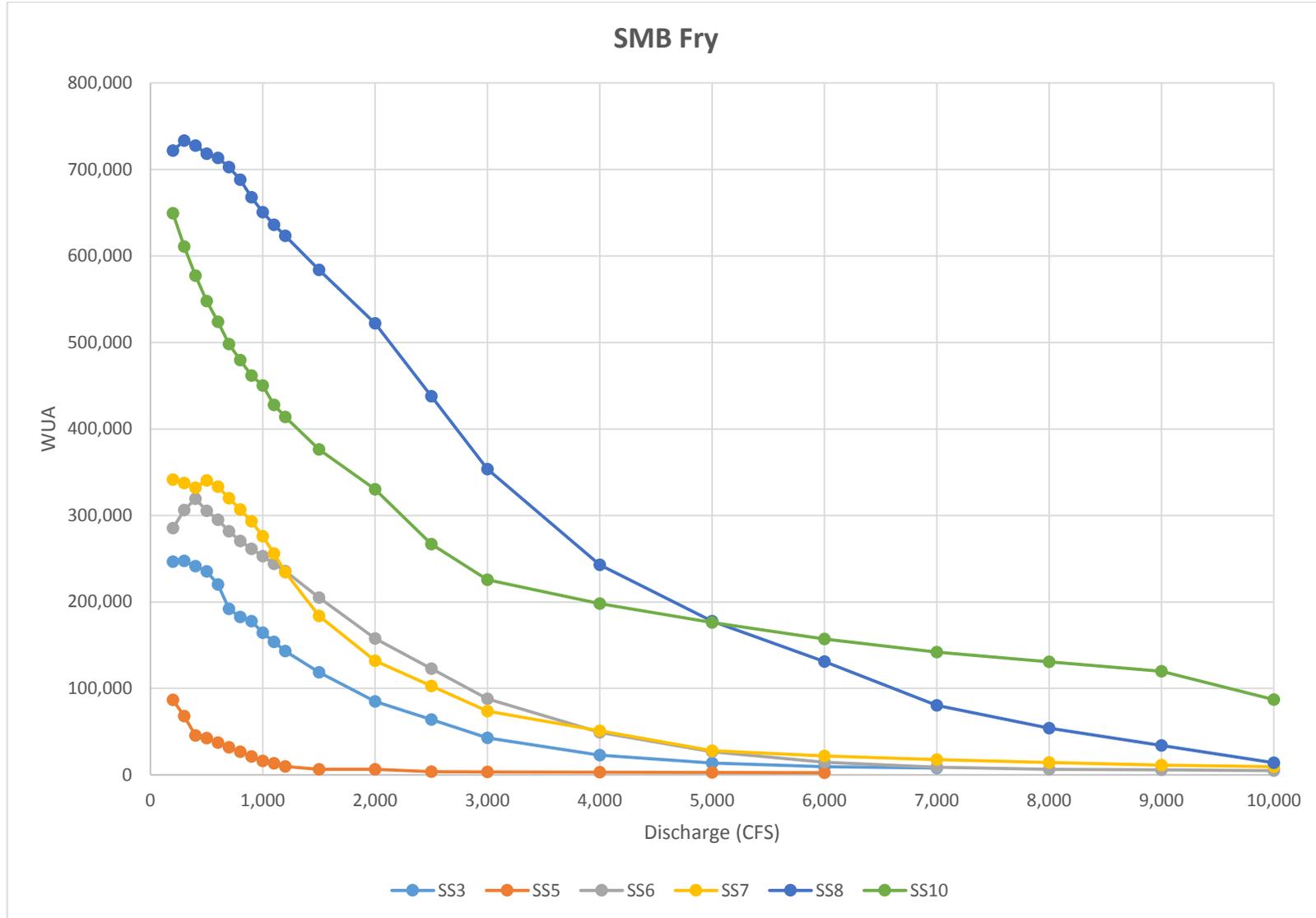
SMB ADULT



SMB ADULT

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	3,245	3%	56,543	63%	24,118	8%	106,819	41%	46,839	10%	102,985	20%
300	8,842	7%	64,142	72%	45,260	15%	131,731	50%	75,439	17%	131,339	25%
400	17,079	14%	66,756	75%	76,247	26%	154,708	59%	91,273	20%	153,838	30%
500	27,450	22%	68,494	77%	89,526	31%	181,096	69%	115,972	26%	176,506	34%
600	38,563	31%	76,693	86%	112,313	38%	195,795	75%	141,045	31%	194,749	38%
700	49,217	40%	80885.05	90%	135,068	46%	206,639	79%	162,671	36%	211,866	41%
800	59,872	48%	85076.74	95%	157,142	54%	216,098	83%	184,653	41%	226,999	44%
900	70,526	57%	89,268	100%	176,480	60%	225,065	86%	203,627	45%	240,853	47%
1,000	80,722	65%	89,452	100%	194,370	66%	233,257	89%	221,233	49%	252,029	49%
1,100	89,180	72%	89,140	100%	210,820	72%	240,484	92%	234,509	52%	265,624	52%
1,200	97,638	79%	88,777	99%	225,268	77%	246,780	94%	248,852	55%	275,994	54%
1,500	114,691	93%	88,413	99%	268,572	92%	261,265	100%	284,722	63%	303,244	59%
2,000	123,771	100%	82,209	92%	268,770	92%	261,421	100%	291,377	64%	337,330	65%
2,500	122,157	99%	80,148	90%	280,997	96%	260,277	100%	361,574	80%	426,528	83%
3,000	120,543	97%	74,277	83%	293,225	100%	259,133	99%	431,772	95%	515,726	100%
4,000	103,264	83%	62,530	70%	275,050	94%	222,522	85%	454,498	100%	389,520	76%
5,000	83,733	68%	53,526	60%	255,326	87%	185,911	71%	445,163	98%	393,487	76%
6,000	66,396	54%	42,668	48%	232,790	79%	157,747	60%	380,246	84%	391,164	76%
7,000	48,860	39%			212,332	72%	116,788	45%	366,469	81%	387,016	75%
8,000					192,959	66%	92,940	36%	320,858	71%	381,099	74%
9,000					174,016	59%	81,702	31%	281,520	62%	372,981	72%
10,000					157,095	54%	70,898	27%	233,230	51%	364,316	71%
15,000					100,384	34%					326,924	63%
20,000											286,761	56%
100%	123,771		89,452		293,225		261,421		454,498		515,726	
75%	92828.3 5		67089.14		219918.7		196065.7		340873.3		386794.5	

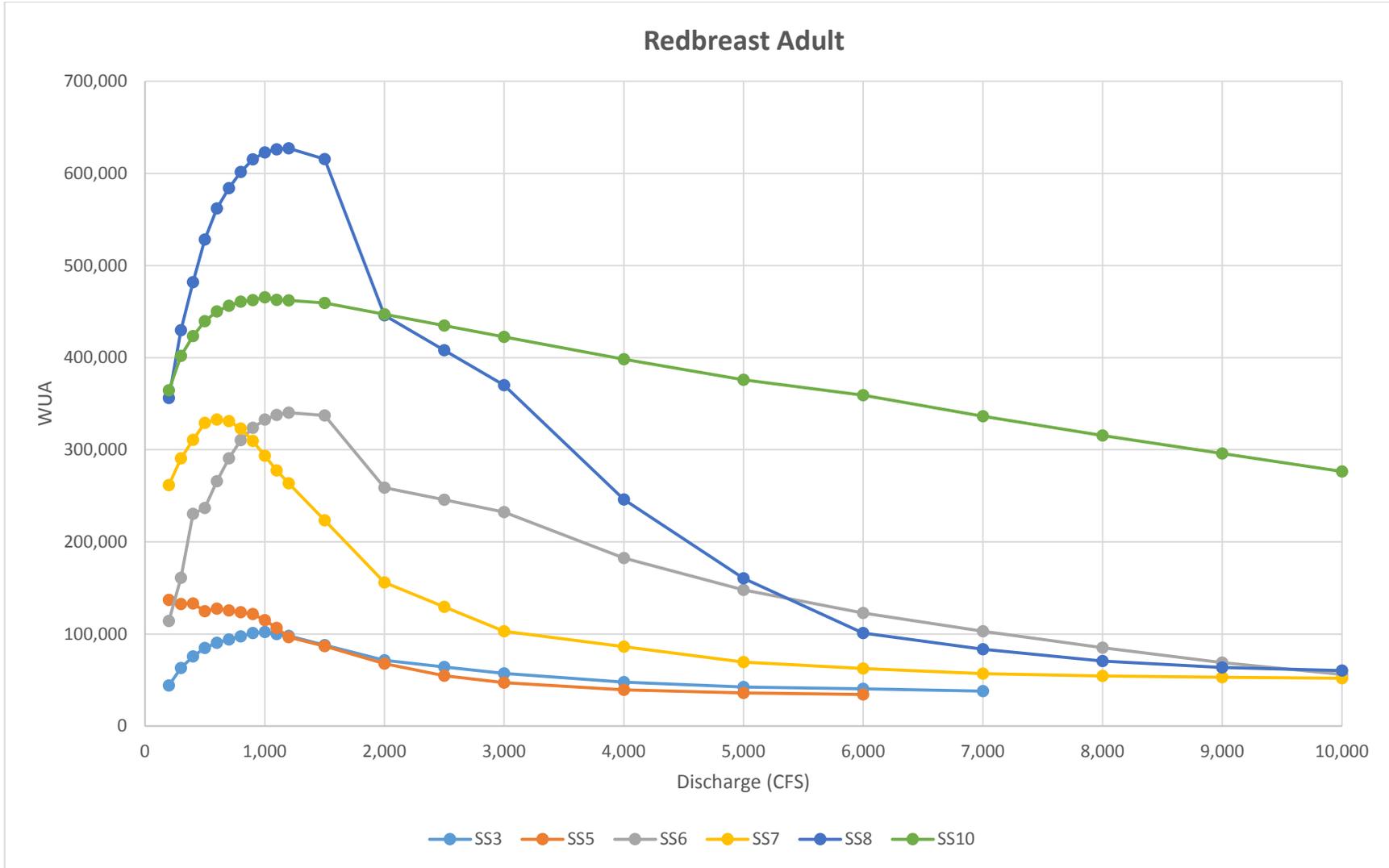
SMB Fry



SMB FRY

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
	Value	%										
200	246,534	100%	86,800	100%	285,437	89%	341,484	100%	721,773	98%	649,442	100%
300	247,519	100%	67,987	78%	306,222	96%	337,537	99%	733,279	100%	611,007	94%
400	241,241	97%	45,721	53%	319,394	100%	331,938	97%	727,425	99%	577,108	89%
500	235,249	95%	42,613	49%	305,488	96%	340,459	100%	718,183	98%	547,736	84%
600	220,223	89%	37,280	43%	294,903	92%	333,109	98%	713,354	97%	523,940	81%
700	191,868	78%	32003.66	37%	281,734	88%	319,872	94%	702,619	96%	498,166	77%
800	182,699	74%	26745.6	31%	270,554	85%	306,876	90%	688,045	94%	479,577	74%
900	177,690	72%	21,450	25%	261,320	82%	293,088	86%	667,906	91%	461,675	71%
1,000	164,360	66%	16,229	19%	252,831	79%	275,941	81%	650,628	89%	450,274	69%
1,100	153,828	62%	13,336	15%	244,155	76%	255,893	75%	636,083	87%	427,936	66%
1,200	143,295	58%	9,960	11%	235,503	74%	234,437	69%	623,217	85%	413,859	64%
1,500	118,562	48%	6,584	8%	205,111	64%	183,945	54%	584,023	80%	376,252	58%
2,000	85,089	34%	6,410	7%	157,825	49%	132,089	39%	522,187	71%	330,119	51%
2,500	63,935	26%	3,840	4%	122,896	38%	102,951	30%	437,908	60%	266,992	41%
3,000	42,781	17%	3,483	4%	87,967	28%	73,814	22%	353,629	48%	225,568	35%
4,000	22,907	9%	3,046	4%	49,201	15%	50,945	15%	242,795	33%	198,045	30%
5,000	13,665	6%	2,802	3%	26,829	8%	28,076	8%	177,842	24%	176,282	27%
6,000	9,506	4%	2,604	3%	14,774	5%	21,965	6%	130,922	18%	157,062	24%
7,000	7,856	3%			8,898	3%	17,849	5%	80,343	11%	142,052	22%
8,000					6,637	2%	14,344	4%	53,984	7%	130,865	20%
9,000					5,770	2%	11,438	3%	34,044	5%	119,961	18%
10,000					5,083	2%	9,418	3%	14,076	2%	87,254	13%
15,000					2,152	1%					67,153	10%
20,000												
100%	247,519		86,800		319,394		341,484		733,279		649,442	
75%	185639.3		65099.9		239545.7		256113.2		549959.5		487081.5	

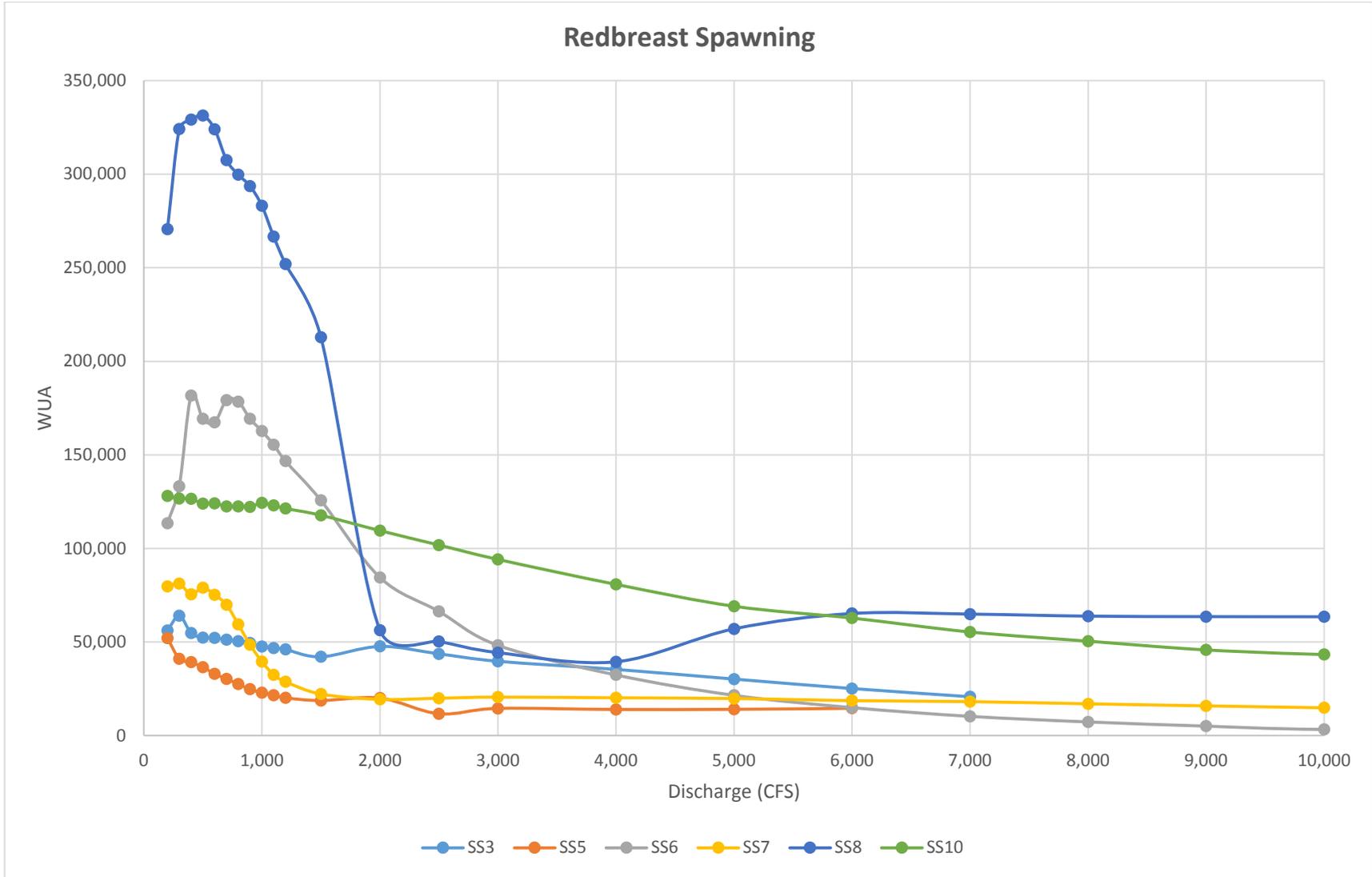
REDBREAST ADULT



REDBREAST ADULT

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	44,190	43%	136,977	100%	114,115	34%	261,525	79%	356,086	57%	364,539	78%
300	63,111	62%	132,491	97%	160,968	47%	290,739	87%	429,842	69%	401,820	86%
400	75,583	74%	133,190	97%	230,410	68%	310,815	93%	482,042	77%	423,349	91%
500	84,730	83%	124,819	91%	236,882	70%	329,123	99%	528,262	84%	439,415	94%
600	90,492	89%	127,556	93%	265,947	78%	332,707	100%	561,905	90%	450,035	97%
700	93,985	92%	125609.3	92%	290,581	85%	330,990	99%	584,088	93%	456,214	98%
800	97,478	95%	123662.4	90%	310,409	91%	323,038	97%	601,579	96%	460,611	99%
900	100,972	99%	121,716	89%	323,790	95%	309,500	93%	615,229	98%	462,315	99%
1,000	102,196	100%	115,085	84%	332,639	98%	293,562	88%	622,795	99%	465,506	100%
1,100	100,034	98%	106,593	78%	337,882	99%	277,494	83%	626,048	100%	462,794	99%
1,200	97,872	96%	96,687	71%	340,255	100%	263,507	79%	627,310	100%	462,037	99%
1,500	87,845	86%	86,780	63%	337,243	99%	223,513	67%	615,528	98%	459,447	99%
2,000	71,328	70%	67,785	49%	258,831	76%	155,888	47%	446,052	71%	447,210	96%
2,500	64,345	63%	54,643	40%	245,621	72%	129,387	39%	408,119	65%	434,926	93%
3,000	57,363	56%	47,300	35%	232,410	68%	102,887	31%	370,186	59%	422,641	91%
4,000	47,726	47%	39,279	29%	182,416	54%	86,170	26%	246,036	39%	398,166	86%
5,000	42,410	41%	35,985	26%	147,997	43%	69,454	21%	160,272	26%	376,055	81%
6,000	40,400	40%	34,497	25%	122,888	36%	62,599	19%	101,113	16%	359,215	77%
7,000	38,010	37%			103,098	30%	56,946	17%	83,555	13%	336,321	72%
8,000					85,223	25%	54,355	16%	70,642	11%	315,493	68%
9,000					68,824	20%	53,145	16%	63,590	10%	296,073	64%
10,000					55,986	16%	51,921	16%	60,365	10%	276,451	59%
15,000					22,933	7%					205,152	
20,000											152,602	
100%	102,196		136,977		340,255		332,707		627,310		465,506	
75%	76647.24		102732.7		255191.4		249530.3		470482.2		349129.4	

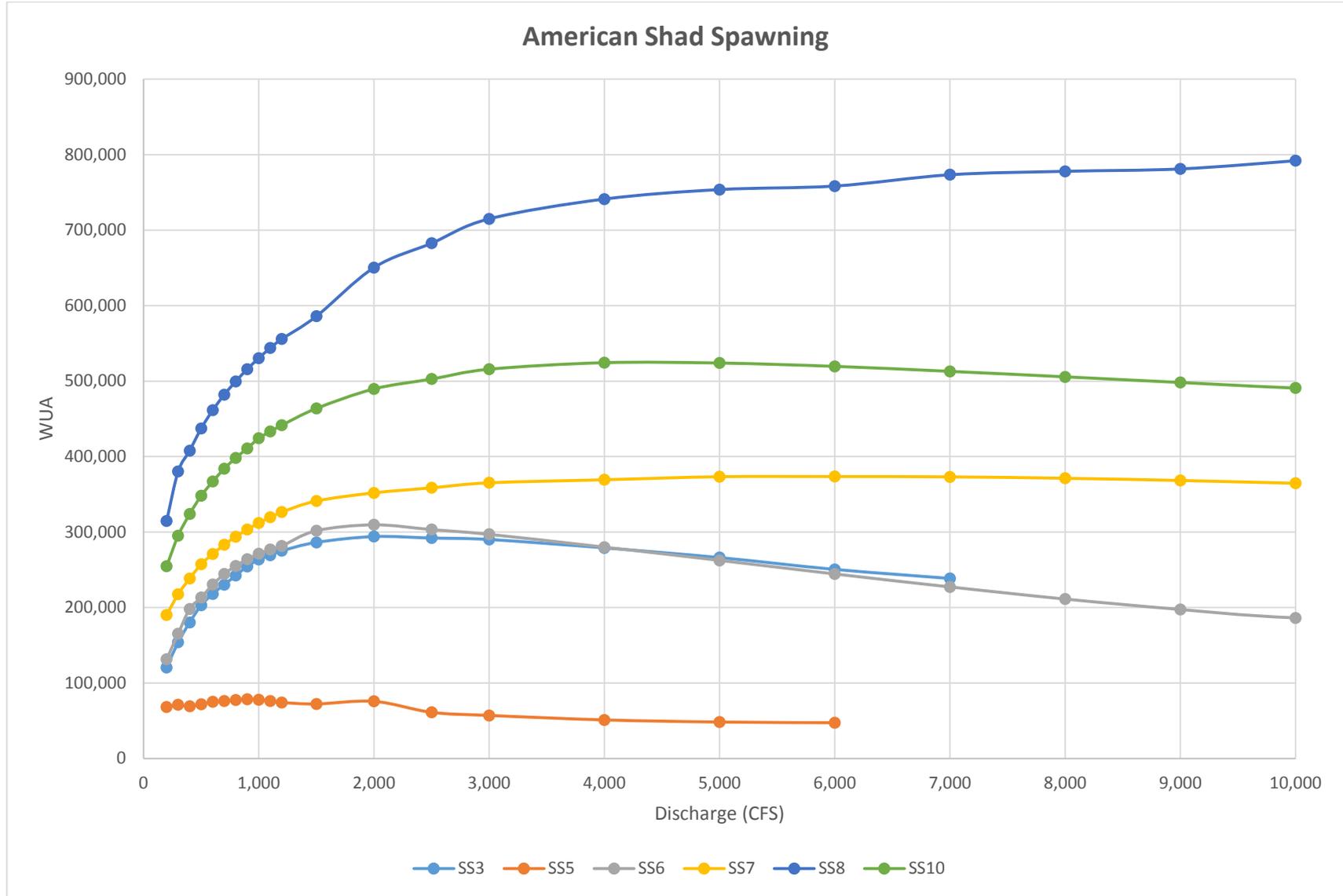
REDBREAST SPAWNING



REDBREAST SPAWNING

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	56,194	88%	52,055	100%	113,475	62%	79,634	98%	270,665	82%	128,007	100%
300	64,009	100%	40,997	79%	133,234	73%	81,168	100%	324,069	98%	126,720	99%
400	54,781	86%	39,197	75%	181,637	100%	75,471	93%	329,175	99%	126,515	99%
500	52,279	82%	36,520	70%	169,259	93%	79,053	97%	331,371	100%	123,901	97%
600	52,231	82%	32,985	63%	167,381	92%	75,154	93%	324,021	98%	124,147	97%
700	51,293	80%	30250.5	58%	179,292	99%	69,883	86%	307,575	93%	122,416	96%
800	50,355	79%	27515.96	53%	178,462	98%	59,448	73%	299,726	90%	122,401	96%
900	49,417	77%	24,781	48%	169,242	93%	48,517	60%	293,642	89%	122,196	95%
1,000	47,588	74%	22,847	44%	162,699	90%	39,499	49%	283,118	85%	124,383	97%
1,100	46,805	73%	21,608	42%	155,421	86%	32,494	40%	266,684	80%	122,957	96%
1,200	46,021	72%	20,163	39%	146,664	81%	28,756	35%	251,980	76%	121,360	95%
1,500	42,077	66%	18,717	36%	125,677	69%	22,186	27%	212,865	64%	117,753	92%
2,000	47,632	74%	20,045	39%	84,461	47%	19,335	24%	56,283	17%	109,511	86%
2,500	43,664	68%	11,662	22%	66,324	37%	19,949	25%	50,305	15%	101,818	80%
3,000	39,697	62%	14,517	28%	48,187	27%	20,563	25%	44,326	13%	94,124	74%
4,000	35,346	55%	13,929	27%	32,379	18%	20,174	25%	39,412	12%	80,787	63%
5,000	30,183	47%	14,020	27%	21,491	12%	19,786	24%	57,011	17%	69,083	54%
6,000	25,129	39%	14,561	28%	14,915	8%	18,668	23%	65,215	20%	62,778	49%
7,000	20,758	32%			10,256	6%	18,123	22%	64,896	20%	55,331	43%
8,000					7,271	4%	16,964	21%	63,805	19%	50,430	39%
9,000					5,035	3%	15,861	20%	63,553	19%	45,753	36%
10,000					3,257	2%	14,828	18%	63,484	19%	43,285	34%
15,000					1,460	1%					35,439	28%
20,000											27,737	22%
100%	64,009		52,055		181,637		81,168		331,371		128,007	
75%	48006.62		39041.08		136227.5		60875.67		248528.3		96005.55	

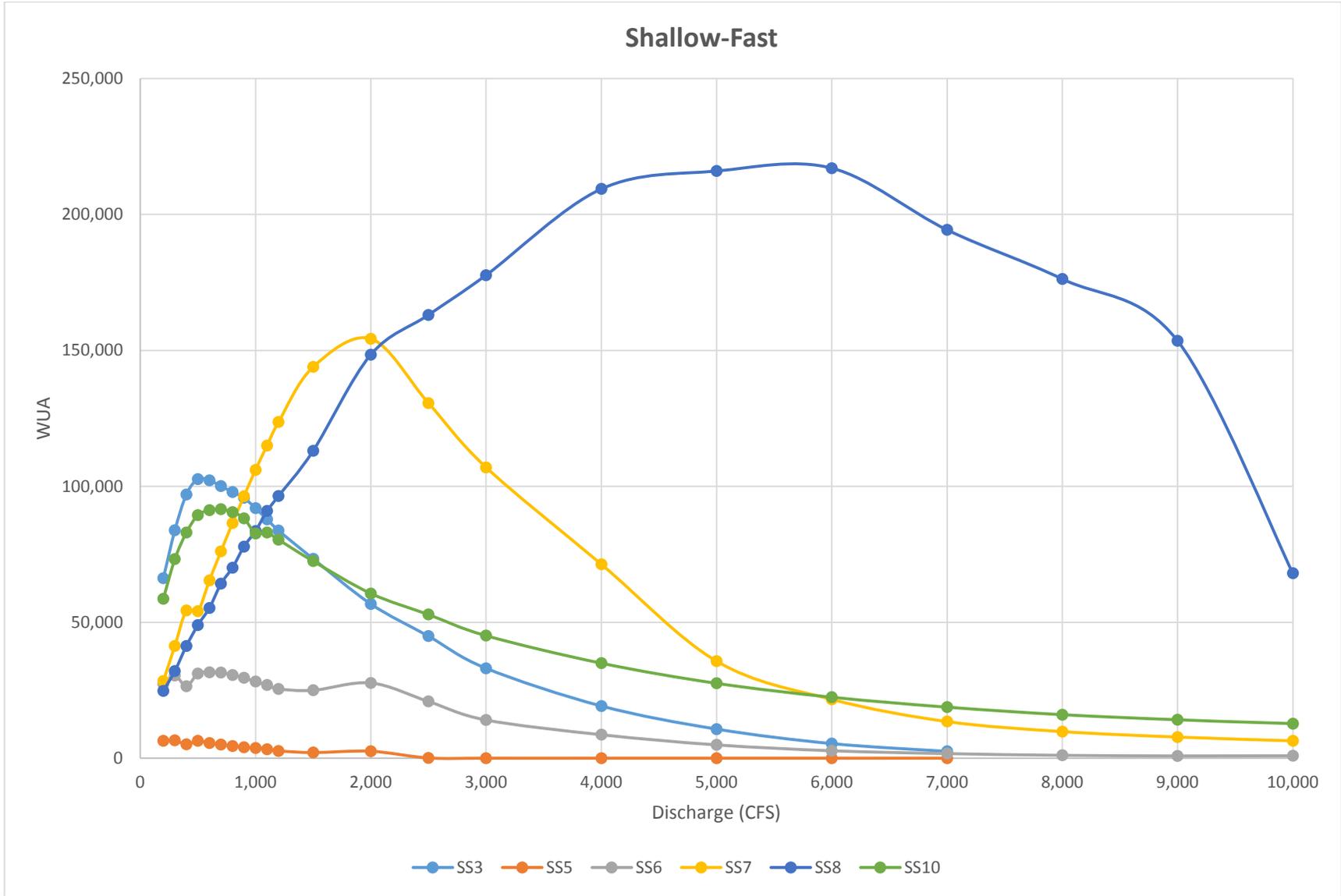
AMERICAN SHAD SPAWNING



AMERICAN SHAD SPAWNING

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	120,632	41%	68,051	87%	131,577	43%	190,039	51%	314,815	40%	254,591	49%
300	153,920	52%	71,047	90%	165,137	53%	217,716	58%	380,288	48%	295,234	56%
400	180,321	61%	69,047	88%	198,199	64%	238,470	64%	407,905	52%	323,861	62%
500	202,960	69%	72,001	92%	213,162	69%	257,465	69%	437,285	55%	348,047	66%
600	218,096	74%	75,054	96%	230,434	74%	270,953	73%	461,329	58%	366,965	70%
700	230,234	78%	76222.19	97%	244,294	79%	283,123	76%	481,975	61%	383,823	73%
800	242,373	82%	77390.59	99%	255,182	82%	293,809	79%	499,479	63%	398,192	76%
900	254,511	87%	78,559	100%	263,953	85%	303,336	81%	515,893	65%	410,855	78%
1,000	263,652	90%	77,843	99%	271,192	88%	311,927	84%	530,301	67%	424,207	81%
1,100	269,389	92%	76,174	97%	276,775	89%	319,565	86%	543,988	69%	433,210	83%
1,200	275,126	94%	74,227	94%	281,595	91%	326,457	87%	555,727	70%	441,486	84%
1,500	286,317	97%	72,279	92%	301,792	97%	341,146	91%	585,840	74%	463,727	88%
2,000	294,034	100%	75,734	96%	309,582	100%	351,931	94%	650,328	82%	489,611	93%
2,500	292,081	99%	61,197	78%	303,265	98%	358,580	96%	682,629	86%	502,668	96%
3,000	290,129	99%	57,062	73%	296,949	96%	365,229	98%	714,931	90%	515,726	98%
4,000	279,051	95%	51,134	65%	280,009	90%	369,263	99%	741,146	94%	524,367	100%
5,000	266,167	91%	48,334	62%	262,462	85%	373,297	100%	753,718	95%	523,905	100%
6,000	250,501	85%	47,419	60%	244,481	79%	373,525	100%	758,374	96%	519,506	99%
7,000	238,542	81%			227,281	73%	373,111	100%	773,326	98%	512,876	98%
8,000					211,218	68%	371,234	99%	777,900	98%	505,625	96%
9,000					197,430	64%	368,321	99%	781,042	99%	498,147	95%
10,000					186,297	60%	364,584	98%	791,919	100%	490,768	94%
15,000					158,756						460,335	88%
20,000											438,390	84%
100%	294,034		78,559		309,582		373,525		791,919		524,367	
75%	220525.2		58919.24		232186.2		280143.6		593939		393275	

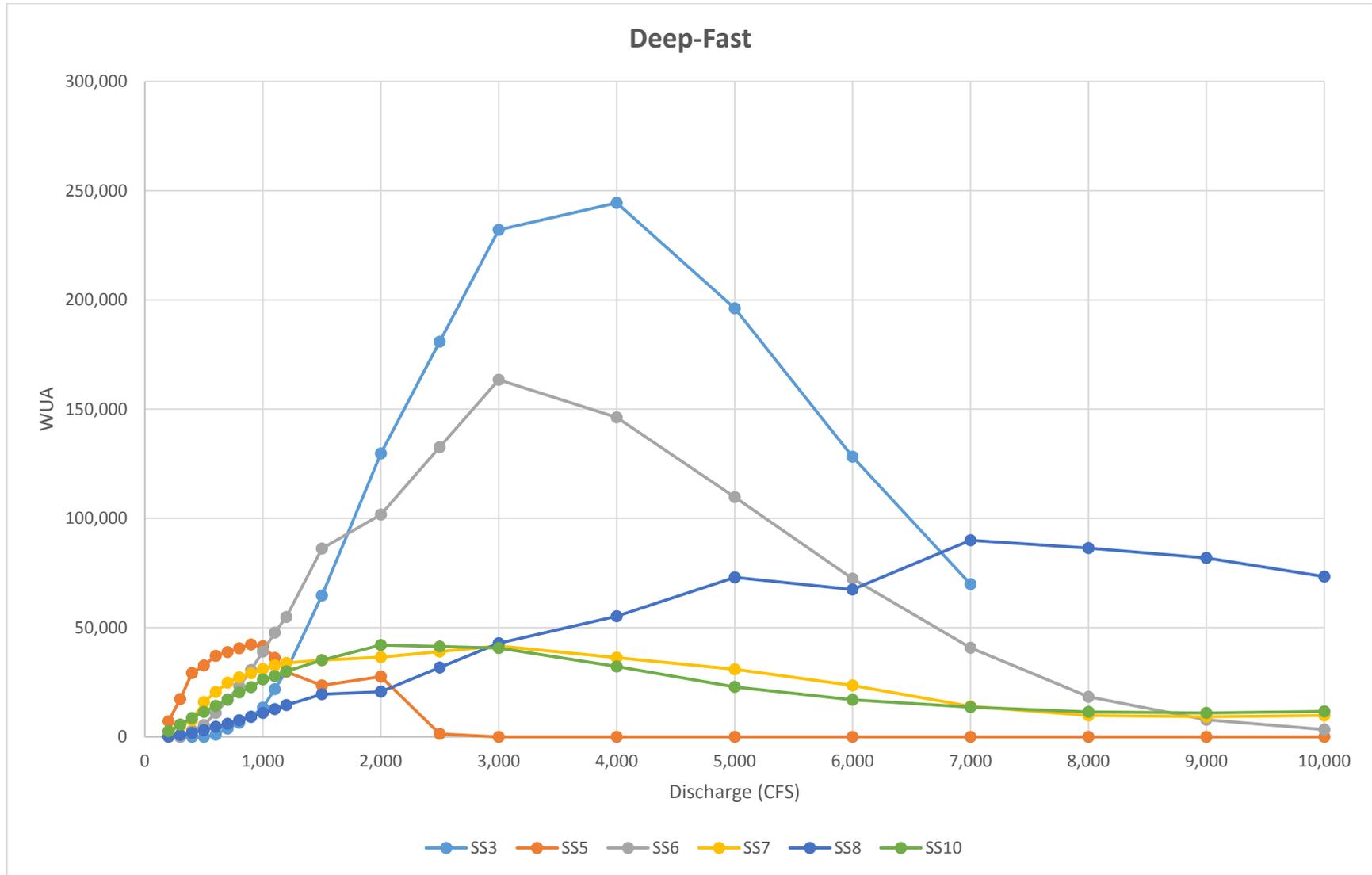
SHALLOW FAST GUILD



SHALLOW FAST GUILD

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	66,201	64%	6,342	96%	27,340	86%	28,370	18%	24,760	11%	58,679	64%
300	83,824	82%	6,572	100%	30,427	96%	41,312	27%	32,086	15%	73,244	80%
400	97,020	94%	5,081	77%	26,471	84%	54,353	35%	41,293	19%	82,985	91%
500	102,671	100%	6,393	97%	31,181	99%	54,073	35%	48,963	23%	89,424	98%
600	102,207	100%	5,556	85%	31,617	100%	65,422	42%	55,300	25%	91,205	100%
700	100,064	97%	5033.878	77%	31,491	100%	76,079	49%	64,177	30%	91,627	100%
800	97,922	95%	4511.272	69%	30,600	97%	86,486	56%	70,081	32%	90,558	99%
900	95,779	93%	3,989	61%	29,573	94%	96,392	62%	77,859	36%	88,219	96%
1,000	91,959	90%	3,780	58%	28,176	89%	106,071	69%	83,585	39%	82,685	90%
1,100	87,850	86%	3,268	50%	26,919	85%	115,004	75%	90,937	42%	83,046	91%
1,200	83,741	82%	2,671	41%	25,488	81%	123,672	80%	96,478	44%	80,362	88%
1,500	73,349	71%	2,075	32%	24,979	79%	143,933	93%	113,087	52%	72,480	79%
2,000	56,730	55%	2,555	39%	27,685	88%	154,310	100%	148,437	68%	60,597	66%
2,500	44,900	44%	91	1%	20,865	66%	130,654	85%	163,054	75%	52,835	58%
3,000	33,070	32%	0	0%	14,045	44%	106,998	69%	177,672	82%	45,073	49%
4,000	19,202	19%	0	0%	8,629	27%	71,344	46%	209,400	96%	34,947	38%
5,000	10,706	10%	0	0%	4,891	15%	35,689	23%	215,992	100%	27,544	30%
6,000	5,364	5%	0	0%	2,732	9%	21,625	14%	217,047	100%	22,432	24%
7,000	2,515	2%	0	0%	1,687	5%	13,469	9%	194,347	90%	18,775	20%
8,000					1,055	3%	9,784	6%	176,258	81%	16,008	17%
9,000					836	3%	7,763	5%	153,515	71%	14,138	15%
10,000					883	3%	6,388	4%	68,001	31%	12,723	14%
15,000					863	3%					6,631	7%
20,000											5,804	6%
100%	102,671		6,572		31,617		154,310		217,047		91,627	
75%	77003.61		4929.285		23712.99		115732.8		162785.3		68720.25	

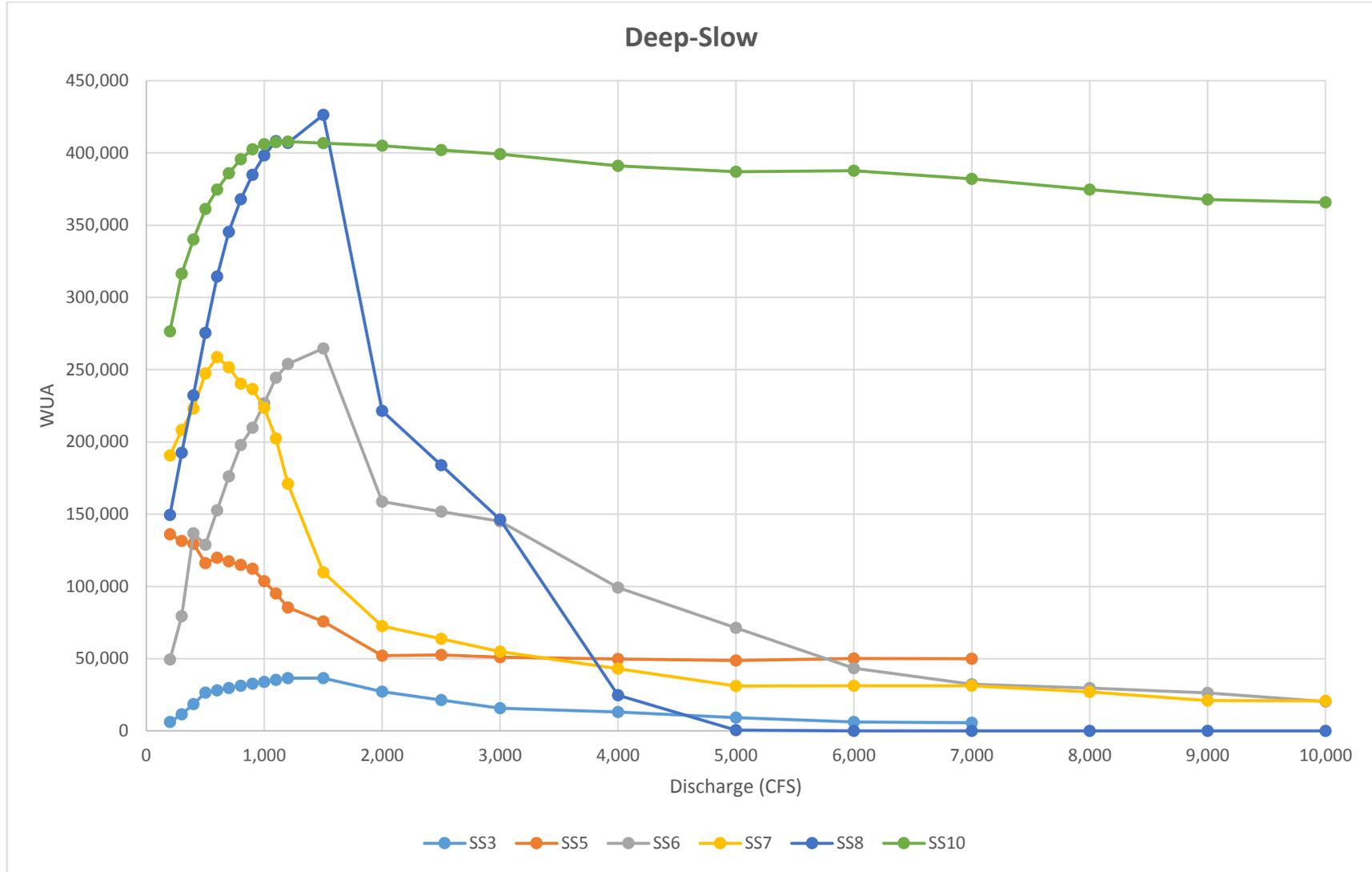
DEEP-FAST GULD



DEEP-FAST GUILD

Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	0	0%	7,119	17%	0	0%	2,170	5%	166	0%	2,612	6%
300	0	0%	17,363	41%	0	0%	4,747	11%	840	1%	5,633	13%
400	0	0%	29,183	69%	2,864	2%	7,648	18%	1,875	2%	8,648	21%
500	18	0%	32,730	77%	5,417	3%	15,931	38%	3,065	3%	11,441	27%
600	1,084	0%	37,055	88%	10,954	7%	20,536	49%	4,562	5%	14,193	34%
700	3,758	2%	38807.74	92%	16,941	10%	24,832	60%	5,953	7%	17,128	41%
800	6,432	3%	40560.68	96%	23,183	14%	27,215	65%	7,639	8%	20,359	48%
900	9,107	4%	42,314	100%	30,634	19%	29,135	70%	9,176	10%	22,786	54%
1,000	13,389	5%	41,495	98%	39,037	24%	31,049	75%	11,013	12%	26,305	63%
1,100	21,793	9%	36,121	85%	47,747	29%	32,678	79%	12,743	14%	27,813	66%
1,200	30,196	12%	29,852	71%	54,830	34%	33,791	81%	14,539	16%	29,999	71%
1,500	64,709	26%	23,583	56%	86,147	53%	35,123	84%	19,458	22%	35,081	84%
2,000	129,719	53%	27,585	65%	101,722	62%	36,462	88%	20,719	23%	42,000	100%
2,500	180,923	74%	1,333	3%	132,600	81%	39,030	94%	31,787	35%	41,335	98%
3,000	232,128	95%	0	0%	163,477	100%	41,599	100%	42,856	48%	40,670	97%
4,000	244,475	100%	0	0%	146,235	89%	36,262	87%	55,265	61%	32,272	77%
5,000	196,150	80%	0	0%	109,750	67%	30,924	74%	72,986	81%	22,921	55%
6,000	128,195	52%	0	0%	72,430	44%	23,526	57%	67,462	75%	16,984	40%
7,000	69,829	29%	0	0%	40,786	25%	13,985	34%	89,994	100%	13,608	32%
8,000			0	0%	18,319	11%	9,834	24%	86,345	96%	11,391	27%
9,000			0	0%	7,838	5%	9,207	22%	81,857	91%	10,965	26%
10,000			0	0%	3,321	2%	9,782	24%	73,303	81%	11,698	28%
15,000			0	0%	7,059	4%					16,741	40%
20,000											19,210	46%
100%	244,475		42,314		163,477		41,599		89,994		42,000	
75%	183356.5		31735.22		122607.9		31198.96		67495.68		31500	

DEEP-SLOW

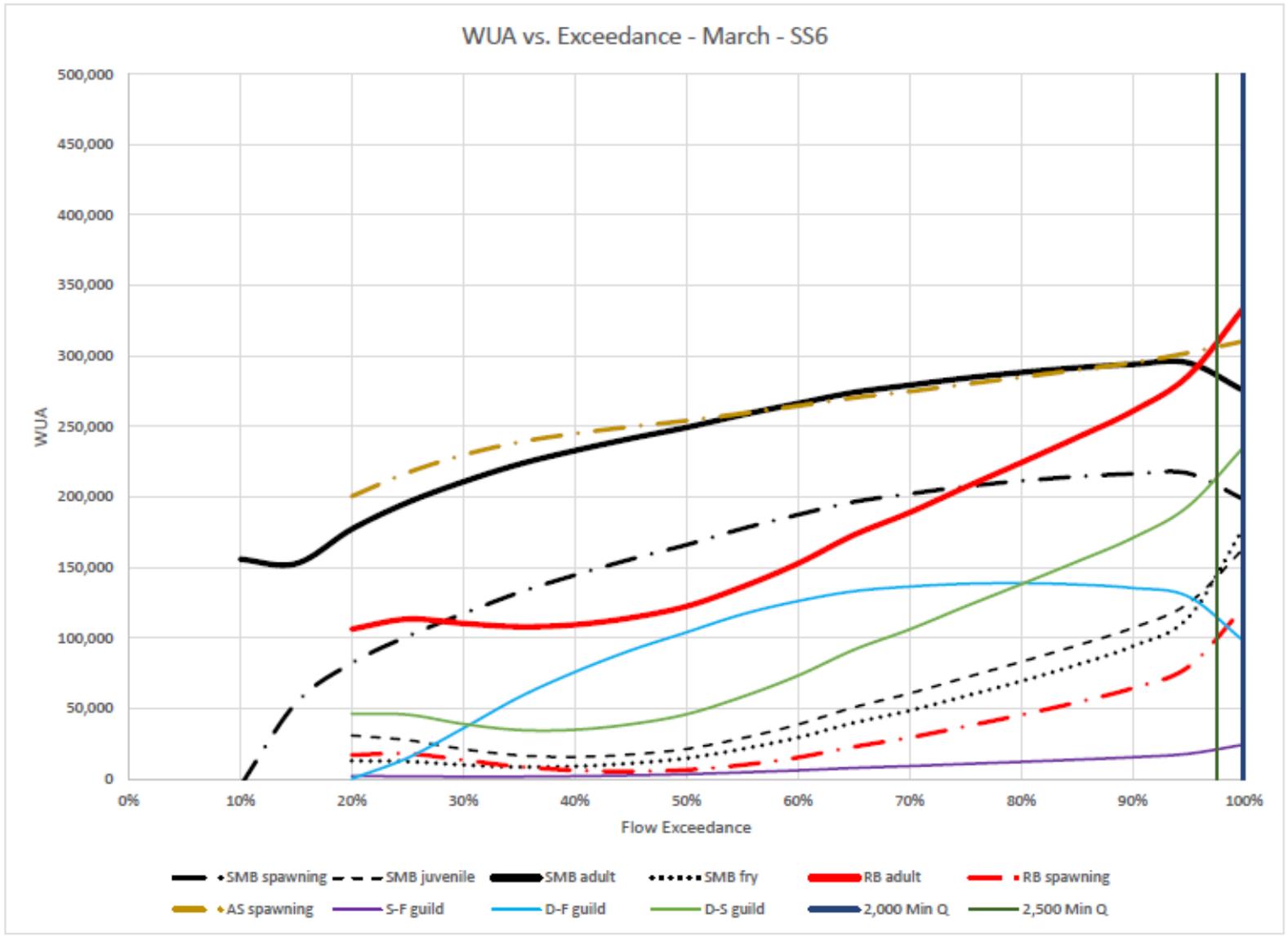


DEEP-SLOW

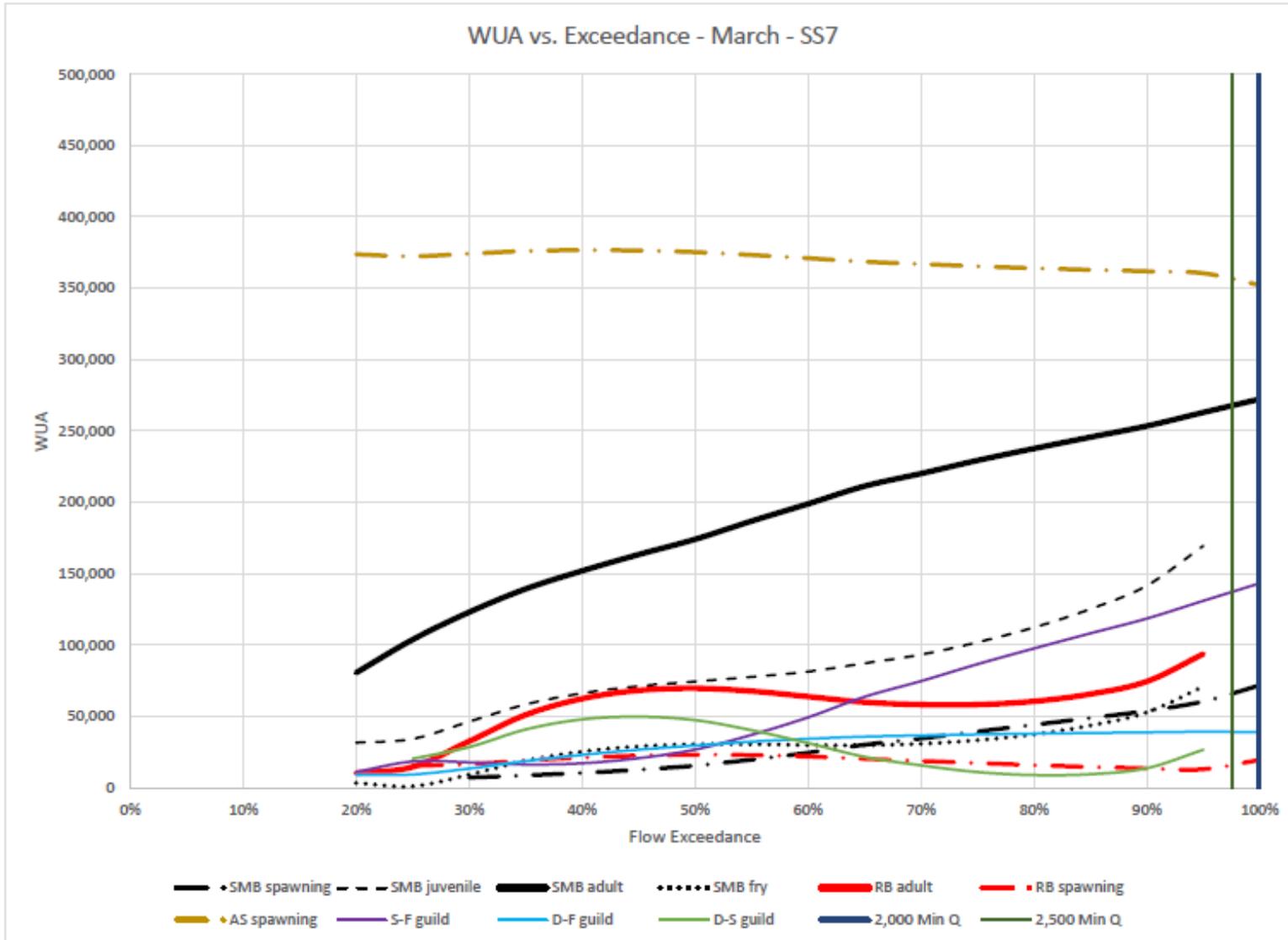
Discharge	SS3		SS5		SS6		SS7		SS8		SS10	
200	6,155	17%	136,092	100%	49,474	19%	190,546	74%	149,560	35%	276,504	68%
300	11,464	31%	131,583	97%	79,497	30%	208,321	81%	192,595	45%	316,376	78%
400	18,557	51%	129,485	95%	136,779	52%	222,996	86%	232,315	54%	340,069	83%
500	26,424	72%	116,099	85%	128,920	49%	247,404	96%	275,507	65%	361,310	89%
600	28,182	77%	119,861	88%	152,720	58%	258,756	100%	314,469	74%	374,690	92%
700	29,693	81%	117350.4	86%	176,107	67%	251,728	97%	345,334	81%	385,859	95%
800	31,203	85%	114839.3	84%	197,806	75%	240,446	93%	367,988	86%	395,625	97%
900	32,714	89%	112,328	83%	209,830	79%	236,609	91%	384,954	90%	402,553	99%
1,000	33,976	93%	103,544	76%	226,852	86%	223,683	86%	398,347	93%	406,112	100%
1,100	35,273	96%	95,210	70%	244,469	92%	202,451	78%	408,175	96%	407,510	100%
1,200	36,570	100%	85,487	63%	253,984	96%	171,054	66%	407,006	95%	407,904	100%
1,500	36,520	100%	75,763	56%	264,661	100%	109,837	42%	426,396	100%	406,762	100%
2,000	27,237	74%	52,131	38%	158,617	60%	72,651	28%	221,524	52%	405,001	99%
2,500	21,481	59%	52,594	39%	151,836	57%	63,768	25%	183,913	43%	402,054	99%
3,000	15,725	43%	50,984	37%	145,056	55%	54,884	21%	146,301	34%	399,108	98%
4,000	13,084	36%	49,753	37%	99,247	37%	43,034	17%	24,704	6%	390,995	96%
5,000	9,249	25%	48,825	36%	71,327	27%	31,185	12%	561	0%	387,064	95%
6,000	6,275	17%	50,155	37%	43,378	16%	31,344	12%	0	0%	387,711	95%
7,000	5,693	16%	50,047	37%	32,282	12%	31,344	12%	0	0%	382,017	94%
8,000					29,607	11%	27,074	10%	0	0%	374,653	92%
9,000					26,329	10%	21,086	8%	0	0%	367,839	90%
10,000					20,375	8%	20,862	8%	0	0%	365,756	90%
15,000					7,834	3%					300,232	74%
20,000											242,391	59%
100%	36,570		136,092		264,661		258,756		426,396		407,904	
75%	27427.61		102069.2		198495.4		194066.8		319797.2		305927.7	

ATTACHMENT C

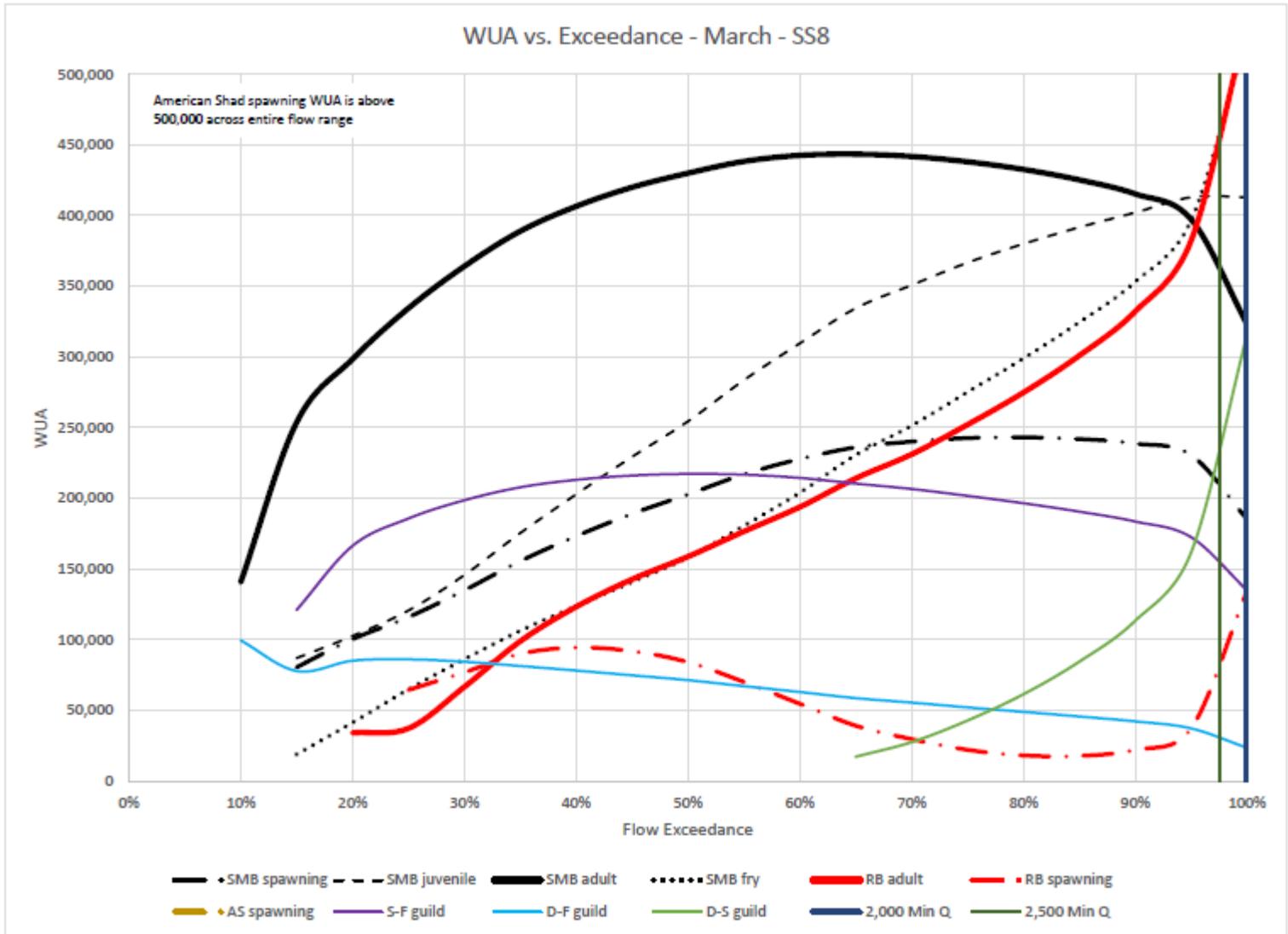
WUA vs. EXCEEDANCE – MARCH – SS6



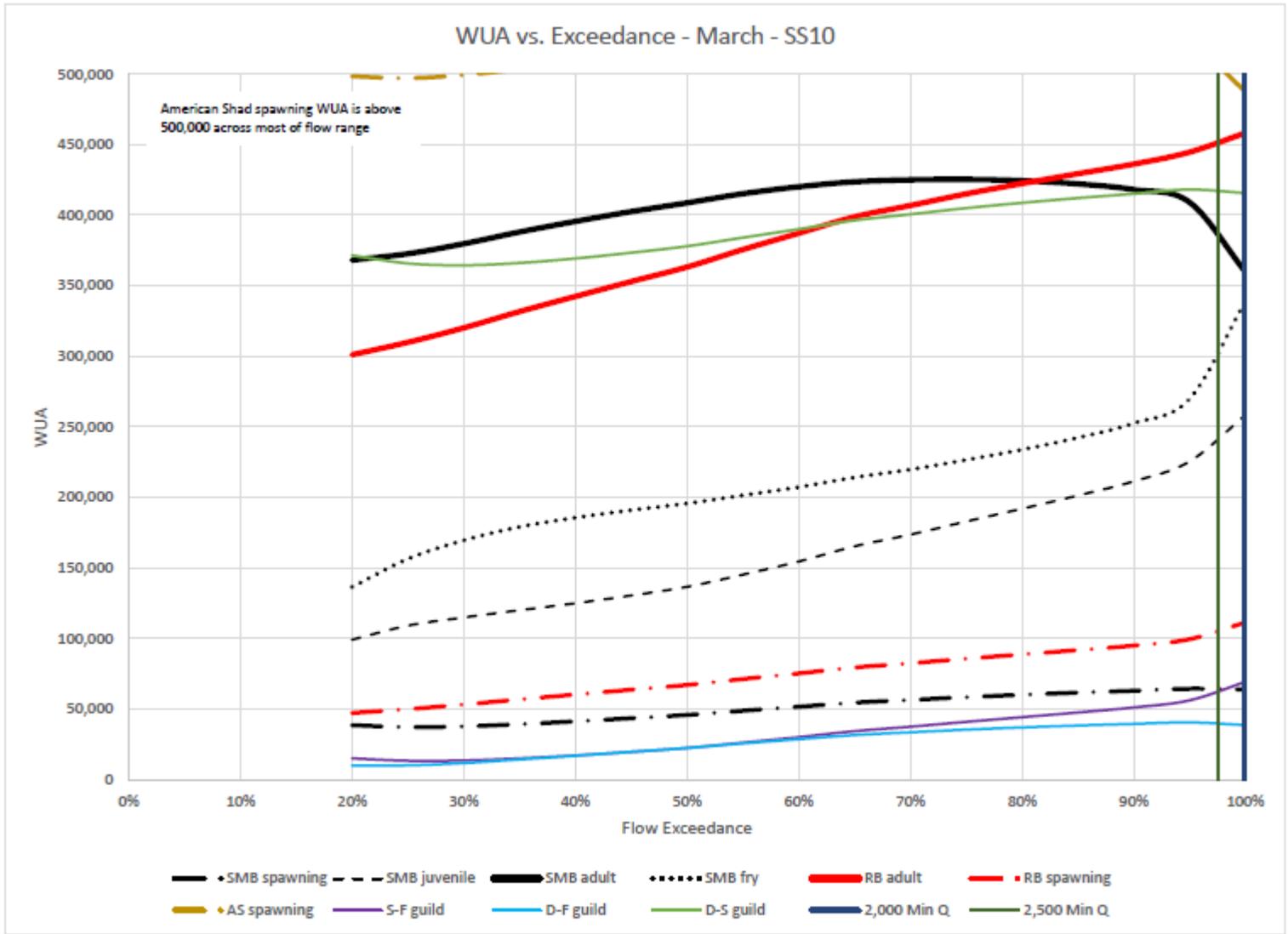
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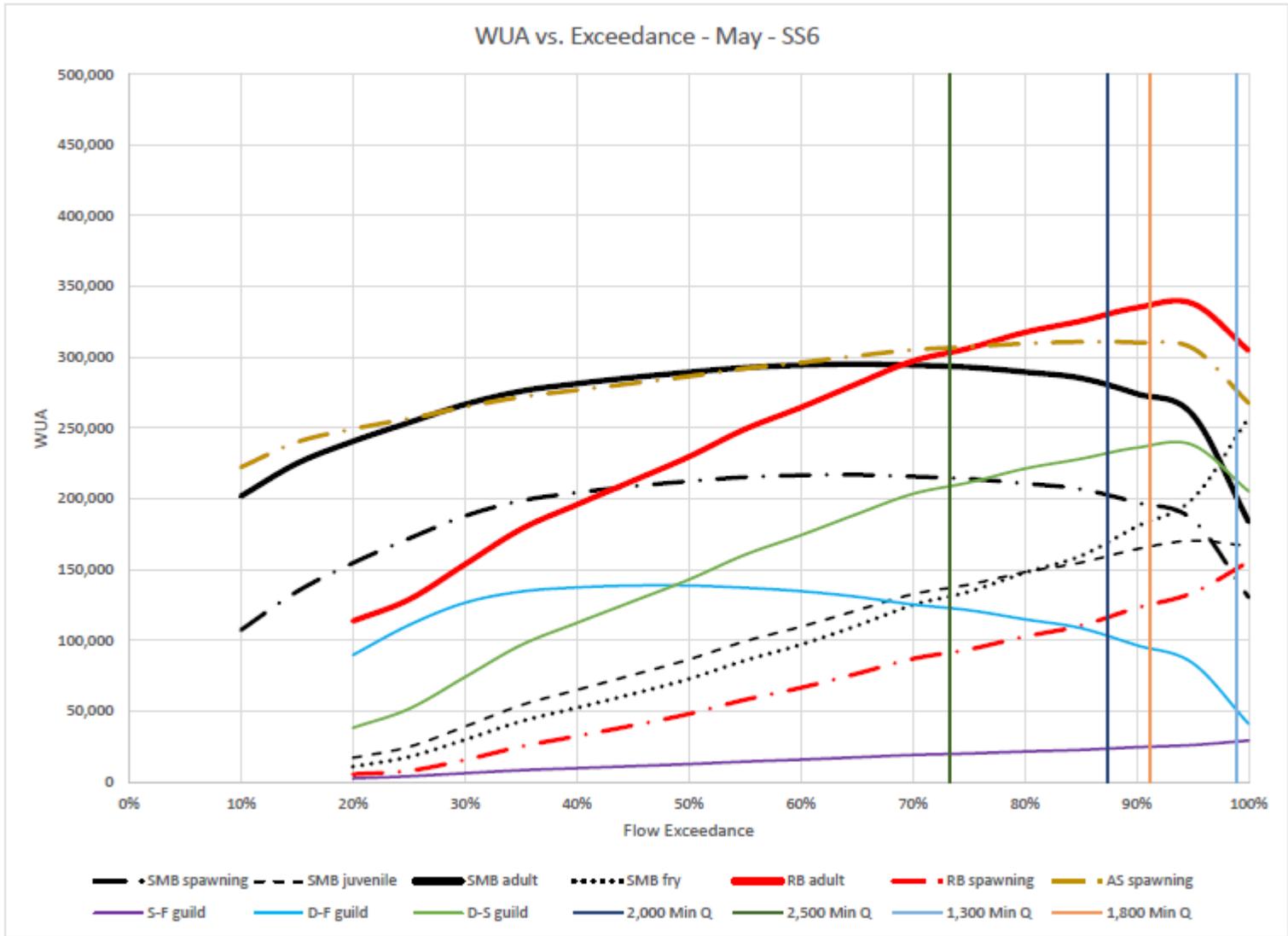
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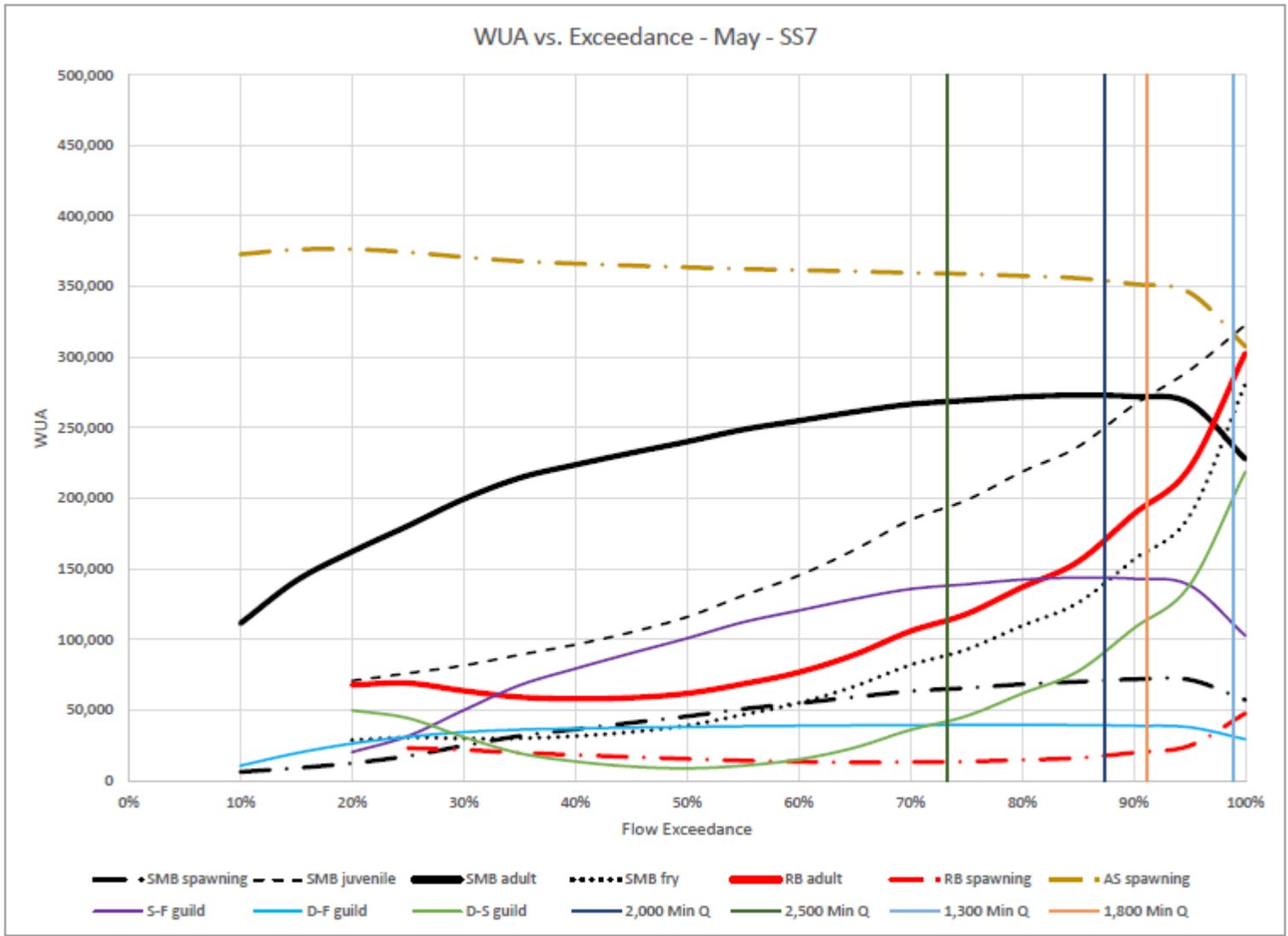
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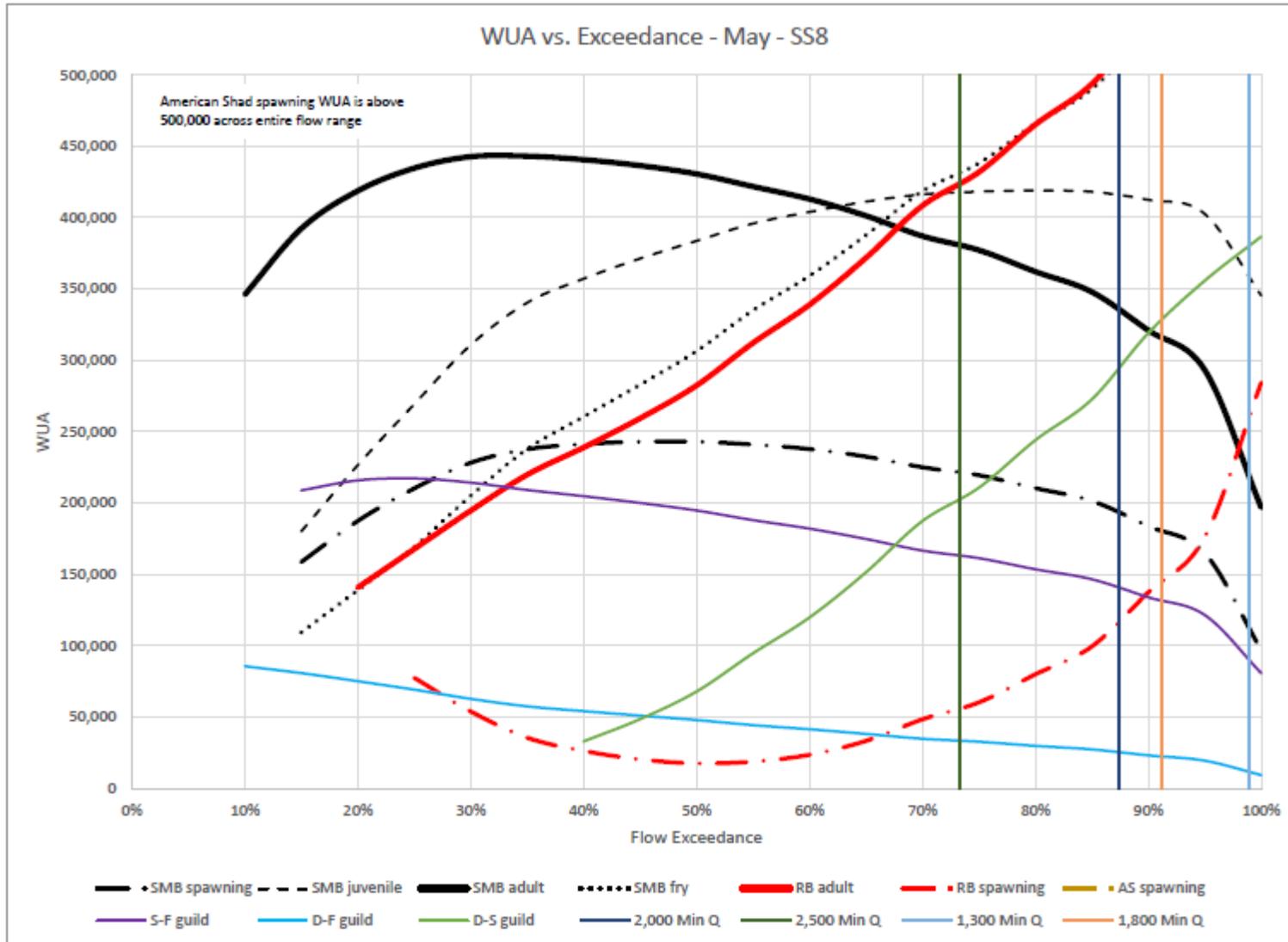
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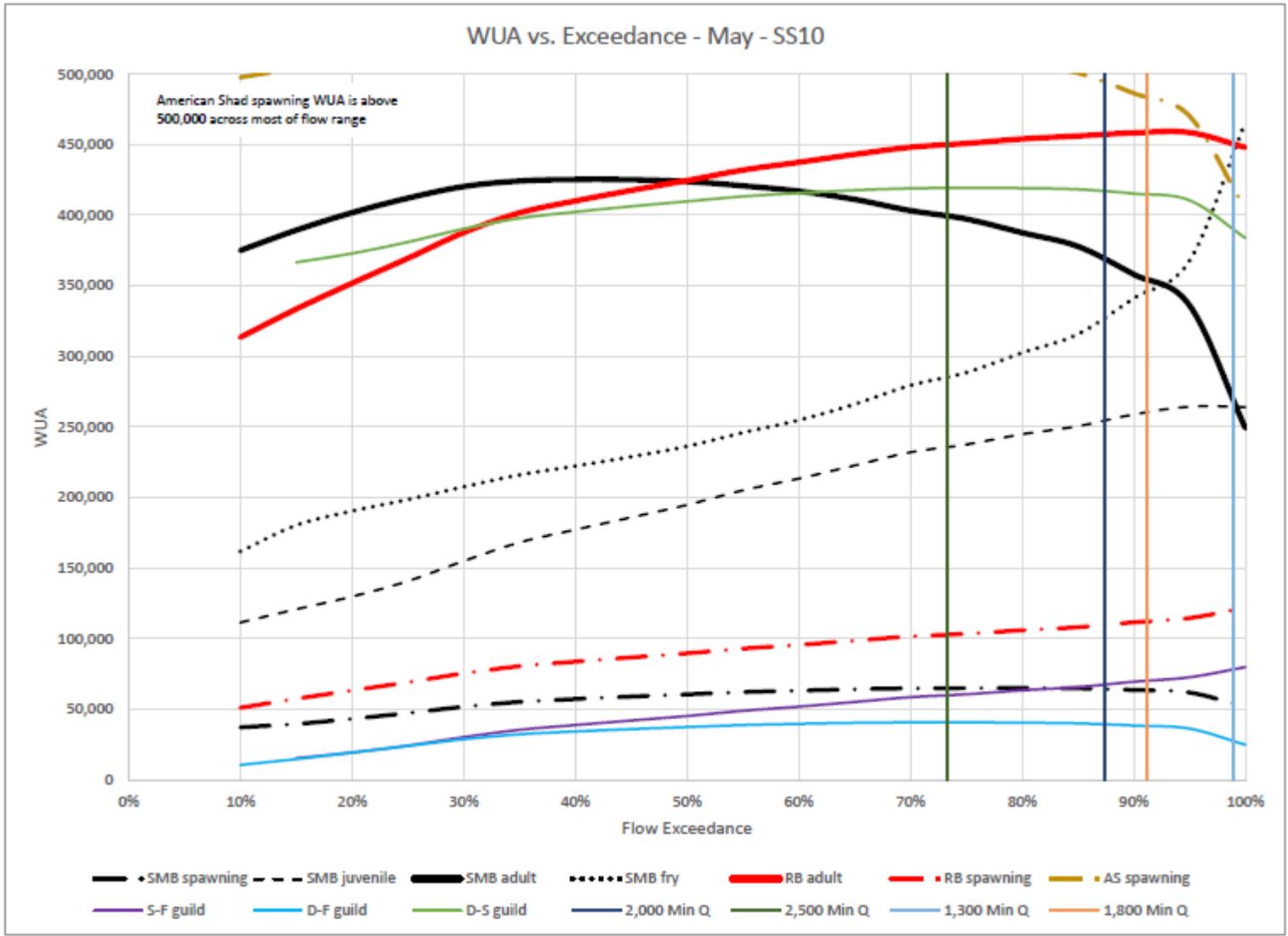
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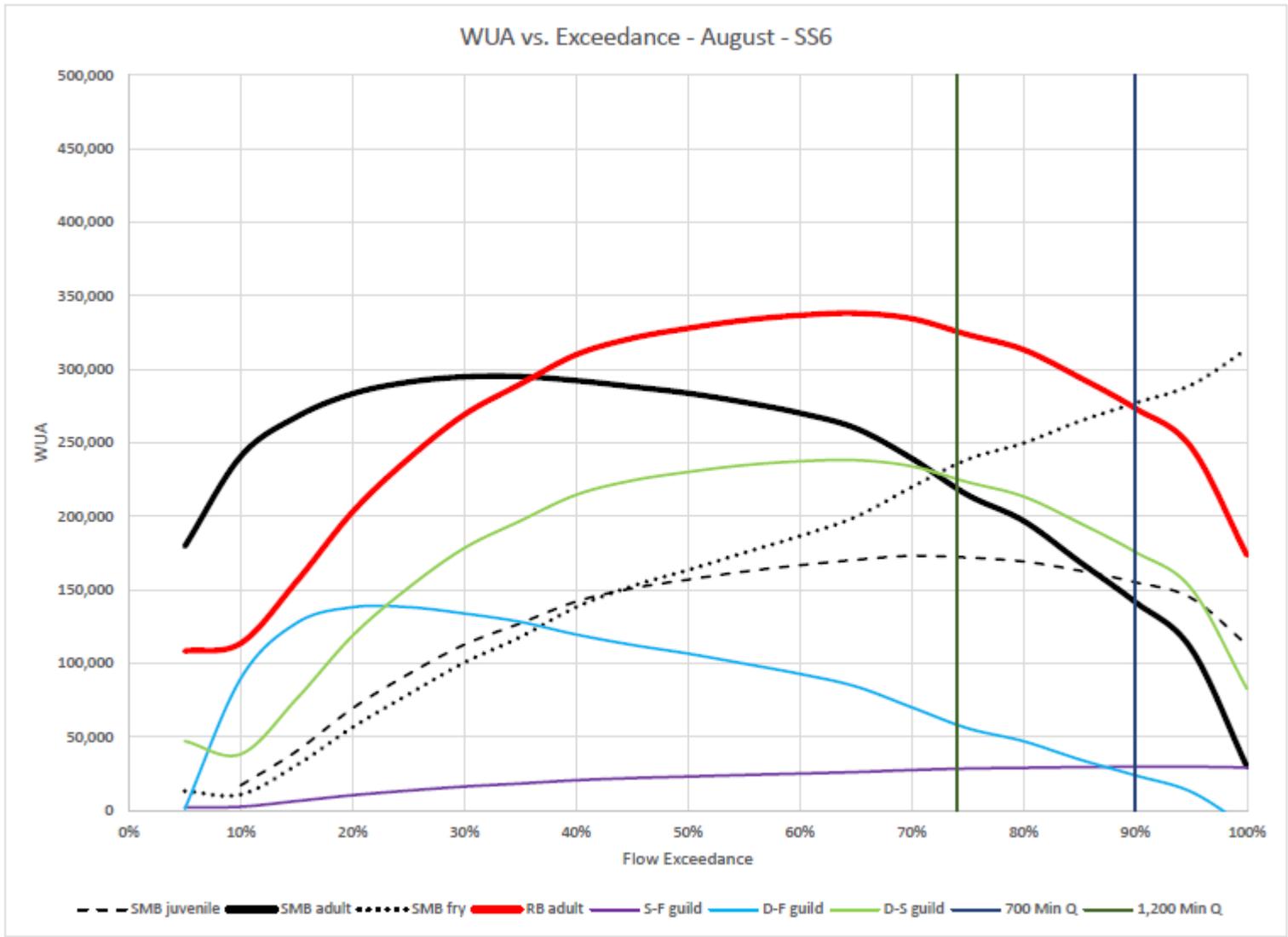
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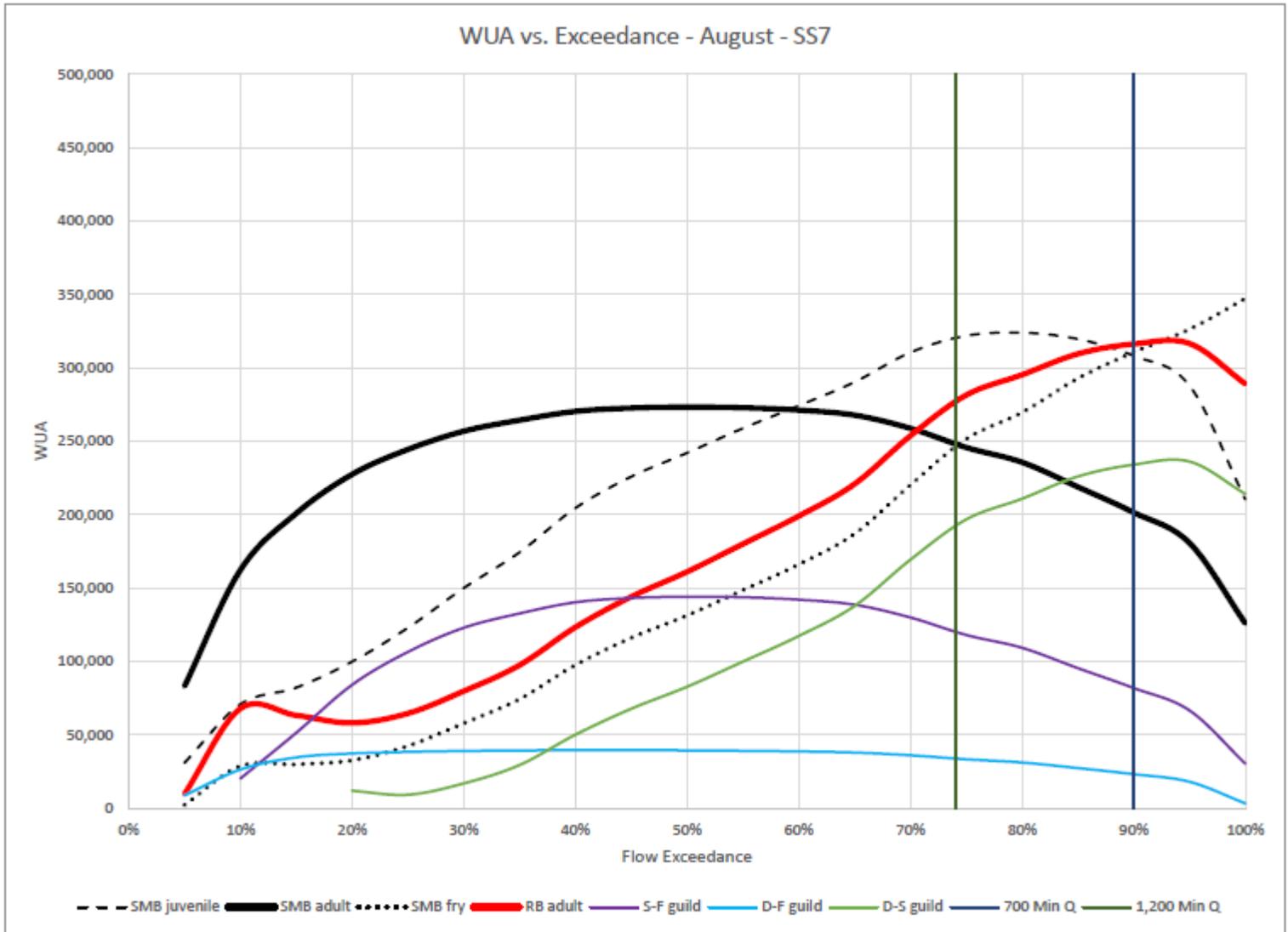
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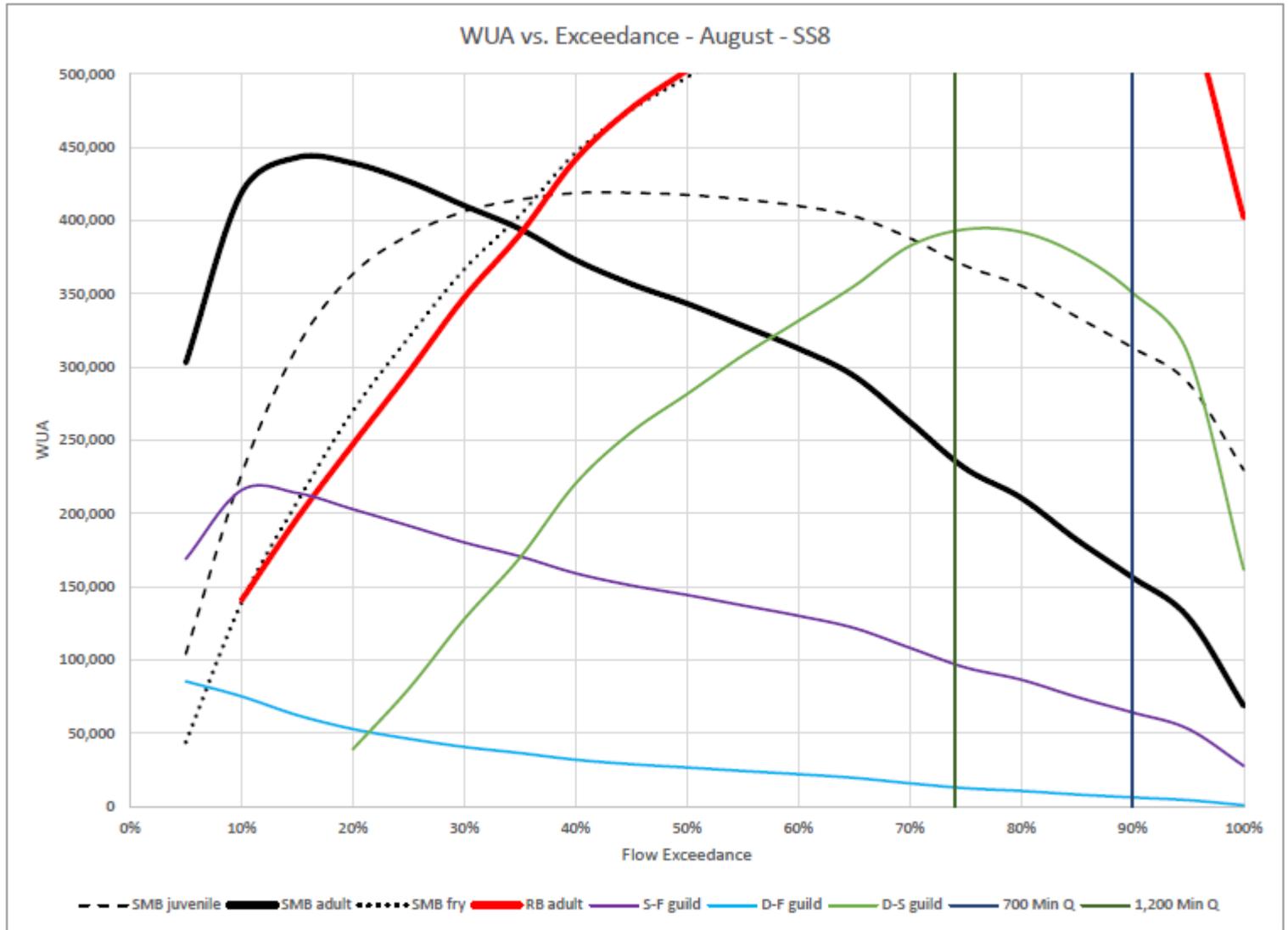
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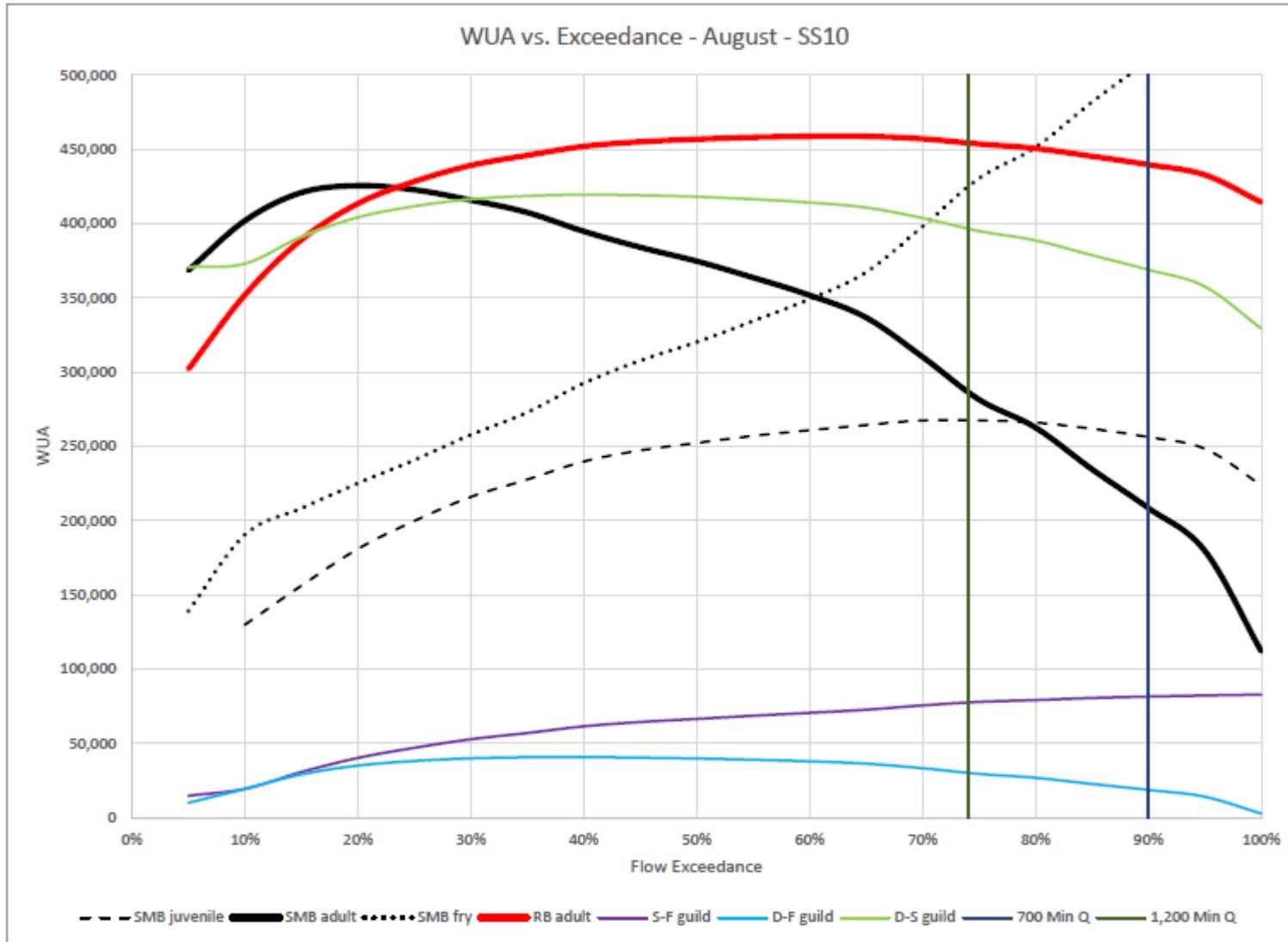
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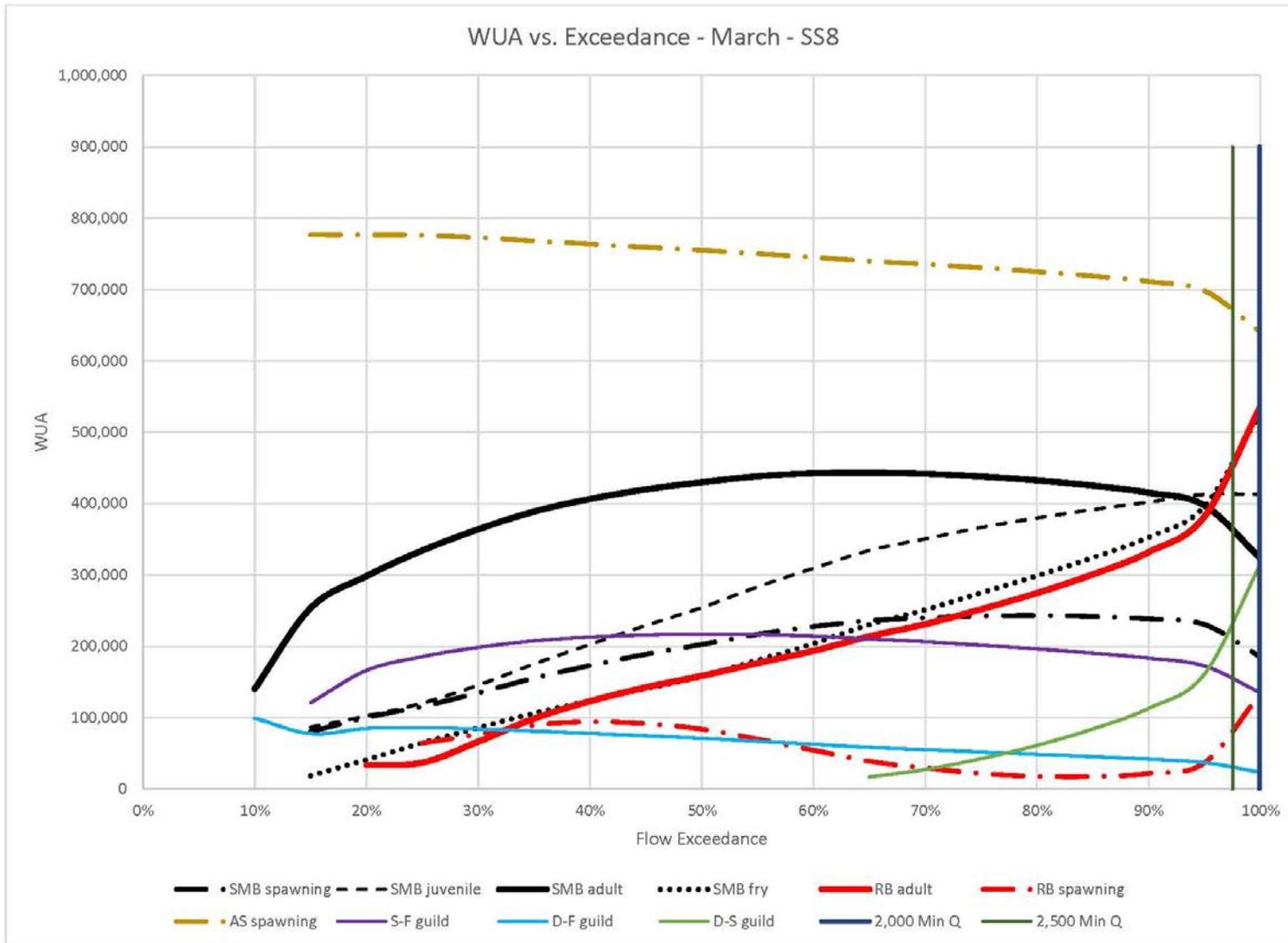
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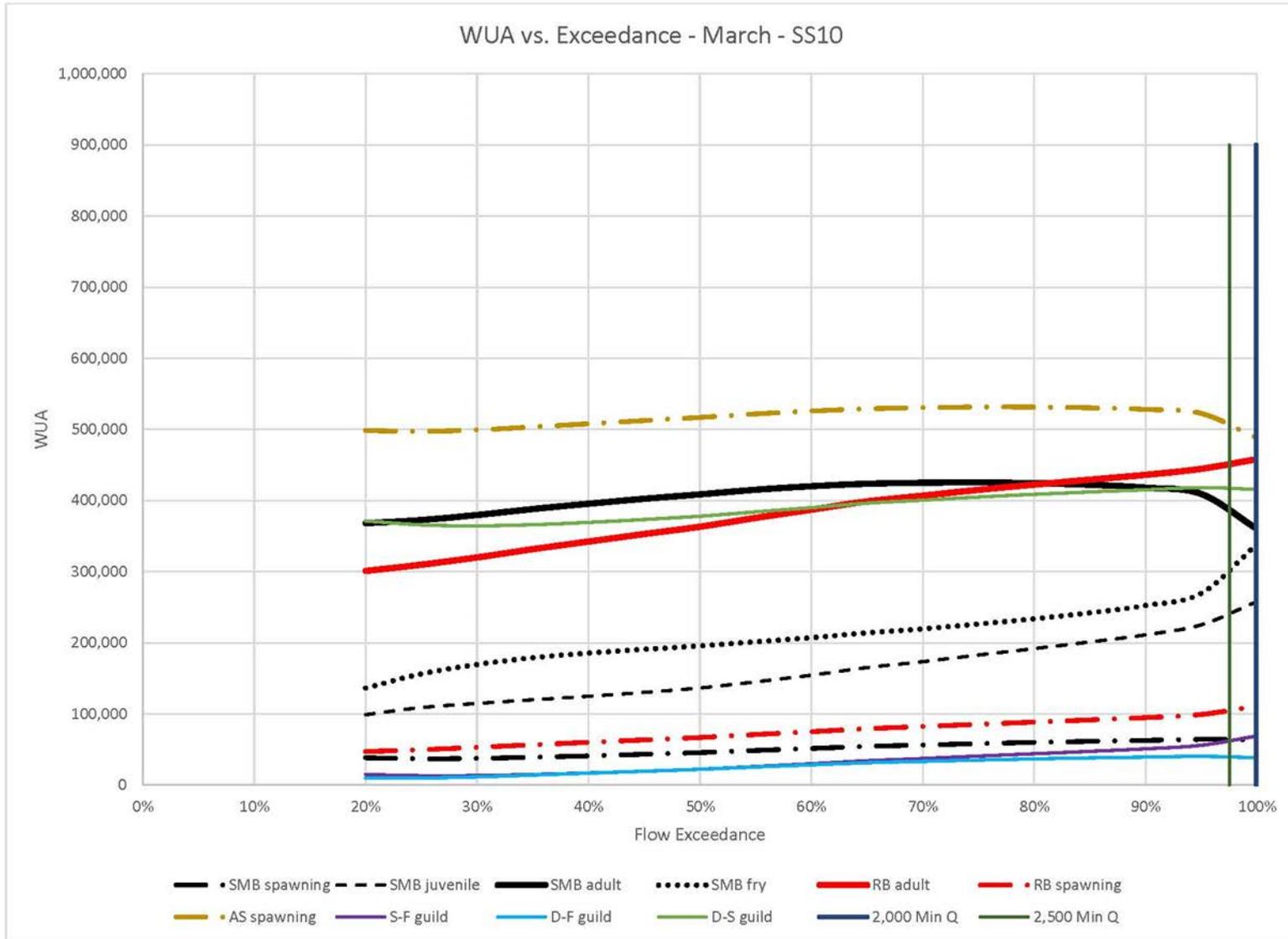
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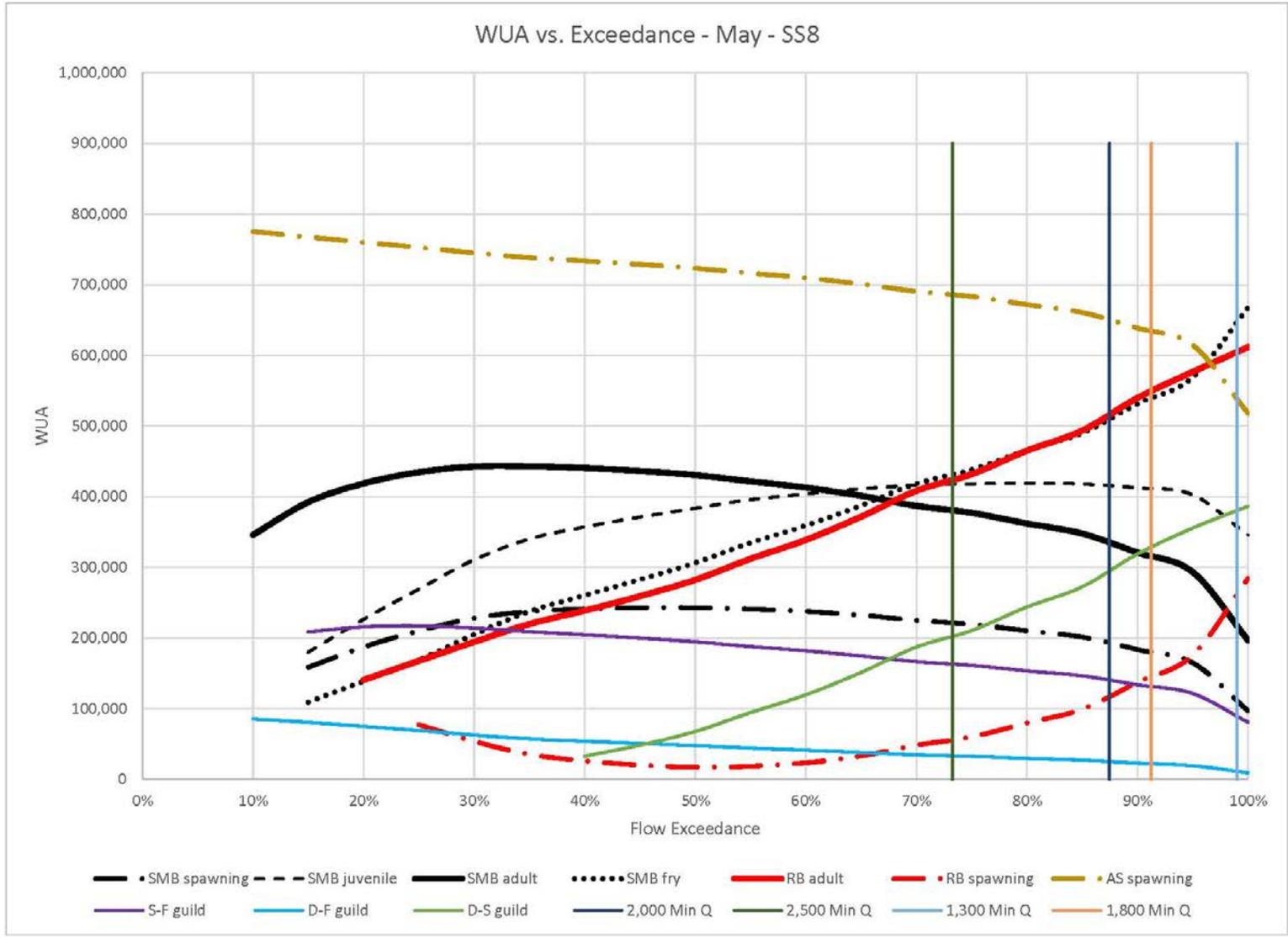
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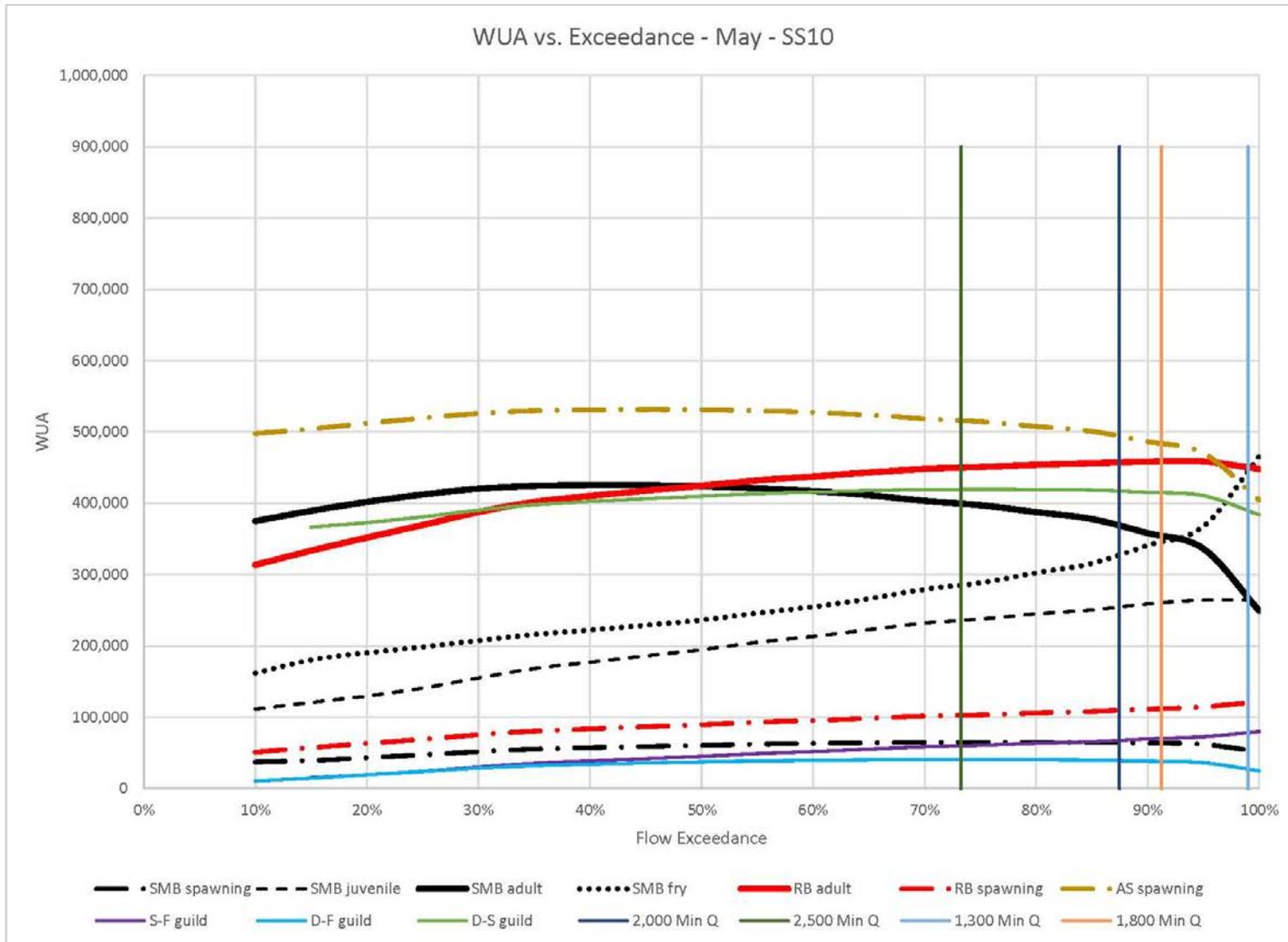
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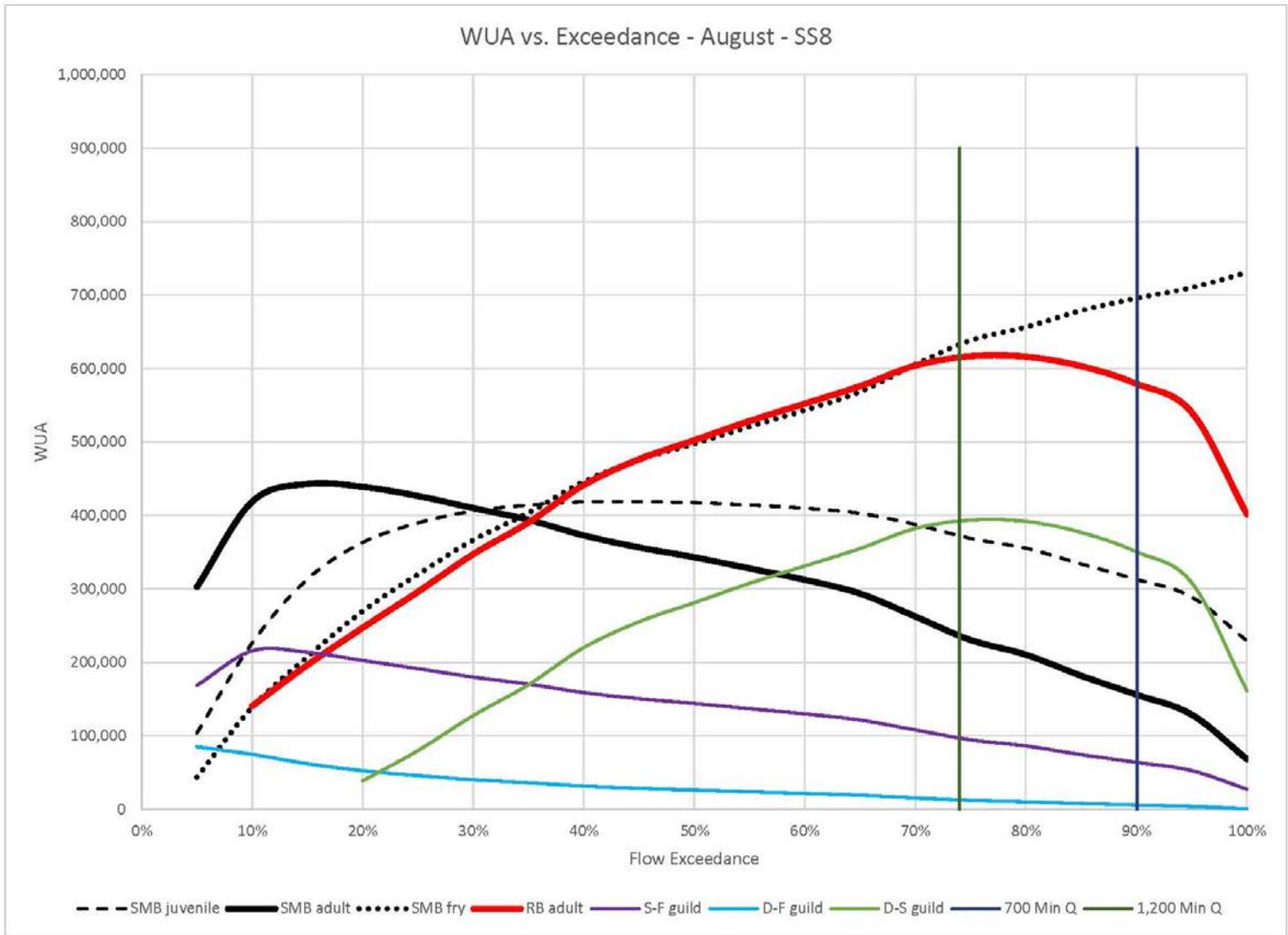
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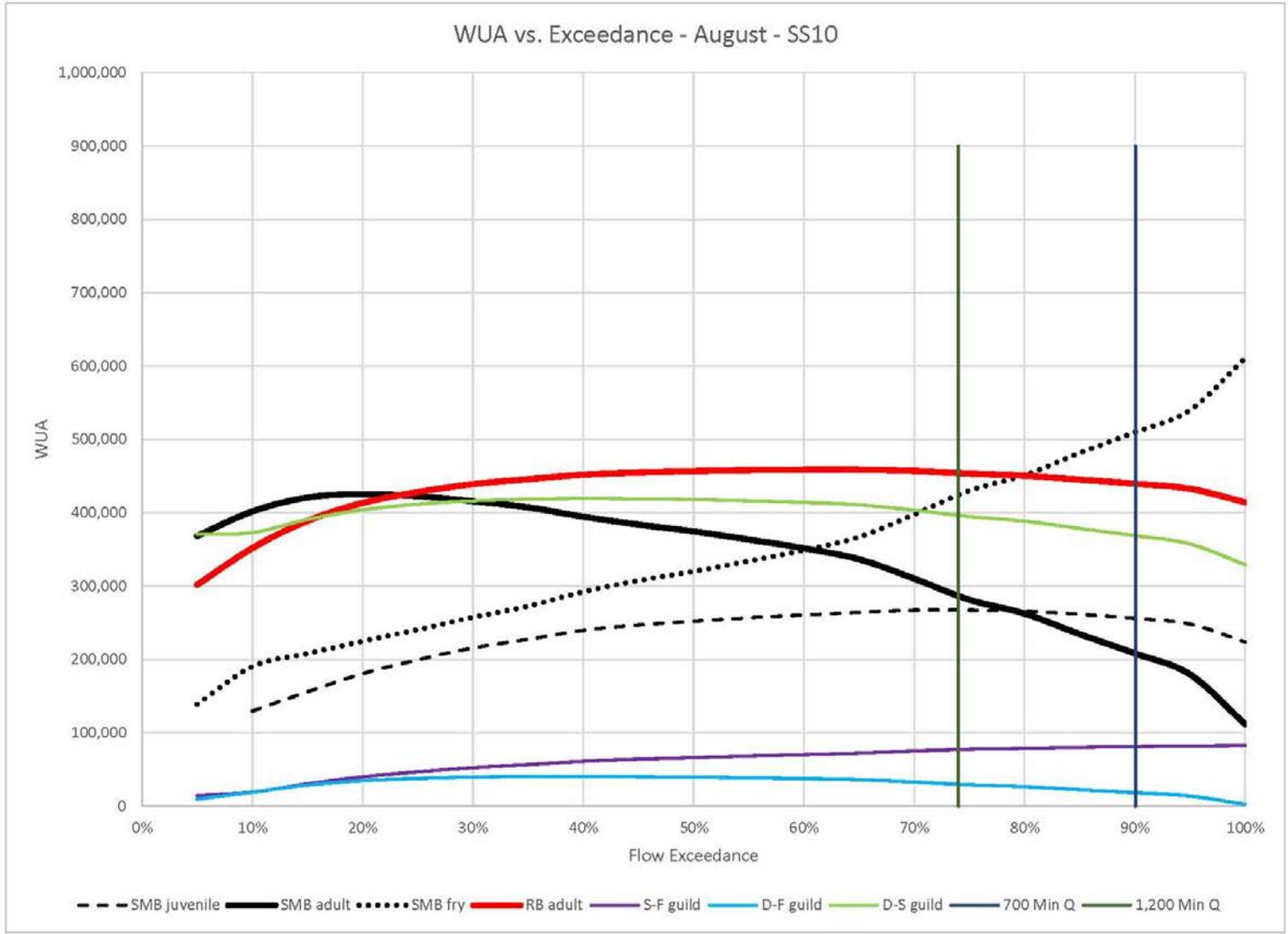
WUA vs. EXCEEDANCE – MAY SS10



WUA vs. EXCEEDANCE – AUGUST – SS8



WUA vs. EXCEEDANCE – AUGUST – SS10



MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Joint RCG Meeting**

March 28, 2017

Final KMK 05-02-17

ATTENDEES:

Bill Argentieri (SCE&G)	Dick Christie (SCDNR)
Ray Ammarell (SCE&G)	Bill Marshall (SCDNR)
Randy Mahan (SCE&G)	Ron Ahle (SCDNR)
Beth Trump (SCE&G)	Lorianne Riggin (SCDNR)
Caleb Gaston (SCE&G)	Gerrit Jobsis (American Rivers)
Pace Wilber (NOAA) via conf. call	Bill Stangler (Congaree Riverkeeper)
Melanie Olds (USFWS)	Henry Mealing (Kleinschmidt)
Rusty Wenerick (SCDHEC)	Alison Jakupca (Kleinschmidt)
David Eargle (SCDHEC)	Kelly Kirven (Kleinschmidt)
Alex Pellett (SCDNR) via conf. call	

These notes are 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 a safety moment and introductions. The purpose of the meeting was to review the Protection, Mitigation and Enhancement (PME) measures identified thus far throughout relicensing, and to discuss any new PME measures that stakeholders may propose. Specifically, the purpose of this meeting was to discuss environmentally related PMEs; a second meeting was scheduled for March 30th to discuss recreation and shoreline related PMEs. Henry said that SCE&G's goal is to file a settlement agreement with FERC at the same time that the Final License Application (FLA) is filed. Also, when the Draft License Application (DLA) is filed with FERC later this summer, SCE&G would like to include as many PMEs as possible, so that stakeholders have an opportunity to comment on them.

A PME memo was distributed to stakeholders prior to the meeting that listed all of the previously identified PME measures and SCE&G proposed response. The PowerPoint presentation that was used during the meeting is attached to the end of these notes.

Monticello Fish Habitat Enhancements

Due to poor habitat along the shoreline and reservoir fluctuations, stakeholders requested that SCE&G make efforts to enhance aquatic habitat in Monticello Reservoir. SCE&G is proposing to enhance spawning, juvenile and adult fish habitat in the reservoir. This will also help to offset entrainment losses by increasing fish recruitment and attracting fish to another area of the reservoir, away from the intake area. Bill M. asked if there were plans for a long term maintenance of the

program. Juvenile and adult enhancements are made of materials that will last for 40 years and will have no long term monitoring, but spawning enhancements will be monitored and adjusted as needed during the first 5 to 10 years of the new license. Bill A. said that after the enhancement is installed, for compliance purposes, the PME will be complete. He said that we won't be putting in trees or other substances that will decay fairly quickly over time, so maintenance shouldn't be needed. He added that if SCDNR wants to add trees to the reservoir, they are welcome to do so. Henry said that this enhancement plan was included in the Final Reservoir Fluctuation Report. He noted that this and other Adaptive Management Plans (AMPs) will be sent back out to the TWCs this summer to revisit and approve.

West Channel Water Quality Enhancements

Low dissolved oxygen (DO) was found to occur in areas within the west channel downstream of Parr Shoals Dam, so SCE&G is developing an AMP to address this issue. The AMP will be provided to the Water Quality TWC within the next month for review and comment. Gerrit asked about the success criteria for monitoring. Henry said that from SCE&G's standpoint, success would be to meet the state standard for DO. Gerrit asked to see the locations for monitoring DO in the west channel. Henry said that Ron Ahle stated in a previous meeting that he would provide a grid of random sampling locations for monitoring. When SCE&G receives this, it will be included in the AMP. Generally, monitoring will occur at the upper and middle portions of the west channel, but not at the lower section, where the west channel converges with the east channel.

Turbine Venting Plan

Rare occurrences of low DO were identified in the tailrace of Parr Shoals Dam. SCE&G determined that venting the turbines could increase DO slightly, so they developed a plan to vent turbines during the low DO season, generally from June 15 through August 31. Dick asked if there will be an AMP component the Turbine Venting Plan. He said that the window has already been extended through August and it may need to be extended even further if the low DO season shifts over the next 30-50 years. Henry said we will add a line into the Turbine Venting Plan to allow for the possibility of extending or adjusting the venting window if low DO becomes an issue outside of the existing window.

David Eargle asked if venting caused any issues within the Project. Bill A. said that venting does create a loss in efficiency and maybe some additional wear and tear on the turbines. He added that SCE&G is replacing the bearings on the turbines to make them more durable, which may actually allow for more air intake and thus making venting unnecessary.

American Eel Monitoring

During the American eel study that was conducted as part of relicensing, a small number of eels were caught/observed downstream of Parr Shoals Dam. NOAA Fisheries asked SCE&G to conduct monitoring during the term of the new license to see if eels were moving up the Broad River to the base of the Parr Shoals Dam. Monitoring will be based on the number of eels passed at the St. Stephen Fish Lift and will only include electrofishing methods.

Melanie said that she is concerned about the frequency of monitoring. She said that 10 years might be too long between studies, and there is the possibility that the trigger to increase monitoring to

every 5 years could be hit soon after the 10 year monitoring mark. She said that the first 10 year interval may be okay, but after that waiting another 10 years may be too much. Bill A. said that this plan hasn't been completely drafted yet, so we can adjust the frequency. Melanie suggested that the plan allow for monitoring every 10 years or after "X" amount of eel passage occurs at a downstream dam.

Gerrit questioned the method of using only electrofishing to survey eels. Is electrofishing alone enough to accurately document the population? Henry said that in our studies, other gear types weren't effective and electrofishing was the only successful method downstream of the dam. The goal is to detect an increase in numbers of eel that justify passage upstream. Melanie suggested that open wording be used in the plan to allow for the use of new technology that may be available in the next 30-50 years.

Dick noted that the new license for Santee Cooper (issuance is pending) includes a fish passage component that might change things. Maybe this could be used as a check point. After fish passage is installed at Santee Cooper, revisit the eel monitoring efforts at Parr.

Kleinschmidt will draft up an American eel monitoring plan and send it to stakeholders for review.

Downstream Flow Fluctuations

Stakeholders requested that SCE&G work to reduce downstream flow fluctuations year round and during spring spawning. SCE&G has identified several ways to accomplish this and will develop an AMP for this issue. Bill A. said he would like the AMP to account for a meeting each year to discuss the spring spawning flow stabilizations and a second meeting to discuss the year round flow stabilizations. He asked the group if this would be too many meetings. Dick said the meetings could be combined and that the AMP can be written to allow for flexibility with meeting. Melanie added that a two week window in the January timeframe should be included each year for agencies to give input on monitoring. SCE&G plans to have someone on site 24 hours a day for the two 14-day monitoring events to make hourly adjustments to the crest gates as needed.

Generator Upgrade at Parr Shoals Development

SCE&G plans to upgrade the generators so that the turbines can pass more than 4,800 cfs, which is currently the maximum amount of water they can pass with current generator limitations. Ray said SCE&G would like to be able to increase this to 6,000 cfs, and also pass higher inflow through the turbines and reduce downstream flow fluctuations due to crest gate operation. Ray said they are still evaluating this, but they should have a decision on this by the time the DLA is issued.

Gerrit asked about the timeframe for making a definite decision on generator upgrades. Bill A. said this has to be in the FLA, so 2018 at the latest. Gerrit asked if there will be a net generation benefit. Ray said, yes, they should be able to pass more water through the powerhouse instead of spilling it.

Santee Basin Accord

SCE&G is a signatory to and active participant in the Santee River Basin Accord for Diadromous Fish Protection, Restoration, and Enhancement (Accord) and will continue to be involved in this program. Bill S. asked how the flooding issues at the Columbia Hydro Project will affect the

Accord, since fish passage at Parr is based on passage numbers from Columbia. The City of Columbia could forfeit their license and the project could be decommissioned. What would happen to the license requirement of monitoring the fish passage facility? If there is no monitoring, would new triggers for fish passage at Parr be developed? Dick said that monitoring is a big responsibility and so is keeping the fishway operating, and he doesn't know if a state agency could take on this responsibility. No one knows exactly what will happen at Columbia in the future.

Henry suggested that the agencies discuss this with the Accord members and see if they have a suggestion.

Downstream Navigation Flows

SCE&G completed navigation surveys at two ledge sites identified by the stakeholders as points of constriction in the Broad River. The surveys concluded that 700-1000 cfs is needed to safely navigate the two ledges. Gerrit said that American Rivers submitted written comments on this study and said that according to the navigation criteria included in the study plan, a flow of 1000 cfs is needed for navigation. Henry stated that the 700 cfs flow creates a channel over 60 feet wide and that a canoe, kayak, or jon boat should be able to navigate the most constricted ledge even if this doesn't strictly meet the criteria. Henry also noted that the criteria isn't a state statute but a recommendation from SCDNR.

Bill M. said that the Bookman Island complex is very complicated and navigation can be tricky. He asked if information is going to be provided that shows the best route to navigate the complex. Henry said that once minimum flows are settled, anyone who is interested will be invited to boat the area to verify navigation. He also said that a map that shows navigation routes will be developed and posted on SCE&G's website for public use.

Downstream Minimum Flows

SCE&G plans to propose a continuous minimum flow for the new license. The Instream Flows TWC is still actively discussing what the new minimum flows should be. The TWC has agreed that there should be three flows, including a spring spawning flow, a transitional flow, and a low flow for summer months. SCE&G has been gathering additional information since the last TWC meeting and will distribute this information to the stakeholders soon. Stakeholders will have an opportunity to meet outside of the TWC to discuss this information, and then the entire TWC will reconvene to discuss and hopefully negotiate and agree to the three flows.

Dick said that since the last TWC meeting, SCDNR has internally discussed the possibility of having target flows and compliance flows, and giving SCE&G an "incentive" to meet the target flows. If flows aren't met for a certain period of time and are off by a certain amount, SCE&G would have to provide some sort of mitigation.

Gerrit said that the real goal is not to put SCE&G in a compliance bind, but to implement flows that will benefit the river as much as possible. He said if rules are developed that provide better downstream flows, instead of hard numbers for flows that might be more beneficial. He agrees with SCDNR's idea to provide an incentive/mitigation for meeting target flows.

The TWC has discussed possibly using the daily average of the previous day's inflow to develop a target for the following day's minimum flow, as suggested by Melanie at the previous TWC meeting.

Bill M. asked if there would be a low inflow protocol (LIP). Bill A. said that part of the new minimum flow proposal would be to take the place of a LIP. Ray said the compliance flow would be adjusted down until it hits inflow. A LIP can be cumbersome and it would be easier if it is built into the daily flow. Gerrit said he is optimistic that minimum flows can be agreed on, especially looking at how well things worked out during the Saluda relicensing. Melanie said that compliance flows could be set and target flows could be very adaptive. And flows could be readjusted through meetings if habitat goals are not met. Ron said that could mean a lot of field work and Melanie said it doesn't have to be done on a yearly basis. Henry reminded the group that this Project does not have a storage reservoir to supplement low inflows so future adjustments of flows may be limited. He also noted that the biggest driver for annual flows would be the basin hydrology – high, medium, or low water years as this changes from year to year.

Gerrit said that the way he understands the state law, the minimum flow applies to a section of river downstream of the Project. If an entity is withdrawing water downstream, such as the Town of Winnsboro, the withdrawal could bring a section of the river out of compliance during low flow periods. Either the Town of Winnsboro can only withdraw water when river flow is above some minimum flow, or SCE&G must release more water to make up for the Town of Winnsboro's withdraws. This is something for SCDHEC to consider as they approve withdrawals.

Dam Removal in the Broad River Basin

Henry said that American Rivers presented the idea of SCE&G funding dam removals in the Broad River Basin early on in the relicensing. At this time, SCE&G is not proposing this as a PME measure.

Gerrit apologized for not providing information earlier, but is prepared to discuss this items further. He said that Parr Reservoir impounds 15 miles of the Broad River. Fluctuations in the reservoir and downstream cause impacts to aquatic habitat and recreation, and none of the proposed PMEs offset these impacts. He would like SCE&G to create a fund for dam removals, which would create riverine habitat in the basin to offset impacts to the Broad River. He would also like SCE&G to create new recreation resources to offset recreation impacts.

Gerrit provided the following requests to SCE&G:

- Recreation Enhancement – To offset impacts to water based recreation from the combined operation of FPSP and PSP, SCE&G will:
 - Provide funding and donate land for a non-motorize boat launch on the west bank of the Broad River in the vicinity of Haltiwanger Island;
 - Provide funding to develop a website that promotes recreation opportunities at the Broad and Enoree rivers in Richland, Lexington, Fairfield, Newberry, Laurens and Union counties;
 - Provide funding for developing, printing and distributing high quality, waterproof paddling maps for the Broad and Enoree rivers in Richland, Lexington, Fairfield, Newberry, Laurens and Union counties.

Decisions for how the funds are to be spent will be determined by a fiduciary board consisting of representatives of SCE&G, SCDNR, USFWS, Congaree Riverkeeper and American Rivers.

- Aquatic Habitat Enhancement - To offset impacts to aquatic habitat from the combined operation of FPSP and PSP, SCE&G will:
 - Provide funding for voluntary dam removals or floodplain restoration in the Broad, Congaree and lower Saluda watersheds
 - Fund at a rate of \$135,000 per year in 2017 dollars. This amount is based on an average cost of approximately \$410,000 per dam removal in 2017 dollars and the expectation to remove one dam for every three years of the license term.

Decisions for how the funds are to be spent will be determined by a fiduciary board consisting of representatives of SCE&G, SCDNR, USFWS, NMFS, Congaree Riverkeeper and American Rivers.

Henry mentioned that during the Recreation Use and Needs Study, the public did not indicate that there was a need for additional recreation opportunities downstream of the Project. Paddling enhancements were requested and are being addressed by enhancement of the Enoree River Bridge Recreation Site and Highway 34 Recreation Site. Alison J. said that only four people responded to the Recreation Flow Survey and the results didn't indicate a need or interest in additional downstream recreation. Bill A. said that if a recreation site were built outside of the PBL, FERC might want this land to be included in the PBL, and this is a concern for SCE&G. Bill A. asked Bill S. if he talked with SCE&G's Land Department to see if they would be interested in donating a piece of land for recreation, outside of the relicensing process or municipalities that would be interested in building and maintaining a recreation site. Bill S. said he hasn't talked with either of them yet.

Bill A. said that regarding the recreation maps, SCE&G is willing to develop these and house them on their existing website. Gerrit said that would be acceptable, or even house them on a separate website and just include a link on SCE&G's website. Gerrit said the maps could include information on safety, species in the area, and cultural connections in the area to educate recreators. Gerrit said he would provide examples.

Bill A. asked Gerrit if there are potentially 12 or more dams identified within the area that need to be removed. Gerrit said these are voluntary removals and approximately 40 dams have been identified in South Carolina. Once a dam is identified, American Rivers would approach the dam owner to see if they are interested in dam removal. He said they don't have any dams identified as ready for removal currently because there is no funding source. However, if funding becomes available, dams can be identified. Gerrit said he would provide a list of dams in the Broad River Basin and Congaree River tributaries that would be eligible for removal. Rusty said that maybe an application process could be implemented, where people can apply to have their dams removed. He said the SCDHEC dam safety program has lots of staff now, so they might be able to provide assistance.

Bill A. asked what is involved with a dam removal; what types of tasks would the money be used to fund? Gerrit said that the money would be used to fund things such as design engineering, in-channel work, planting, contaminant analysis with sediment sampling, construction/demolition, and permitting.

Ron said that if small dams are removed, there may not be a lot of benefit, but if there is one big dam removal, it might be more beneficial. He said there is so much variability in dam size, the rate of one dam removal for every three years can be confusing. Gerrit said he would like the funding level to be at one dam removal every three years, however, the program might not necessarily take out one dam every three years. A fiduciary committee would determine the best use of money. The committee may elect to save up for many years to provide funding for one large dam removal.

Other PME's

At the end of the meeting, Henry asked the group if there were any other PME's they would like to discuss that had not previously been brought to the table.

Ron said that on the Recreation Lake, the boat ramp is very narrow and is bordered with rip-rap, making it very hard to launch a boat. He said that you have to walk out on the rip-rap, which can be dangerous. Ron asked that a courtesy dock be constructed at this boat ramp.

Ron also said that he would start a baseline study on fisheries in the west channel. He will put together a study proposal with the intention of starting the study this year. He plans to conduct three samples per year for two years to establish the baseline, and repeat the study again as changes are made. He also said he will provide the grid for sampling DO in the west channel, as he indicated at a previous meeting.

Bill M. said that SCDNR has been considering the unavoidable impact to aquatic resources in Parr Reservoir and the unavoidable impacts to the downstream area from flow fluctuations. While SCE&G is trying to minimize flow fluctuations, there will still be some fluctuation that will never be completely eliminated. In response, the PME measure that SCDNR has considered is establishment of a funding mechanism for various programs. He said that SCE&G could provide funding for an existing mitigation and enhancement program such as the Broad River Mitigation Trust Fund or the Santee Accord, or create a new in-license habitat enhancement program that would focus on the entire watershed.

SCDNR is also considering the effects of entrainment. They will continue to discuss how to reduce the impacts of entrainment with SCE&G, including the presence of lights or other “bells and whistles” to scare fish away. Bill M. said that some entrainment studies at other projects have shown that one intake may draw more fish in than others, so making operational changes may help reduce entrainment.

Bill A. said that SCE&G is already planning to make operational changes to reduce downstream flow fluctuations. If SCE&G was to create a fund, would they then not need to implement the operational changes? SCDNR seeks to avoid or minimize impacts as the initial steps of mitigation, and the operational changes are expected to reduce impacts but not eliminate them. Bill M. said there will still be some unavoidable fluctuations that will happen, and the fund will be to address these unavoidable impacts.

Melanie said that she didn't see any PME's that would monitor changes downstream after new minimum flows and reduced flow fluctuations are implemented, such as the mussel population. She said that monitoring could be tied back to the fund that SCDNR is proposing.

Caleb said that requesting funding for external goals should not be considered. Instead, any amount of money contributed to a fund should be based on losses from the Project. Gerrit said that he believes his proposal for contributions to dam removal is reasonable. He estimated that habitat and other losses from the Project are approximately \$96 million due to the impoundment of 15 miles of the Broad River by Parr Reservoir. Henry said that number would be based on pre-Project impacts, for which SCE&G has already mitigated during the Project's re-development. Bill S. said that he thinks there is a benefit in the flexibility of having a fund that will address all of the various unavoidable impacts.

Bill A. suggested that the group hold a meeting to discuss these new PM&E measures, such as a habitat enhancement fund, future entrainment studies, and monitoring studies. The stakeholders need to provide specifics for each of these prior to the meeting so that they can be reviewed and considered with SCE&G management.

With that the meeting adjourned. Action items from this meeting are listed below.

ACTION ITEMS:

- Kleinschmidt will send out the Final Reservoir Fluctuation Report to the TWC for another review.
- Kleinschmidt will add wording to the Turbine Venting Plan to allow for an adjustment of the turbine venting window in the future, if determined as necessary.
- Stakeholders (specifically NOAA and USFWS) to provide comments on what they would like to see in the American Eel Monitoring Plan. Kleinschmidt will use these comments to develop a plan and distribute to Fisheries TWC for additional comments.
- Kleinschmidt will send out the West Channel AMP draft ASAP.
- Once minimum flows are established, SCE&G and Kleinschmidt will schedule demonstration flows, and invite stakeholders to boat the river to verify navigation.
- SCE&G and Kleinschmidt will distribute the additional information on minimum flows ASAP. Stakeholders are encouraged to meet separately and discuss this information. SCE&G will then schedule an Instream Flows TWC meeting to discuss minimum flows.
- Bill Stangler will talk to SCE&G's Land Department to discuss the donation of land and to municipalities for developing and maintaining a recreation site on the Broad River, downstream of the Project.
- Gerrit will send some example recreation maps, similar to what he would like SCE&G to develop for the Project. Gerrit will also send a fact sheet on dam removals, a list of dams identified for removal in South Carolina, and information on removed dams.
- Ron will provide the sampling grid for the West Channel AMP.
- SCDNR, USFWS and other stakeholders will send in specifics for a habitat enhancement fund, future entrainment studies, and monitoring studies prior to the next meeting.
 - USFWS to provide specifics for a Mussel Monitoring Plan – where, when, how, why, who and what is the goal?

MEETING NOTES

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
Joint RCG Meeting**

March 30, 2017

Final KMK 05-02-17

ATTENDEES:

Bill Argentieri (SCE&G)
Ray Ammarell (SCE&G)
Randy Mahan (SCE&G)
Beth Trump (SCE&G)
Corbin Johnson (SCE&G)
Tommy Boozer (SCE&G)
Billy Chastain (SCE&G)
Dan Adams (SCE&G)
Brandon McCartha (SCE&G)
Caleb Gaston (SCANA)
Brandon Stutts (SCANA)

Melanie Olds (USFWS)
Dick Christie (SCDNR)
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Kelly Kirven (Kleinschmidt)

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

Alison opened the meeting with a safety moment and introductions. The purpose of the meeting was to review the Protection, Mitigation and Enhancement (PME) measures identified thus far throughout relicensing, and to discuss any new PME measures that stakeholders may propose. Specifically, the purpose of this meeting was to discuss recreation and shoreline related PMEs; a meeting was held earlier in the week on Tuesday, March 28th to discuss environmentally related PMEs. Alison reminded the group that SCE&G's goal is to file a settlement agreement with FERC at the same time that the Final License Application (FLA) is filed (June 2018) and include as many PMEs as possible in the Draft License Application (DLA) when it is filed with FERC later this summer.

A PME memo was distributed to stakeholders prior to the meeting that listed all of the previously identified PME measures and SCE&G proposed response. The PowerPoint presentation that was used during the meeting is attached to the end of these notes.

Recreation Site Monitoring/Maintenance/Improvements at Parr Reservoir

Based on the results of the Recreation Use and Needs Study (RUNS), the Recreation TWC developed a list of proposed recreation enhancements for Parr Reservoir. The informal Highway 34 Recreation Site and the informal Enoree River Bridge Recreation Site will both be improved and formalized. The experimental canoe portage at Parr Shoals Dam will also be formalized. Cannon's

Creek Recreation Site will receive upgrades and improvements. A Recreation Management Plan (RMP) will also be developed for the Project.

David Eargle asked if the channel in Parr Reservoir will be marked for hazards and navigation. Bill A. asked David if he was thinking of marking a path from the Cannon's Creek and Heller's Creek recreation sites into the main reservoir and David said yes. Tommy said that SCDNR would have to do the hazard marking in the reservoir. Bill M. said that there is a Memorandum of Agreement (MOA) from 1979 between SCDNR and SCE&G that SCDNR would like to revisit and possibly update. Hazard markers were part of the original MOA and might need to be carried forward into a new agreement. SCDNR would install the markers with help from SCE&G. Henry said that SCE&G and SCDNR should review the MOA and decide if it needs to be included in the Settlement Agreement or if it should be a separate agreement.

Recreation Site Monitoring/Maintenance/Improvements at Monticello Reservoir

Results from the RUNS were used to develop a list of proposed recreation enhancements at Monticello Reservoir. SCE&G will improve the Project and non-Project portions of the Scenic Overlook. They will also make improvements at the Highway 99 "West" and "East" Recreation Sites. The Highway 99 "East" site is currently informal and it will be formalized after the new license is issued.

At the PME meeting on Tuesday, Ron Ahle asked that SCE&G construct a courtesy dock at the Recreation Lake boat ramp. Dick said he talked with Ron about this and agrees that it would be a good addition. There is a safety concern with walking on the rip-rap when launching a boat. Bill A. said he would talk to SCE&G management about this request.

Erosion Monitoring and Control on Parr and Monticello Reservoirs

Currently, SCE&G monitors the shoreline of Parr Reservoir for erosion annually and the shoreline of Monticello Reservoir bi-annually. Alison said that FERC likes to see formal plans for erosion monitoring and control. This plan will be formalized and included in the DLA.

Melanie asked why Parr is monitored annually and Monticello is monitored bi-annually. Ray said there has always been more concern around Monticello Reservoir for erosion and they wanted to monitor the shoreline more frequently because of this. At Monticello Reservoir, there are areas where the Project Boundary Line (PBL) is close to the shoreline. When there is the potential for encroachment on the PBL, SCE&G obtains a permit from the US Army Corps of Engineers and works with the property owner to get access to add rip rap. Bill A. said that Parr Reservoir doesn't have any significant areas of severe erosion but Monticello does mainly due to significant wind and wave action on the reservoir.

Shoreline Management Plans for Parr and Monticello Reservoirs

SCE&G updated the existing Shoreline Management Plan (SMP) for Monticello Reservoir and created a new SMP for Parr Reservoir. SCE&G also created a Permitting Handbook that will be distributed for public use.

Bill A. said there was land designated as Future Recreation next to the Fairfield tailrace and there was discussion with SCDNR about potentially reclassifying the land as Project Operations and

providing a different tract of land for Future Recreation. However, SCE&G has decided to keep the lands classified as Future Recreation.

Bill M. said SCDNR has some questions about the Broad River Waterfowl Area. The SCDNR boundaries (which are shown on maps sent to Ray A. by Bill M.) include some land that is outside of the PBL and not owned by SCE&G. The group reviewed the maps from Bill M. on the screen and Ray stated that SCE&G does not intend to change the PBL in that area and the original agreement in the 1970s was for the construction of the waterfowl sub-impoundment itself, with some of the surrounding property being denoted on the Exhibit K maps as “Game Management Area”, which is now called Wildlife Management Area. Bill M. said that some of the land that was offered by SCE&G in the potential trade for Future Recreation lands was land that SCDNR already occupies in the Broad River Waterfowl Area. Corbin said this land was offered to SCDNR to include in the waterfowl area so they could have more control over the land. SCE&G will discuss this issue and the Enoree River Waterfowl Area boundary further with SCDNR outside of the meeting.

Alison noted that the SMPs are scheduled for review every 10 years of the new license.

Cultural Resources

SCE&G worked with the State Historic Preservation Office (SHPO) to complete Phase I and Phase II cultural studies.

SCE&G also developed a Historic Properties Management Plan (HPMP) and filed it with FERC. FERC is developing a Programmatic Agreement (PA) which will take effect after the new license is issued. As part of the HPMP and PA two kiosks will be constructed at Cannon’s Creek and the Highway 215 boat ramp. One kiosk includes information on the Lyles Ford area that was impacted by Project operations and the other kiosk has a timeline history of the Project.

Bill A. said that one site is being impacted by erosion from Project operations and SCE&G will do stabilization to prevent further erosion or will complete a data recovery at the site. They have not decided which mitigation they will complete yet. Bill M. mentioned that SCE&G should put the kiosk information on their website as well and Bill A. said they will do that as part of the HPMP requirements.

Recreation Resource Maps

During relicensing, stakeholders requested that SCE&G develop a map that displays recreation areas downstream of Parr Shoals Dam, along with navigation points and Rocky Shoals Spider Lily (RSSL) locations. SCE&G would like to complete this as an off-license agreement. Gerrit said he would like to see recreation information from Neal Shoals through the Parr Reservoir and downstream to Columbia Hydro, including locations of recreation sites on the Enoree River and Cannon’s and Heller’s creeks. SCE&G will develop a draft of the map and send it to the stakeholders to review.

RSSL Outreach and Education

During previous meetings, the Congaree Riverkeeper requested that SCE&G make efforts to educate the public on the RSSL. SCE&G has agreed to do this as an off-license agreement and will provide information on the RSSL on the recreation maps and on their website.

Melanie asked why SCE&G is not doing periodic monitoring of the RSSL. Bill A. said the populations are located downstream outside of the PBL. Henry added that they were never identified as a “driver” for setting minimum flows, so monitoring wasn’t warranted.

Melanie asked if signs are located in the area of the RSSL populations that ask people not to pick the flowers. Bill A. said the flowers are in the middle of the river and he doesn’t know where they would put signs. Melanie said they could put signs on the access points on the Broad River. Bill A. said the access points aren’t owned by SCE&G and the signs could be vandalized. Henry said maybe they could develop a brochure that also includes information on bald eagles and other species in the area to educate the public. It was also mentioned that this information could be included on the recreation resource maps. Dick said it would be nice if the brochure could be posted to SCE&G’s website before the license comes out. The group looked at a similar brochure developed for Saluda Hydro Relicensing on the screen.

Downstream Recreation Flows

Alison said that SCE&G did a study to determine if there was an interest in recreation flows that included a focus group and an online survey. The survey did not provide much feedback, as only four responses were received. The flows that were requested during the summer months are typically during times of low inflow. This Project does not have a storage reservoir, so providing recreation flows when inflow is low is not possible. Recreation flows would only be available during wet summers.

Alison said that when the downstream minimum flows are tested, stakeholders will be able to boat the flows and see how they would work for recreation and navigation. The Recreation TWC will be notified when the demonstration flows are scheduled so they can plan to participate.

Gerrit said that setting the flows for navigation only doesn’t provide for a high quality canoe/kayak experience. He said that there is a huge storage reservoir in Monticello Reservoir that could release water for recreation for short periods of time. Henry reminded the group that Monticello is not a storage reservoir. It is used for the pumped storage facility only. Ray said that releasing water from Monticello and then releasing that water from Parr Shoals Dam for recreation purposes is a loss to the pumped storage system and is counter to the way SCE&G needs to operate Fairfield to meet the needs of the electric system. Ray said that changing the minimum flow from a daily average to a continuous flow should help with recreation.

Palmetto Trail Contributions

Stakeholders requested that SCE&G contribute to the Palmetto Trail, however SCE&G already provides funding, easements, and volunteer labor through the V.C. Summer Facility, and they do not plan to make additional donations as part of Parr Relicensing.

Other PME Requests

SCDNR said that there is currently an informal agreement with SCE&G to coordinate the draining and flooding of the waterfowl impoundments. SCDNR would like this agreement to be formalized and included in the Settlement Agreement. Dick said the agreement needs to be adaptive to changing conditions and focus on communications. This should be discussed each year so SCDNR and SCE&G can come up with a mutually agreeable way to drain and flood the impoundments.

Bill M. and Dick said that they have discussed different ways that SCE&G can mitigate for unavoidable impacts particularly to aquatic resources. There should be something in the PME package that encourages stakeholders to support long term licenses. SCDNR would like to see additional land conservation and protection, particularly riparian lands or wetlands since they are important to aquatic species. Other important lands are those that provide public access and recreation benefits. Bill M. said that SCDNR is also interested in Wildlife Management Area (WMA) property enhancements and large parcels of land that provide public benefits. Henry asked if they had identified any land or if they have an idea of how much land they would want. Bill M. identified 14 parcels of land owned by SCE&G that SCDNR might be interested in. These lands could be put into a conservation easement or a WMA. SCE&G could commit to protect and not develop these lands for the term of the new license. Bill A. asked if it would be okay with SCDNR if SCE&G maintained timber and mineral rights. Bill M. said that probably would be fine. Dick said lands that allow for habitat and species protection are valuable. Lands that also provide public access have an increased value. And lands that, in addition to protecting habitat and species and providing public access, also provide value to SCDNR have the highest value. These lands could be protected for the term of the license instead of in perpetuity.

Melanie asked if the funds that were discussed in Tuesday's PME meeting for dam removal and habitat enhancements could be combined into one fund that provided for all these things. Henry said SCE&G would need details on how much money should go in the fund and exactly what the money would be used for including habitat enhancement, land acquisition, dam removal and floodplain restoration. Gerrit said American Rivers' priority is to use the money on dam removal, but since it is impossible to predict when those projects will come up, they have to be flexible. Gerrit agreed with SCDNR that developing a fund to mitigate for unavoidable adverse impacts is important. There should be a lower priority on studies and a higher priority on actions. Studies don't offset impacts. Rusty said that from a SCDHEC perspective they would place a priority on any improvements or changes that the stakeholders are proposing that would have a positive impact on water quality or quantity of the resource.

Henry asked if the enhancements that SCE&G has already agreed to, including fish habitat enhancements in Monticello Reservoir and recreation enhancements, could be financed through the fund. Gerrit said that those enhancements are minimizing effects and the fund should be separate and used for mitigation.

Alison reviewed the timeline for the remainder of relicensing with stakeholders. SCE&G plans to file the DLA in May 2017. Stakeholders will have 90 days to review and comment. SCE&G hopes to submit the RMP to the TWC for review prior to submitting the DLA. The Settlement Agreement development and discussion will occur from August through October 2017. SCE&G will revise the license application from March through April 2018 and will file the Final License Application in June 2018.

Henry asked Rusty when SCDHEC wants SCE&G to file the 401 water quality certificate application. Could SCE&G file early? Rusty said he would talk with his management. If SCE&G filed early, it could be ready for implementation when FERC issues the new license.

The meeting adjourned. Action items are listed below. After the meetings, American Rivers and SCDNR submitted additional information. This information is attached to the end of the notes.

ACTION ITEMS:

- SCE&G and SCDNR will review the 1979 MOA and explore the channel marking/hazard marking in Parr Reservoir further.
- SCE&G and SCDNR will discuss the land issue at the Broad River Waterfowl Area.
- SCE&G and Kleinschmidt will develop a draft recreation resource map and send it to stakeholders for review and comment.
- Stakeholders need to decide how much money they would like for a mitigation fund and how the fund would be used.
- Rusty will talk to his managers at SCDHEC about the possibility of SCE&G filing an application for the 401 water quality certificate early.
- SCDNR to provide more information and details on a Land Protection Plan.

Parr Hydroelectric Project Relicensing

PM&E Measures Proposed by SCE&G

March 28, 2017

Purpose of Meeting

- Relicensing Process “Check and Adjust”
 - Review “to-date” TWC issues, discussions and agreements (not to re-hash issues agreed to or still under discussion)
 - Provide stakeholders with an overview of the analysis included in the Draft License Application

Monticello Fish Habitat Enhancements

- Issue- Lake level fluctuations may negatively affect spawning and juvenile fish; Fish loss may occur due to turbine entrainment and mortality

Proposed PME

- Install aquatic habitat enhancements in the upstream portions of Monticello Reservoir
 - Spawning beds and fish structures
- Serve two purposes- (1) Concentrate fish to promote angling success (2) improve recruitment success to adult lifestage



West Channel Water Quality Enhancements

- Issue- Currently low Dissolved Oxygen (DO) levels may occur in the West Channel during the late spring and summer months

Proposed PME

- Implementation of an Adaptive Management Plan will help facilitate water quality improvements in the West Channel
 - Identify ways to increase flows to the West Channel - channel modifications or pulse flows
 - Five year plan to monitor DO in West Channel and evaluate flow improvements.

Turbine Venting Plan

- Issue- DO levels have occasionally dropped below state standards in the Parr tailrace during the spring or summer months

Proposed PME

- Turbine venting testing conducted by SCE&G showed that venting can increase DO levels.
- Turbine venting proposed to be implemented from June 15- August 31 annually in new license
- SCE&G will notify SCDHEC within 10 days when DO drops below the standard



American Eel Monitoring

- Issue- American eels were found downstream of Parr Shoals Dam. NOAA Fisheries requested SCE&G perform additional monitoring during the new license to track changes in eel abundance.

Proposed PME

- Eel sampling would occur first year after new license is in place and every ten years thereafter
- Survey frequency would increase to every 5 years when a target threshold is met
- Target Threshold = 10% of the five year average of eels passed at St. Stephen Dam

Downstream Flow Fluctuations

- Issue- Stakeholders requested a reduction in downstream flow fluctuations from Parr Shoals Dam
 - General year-round reduction
 - Spawning-specific flow stabilization

Proposed PME

- Year Round- SCE&G will implement operational changes to reduce fluctuations
- Spawning Stabilization - SCE&G will implement operational changes to reduce/stabilize flows for two 14-day spawning periods to enhance sturgeon, striped bass, American shad, and robust redhorse spawning.

Parr Shoals Dam Generator Upgrade

- Issue- Parr Shoals Dam turbine generators are not fully developed - an upgrade of the generators will allow more reservoir/flow control and greater energy production

Proposed PME

- SCE&G investigating the feasibility of upgrading of the Parr Shoals Dam generators
- Upgrades could increase the powerhouse flows max of 6,000 cfs and allow better reservoir and downstream flow control.

Santee River Basin ACCORD for Diadromous Fish Protection, Restoration, and Enhancement

- Issue- Fish passage in the Santee River Basin is impeded by dams in the river basin.
- SCE&G is an active participant in an agreement, the ACCORD, to help restore upstream and downstream fish passage in the basin.

Proposed PME

- The ACCORD includes a process to provide fish passage at the Parr Shoals Dam that SCE&G has agreed to.
- This process includes meeting downstream fish passage triggers at the Columbia Hydro Fish Passage facility.
- SCE&G will include the appropriate portions of the ACCORD in the Parr Hydroelectric Project License Application to address fish passage concerns at the project during the new license.

Downstream Navigation Flows

- Issue- Stakeholders expressed a desire to make sure that the Broad River, downstream of Parr Shoals Dam, meets the SC recommendations for downstream navigation.

Proposed PME

- SCE&G conducted a Downstream Navigation Flow Assessment downstream of Parr Shoals Dam at several “ledge” areas identified by the TWC
- Results suggest 700-1,000 cfs are necessary for navigation
- Downstream navigation will be one factor in determining minimum flow

Downstream Minimum Flows

- Issue- Stakeholders requested a study to determine a “new” minimum flow from the Parr Shoals Development that takes into account fish habitat and fish passage goals.

Proposed PME

- A IFIM study was conducted and a range of “continuous” minimum flows have been discussed in the TWC. Areas of agreement:
 - Set 3 flows for the year: spring spawning flow, a low summer/fall flow, and a transition flow for ramping up and down between those two time frames.
 - Minimum flow should be continuous
 - Minimum flow should take into account the inflows to the Parr Reservoir.

Dam Removal

- Issue- American Rivers requested that SCE&G consider funding removal of a small dam in the Broad River basin, with the intent of restoring stream connectivity and offset impacts caused by original construction of Parr Shoals Dam
- SCE&G has not proposed a PME measure for this issue.

Timeline for 2018

- File the DLA – May 2017
- Stakeholder Comments – 90 days
- Settlement Agreement Discussion August – October 2017
- Revise License Application March – April 2018
- File License Application – June 2018

Parr Hydroelectric Project Relicensing

PM&E Measures Proposed by SCE&G

March 30, 2017

Purpose of Meeting

- Relicensing Process “Check and Adjust”
 - Review “to-date” TWC issues, discussions and agreements (not to re-hash issues agreed to or still under discussion)
 - Provide stakeholders with an overview of the analysis included in the Draft License Application

Recreation Site Monitoring/ Maintenance/Improvements on Parr Reservoir

- Issue- Stakeholders requested that SCE&G perform a Recreation Use & Needs Study to assess the existing use, and the need for enhancements, at Project and non-Project Parr Recreation sites.

Proposed PME

- Based on study results – stakeholders requested several recreation improvements.
- SCE&G will include enhancements in a Recreation Management Plan to be filed with the License Application.
- Monitoring, maintenance, and improvements will be implemented on a proposed timeline subsequent to license issuance.

Recreation Enhancements

- Improve Hwy 34 Recreation Site and include as a “Project Recreation Site”.
- Build a canoe launch on Enoree River within the Project boundary.
- Formalize a canoe portage around Parr Shoals Dam.
- Enhance Cannon’s Creek Site.

Recreation Site Monitoring/ Maintenance/Improvements on Monticello Reservoir

- Issue- Stakeholders requested that SCE&G perform a Recreation Use & Needs Study to assess the existing use, and the need for enhancements, at Project and non-Project Monticello Recreation sites.

Proposed PME

- Based on study results – stakeholders requested several recreation improvements.
- SCE&G will include changes in a Recreation Management Plan to be filed with the License Application.
- Monitoring, maintenance, and improvements will be implemented on a proposed timeline subsequent to license issuance.

Recreation Enhancements

- Improve Project and non-Project portions of Scenic Overlook recreation site.
- Improve Hwy 99 “West” recreation site.
- Enhance Hwy 99 “East” recreation site (previously known as Highway 99 Informal site) and bring it into the Project as an official site.

Canoe Portage

- Issue- SCDNR requested that SCE&G build a canoe portage around Parr Shoals Dam

Proposed PME

- SCE&G built an experimental canoe portage
- A 1600 ft. trail was cleared and signs were installed
- After license issuance SCE&G will bring the portage into the Project and maintain it, pending agency and public feedback

Erosion Monitoring and Control on Parr and Monticello Reservoirs (Shoreline Inspection)

- Issue- Reservoir fluctuations on Parr and Monticello Reservoirs associated with Fairfield Pumped Storage operations can cause localized erosion spots.

Proposed PME

- SCE&G currently monitors Parr shoreline annually, Monticello shoreline bi-annually
- Conditions and areas of erosion are noted
- SCE&G makes appropriate repairs to stabilize the shoreline when severe erosion is noted
- SCE&G proposes to continue these inspections in the new license

Shoreline Management Plan for Parr Reservoir

- Issue- Currently, there is no Shoreline Management Plan (SMP) for Parr Reservoir.
- Stakeholders requested creation of an SMP for Parr.

Proposed PME

- New SMP developed in consultation with RCG/TWC
- SCE&G will educate public and enforce rules
- Updates will be made as-needed and/or where FERC guidelines dictate
- Consultation to occur every 10 years

Shoreline Management Plan for Monticello Reservoir

- Issue- Stakeholders requested that the Monticello Reservoir SMP be reviewed and updated for the new license.

Proposed PME

- SMP reviewed and revised in consultation with RCG/TWC
- SCE&G will educate public and enforce rules
- Updates will be made as-needed and/or where FERC guidelines dictate
- Consultation to occur every 10 years

Cultural Resources

- Issue - SCE&G has consulted with the State Historic Preservation Officer to complete Phase I and Phase II studies of cultural resources associated with the Parr Hydroelectric Project.

Proposed PME

- Ongoing consultation with FERC and SHPO
- Lyles Ford site may be impacted by Project
- Education material and signage will include historical information
- Stabilization or mitigation will occur at one archaeological site

Recreation Resource Maps

- Issue- Stakeholders requested that SCE&G provide information and maps to the public that include non-project Broad River access areas downstream of Parr Shoals Dam and include downstream navigation information for recreators.

Proposed PME

- SCE&G will address this as an “Off-license Agreement” with stakeholders
- SCE&G will provide maps of river access and downstream navigation routes on their website.

RSSL Outreach and Education

- Issue- Congaree Riverkeeper requested that SCE&G provide information to the public on the Rocky Shoals Spider Lily populations that currently exist in the Broad River between Parr Shoals Dam and the Columbia Dam.

Proposed PME

- SCE&G will address this as an “Off-license Agreement”
- SCE&G will provide information on, and generalized location maps of, Rocky Shoals Spider Lily populations on their website.

Downstream Rec Flows

- Issue- The Recreation TWC requested that SCE&G schedule recreation flows in the Broad River downstream of Parr Shoals Dam.
- SCE&G has not proposed a PME measure for this issue.
- Inflows to Parr Reservoir are not stored but are released downstream on a daily cycle.

Palmetto Trail Contribution

- Stakeholders requested SCE&G to make a monetary contribution to the Palmetto Trail
- V.C. Summer Nuclear Plant currently provides funding for this organization
- SCE&G does not plan to support additional funds

Timeline for 2018

- File the DLA – May 2017
- Stakeholder Comments – 90 days
- Settlement Agreement Discussion August – October 2017
- Revise License Application March – April 2018
- File License Application – June 2018

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Cc: [Erin McCombs](#)
Subject: American Rivers' Trial Balloon to reach agreement for offsetting Parr Reservoir fluctuations
Date: Friday, March 31, 2017 5:15:13 PM
Attachments: [American Rivers - SAC Dam Removal Update March 2017.pdf](#)
[SoutheastDamRemovalFactSheet.pdf](#)
[BroadRiverDamsPreliminaryQuery.xlsx](#)
[Median total project costs.pdf](#)

Relicensing stakeholders:

As discussed at the March 28 and 30, 2017 PM&E meetings, please find below American Rivers' Trial Balloon to reach agreement for offsetting the impacts of Parr Reservoir fluctuations. I am also providing additional information requested:

- Links to American Rivers' Blue Trails website and maps www.bluetrailsguide.org
- Congaree River Blue Trail Map
<http://www.bluetrailsguide.org/assets/pdfs/blue-trails/congaree-river-blue-trail-map.pdf?d34d3c>
- Ashley River Blue Trail Map
North - http://b3cdn.net/amrivers/a0424eab4b4bd2e825_mlbrgbynj.pdf
South - https://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2016/08/16105228/BTG_ashley-river-south-map.pdf
- Waccamaw River Blue Trail Map
<http://www.bluetrailsguide.org/assets/pdfs/blue-trails/Waccamaw-River-Blue-Trail-Map.pdf?d34d3c>
- American Rivers' fact sheet on dam removals
- American Rivers' spreadsheet showing a preliminary assessment of Broad River watershed dams for voluntary removal.
- American Rivers' March 2017 dam removal project list for the Carolinas and Tennessee demonstrating that finding such projects is doable.
- Median project costs of dam removals.

[American Rivers Trial Balloon to reach agreement for offsetting Parr Reservoir fluctuations](#)

Issue: South Carolina Electric and Gas Company operates the Fairfield Pump Storage Project (FPSP) and Parr Shoals Project (PSP) in a manner which results in the substantial loss of habitat and recreation opportunities. Fifteen miles of Broad River are impounded by the Parr Shoals Dam. Combined operation of FPSP and PSP result in substantial Parr Reservoir fluctuations when water is either withdrawn from Parr Reservoir during FPSP pumping or by generation when FPSP discharges water into Parr Reservoir. These operations can result in fluctuations of Parr Reservoir water surface elevations up to 10 feet and a reduction of Parr Reservoir surface area to as little as 1,200 acres. The end result is the loss of riverine habitat for 15 miles of one of South Carolina's major rivers and up to 3,200 acres of aquatic habitat loss in the Parr Reservoir. Similarly, river recreation opportunities are lost for 15 miles of the Broad River and recreation opportunities in Parr Reservoir are substantially reduced.

Proposal: American Rivers proposes the following measures to offset ongoing impacts during the new license of the Parr Shoals dam and reservoir fluctuations by creating new riverine habitat for fish and wildlife and enhanced recreation opportunities in the project vicinity result in a severe reduction in recreation opportunity. We believe this is best treated as an off license agreement due to the limits of mitigating project impacts within the project boundary.

- Recreation Enhancement – To offset impacts to water based recreation from the combined operation of FPSP and PSP, SCE&G will:
 - Provide funding and donate land for a non-motorize boat launch on the west bank of the Broad River in the vicinity of Haltiwanger Island;
 - Provide funding to develop a website that promotes recreation opportunities at the Broad and Enoree rivers in Richland, Lexington, Fairfield, Newberry, Laurens and Union counties;
 - Provide funding for developing, printing and distributing high quality, waterproof paddling maps for the Broad and Enoree rivers in Richland, Lexington, Fairfield, Newberry, Laurens and Union counties.

Decisions for how the funds are to be spent will be determined by a fiduciary board consisting of representatives of SCE&G, SCDNR, USFWS, Congaree Riverkeeper and American Rivers.

- Aquatic Habitat Enhancement - To offset impacts to aquatic habitat from the combined operation of FPSP and PSP, SCE&G will:
 - Provide funding for voluntary dam removals or floodplain restoration in the Broad, Congaree and lower Saluda watersheds
 - Fund at a rate of \$135,000 per year in 2017 dollars. This amount is based on an average cost of approximately \$410,000 per dam removal in 2017 dollars and the expectation to remove one dam for every three years of the license term.

Decisions for how the funds are to be spent will be determined by a fiduciary board consisting of representatives of SCE&G, SCDNR, USFWS, NMFS, Congaree Riverkeeper and American Rivers.

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Other PM&E Measures for Parr Hydro Relicensing DNR Comments and Recommendations at Meetings of March 28 and 30, 2017

March 28 - Parr PM&E Meeting

Other PM&E measures -- DNR Comments and Recommendations

Downstream flows delivery incentive

A new protocol for delivering continuous instream flows from Parr Shoals Dam is under development and we expect the protocol to address target flows (desired for habitat and navigation needs) and required compliance flows. We understand SCE&G will strive to deliver flows according to a new protocol; however, our interest is to assure target flows are delivered when the necessary inflow is available. Therefore, we are requesting SCE&G provide mitigation to compensate for not delivering target flows when inflow to the Project is available to meet or exceed the target flow. For example, mitigation payment is provided when flow delivery deviates more than XX cfs less than the target flow for a continuous period of XX hours during which inflow was adequate to meet the target.

Ongoing, unavoidable impacts from operations

We see a need to address the ongoing, unavoidable impacts to aquatic resources caused by fluctuations in Parr Reservoir and the intermittent downstream flow fluctuations in the Broad River, which will not be eliminated because of SCE&G's need to generate at Fairfield station. The fluctuations in Parr Reservoir also have an ongoing negative effect on potential recreational uses of the reservoir.

As a PME measure to address the impacts described above, DNR recommends SCE&G consider funding a habitat enhancement program to support aquatic resource conservation and protection projects that will benefit the Broad River watershed and Congaree River. We foresee options to include creating a new funding program (which may be preferred) or contributing to an existing program such as the Broad River Mitigation Trust Fund.

Avoid and minimize fish entrainment mortality

Identify measures that could be implemented and may be effective to avoid or minimize fish entrainment at the Fairfield station. Measures to consider include changes to lighting that may attract fish to forebay areas and sequencing unit start-up to begin away from areas where fish are known to congregate.

March 30 - Parr PM&E Meeting

Other PM&E measures -- DNR Comments and Recommendations

Review and consider provisions of the May 1979 SCE&G-DNR memorandum of agreement

Are there items in the 1979 MOA to be carried forward in the next license? Hazard markers (#5 of MOA) is one item that may need to be addressed.

Water management agreement at BRWMA

Establish an SCE&G-DNR communications protocol to address coordination of DNR's water management needs at Broad River Waterfowl Management Area with the operations and water elevations of Parr Reservoir.

Land Protection – for habitat conservation and public recreation

DNR's approach to considering "Other PME measures" is based on our assessment of Project impacts and the PMEs already proposed by SCE&G. We consider a mitigation sequence: first avoid and minimize impacts and then compensate for unavoidable impacts. Many of the PMEs already being proposed by SCE&G represent of a good-faith effort to avoid and minimize Project impacts (and provide enhancements to recreational access), and we are supportive of the proposed PMEs. What remains to be addressed are what we see as ongoing, unavoidable impacts to aquatic resources caused by Project operations, primarily the fluctuations in Parr Reservoir and the intermittent downstream flow fluctuations in the Broad River, which will not be eliminated because of SCE&G's need to generate at Fairfield station. The fluctuations in Parr Reservoir also have an ongoing negative effect on potential recreational uses of the reservoir. Finally, as DNR considers PMEs, thought is given to license terms and what PMEs will promote stakeholder support of longer terms.

As part of a total PM&E package, DNR recommends significant, additional land protection be provided for habitat conservation and recreational use. We think land protection can serve to address both mitigation for unavoidable impacts and justification for longer license terms.

DNR has a number of ideas regarding land protection but has not yet developed a specific PME proposal. We think there is potential for PMEs to include both a fund for habitat enhancement (as discussed at the March 28 meeting) and land protection, and there may be interest in structuring a funding program to incorporate credits for land protection.

What lands to consider for protection? Preferred land areas to serve as mitigation for aquatic resource impacts will contain a significant portion of riparian and wetland habitats. Alternatives under consideration: 1) DNR has identified SCE&G lands contiguous with the Project and adjacent to the Broad River downstream of the Project, and these include 14 parcels that total approximately 1900 acres (based on county land-ownership data from the Internet). Six of the 14 parcels are contiguous with the Project boundary, and eight are adjacent to the Broad River downstream of the Project. 2) DNR also has interest in protecting a large contiguous tract, preferably a tract with a significant aquatic and wetland resources, to be leased and managed by SCDNR in the WMA Program for the term of the new license.

Optional means for land protection: DNR would prefer permanent protection of lands or, at a minimum, land protection that extends for the term of the new license. Protection measures could be established in a settlement agreement, MOA, restrictive covenant, lease to DNR, conservation easement, or by fee simple donation to a conservation agency such as DNR.

During the meetings, SCE&G requested DNR to develop a proposal with more specificity on our ideas of land protection and habitat enhancement funding, so that a proposal can be evaluated by SCE&G management. DNR will develop a more specific proposal.