

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

G. Paul Bollwerk, III, Chairman  
Nicholas G. Trikouros  
Dr. James Jackson

In the Matter of

SOUTHERN NUCLEAR OPERATING CO.

(Early Site Permit for Vogtle ESP Site)

Docket No. 52-011-ESP

ASLBP No. 07-850-01-ESP-BD01

May 8, 2009

**JOINT INTERVENORS' REPLY TO NRC STAFF'S AND  
SOUTHERN NUCLEAR OPERATING COMPANY'S  
PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW  
CONCERNING CONTESTED ENVIRONMENTAL MATTERS**

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This Atomic Safety and Licensing Board (“Board”) has before it over 250 pages of proposed findings of fact and conclusions of law (collectively or individually, “Findings”) filed April 24, 2009, by Southern Nuclear Operating Company (“SNC”), the Nuclear Regulatory Commission (the “NRC”) Staff, and Joint Intervenors.<sup>1</sup> Moreover, the parties have previously stated their positions on the issues in contention, namely environmental contentions 1.2, 1.3, and 6.0 (“EC 1.2”, “EC 1.3”, and “EC 6.0”, respectively), in their pre-filed testimony, position statements, and during this Board’s cross-examination at the evidentiary hearing held on March 16-19 in Waynesboro, Georgia (the “Evidentiary Hearing”). At this point, the disagreements are plain.

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<sup>1</sup> Joint Intervenors include the Center for a Sustainable Coast, Savannah Riverkeeper, Southern Alliance for Clean Energy, Atlanta Women’s Action for New Directions, and Blue Ridge Environmental Defense League.

Thus, Joint Intervenors do not attempt in this Reply to respond in detail to each finding and conclusion of SNC or the NRC Staff with which they disagree. Rather, this Reply will focus on key inconsistencies and misstatements that are evident in the proposed SNC Findings and the proposed NRC Staff Findings.

Based on the record as a whole, Joint Intervenors continue to maintain that this Board should resolve each environmental contention in their favor and accordingly deny SNC's early site permit ("ESP") request.

## **REPLY TO FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR EC 1.2**

1. The NRC Staff and SNC contend that the evidence supports a finding that important aquatic species will not be harmed by the cooling water system for Units 3 and 4 because the middle Savannah River has been extensively studied; however, they fail to recognize that it is the quality of the studies, and the specific items studied, that are relevant.<sup>2</sup> The NEPA "hard look" requirement is not satisfied merely because the Savannah River Site (SRS), across the river from the Plant Vogtle site, has been studied, or because the Academy of Natural Resources of Philadelphia (ANSP) studied the river for many years, or because Marcy, et al. lists hundreds of references.<sup>3</sup> While these studies are not irrelevant, none were designed to measure the potential impact of the

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<sup>2</sup> NRC Staff Findings at ¶2.37, ¶2.38; SNC Conclusions of Law at ¶2.

<sup>3</sup> See Staff Direct Testimony for EC1.2 at A9. ("Over 33 pages of references are provided in Marcy et al., as literature sources that were cited in the development of this compendium."). Cf. Lands Council v. McNair, 537 F.3d 981, 995 (9th Cir. 2008) ("To determine whether deference is warranted, we look to the sufficiency of the evidence, not the size of the record."); Anderson v. Evans, 314 F.3d 1006 (9th Cir. 2002) ("girth is not a measure of the analytical soundness of an environmental assessment").

proposed new intake and discharge structures on important species, particularly during their most vulnerable life stages.<sup>4</sup>

2. Although SNC and the Staff cite a myriad of studies, none examine the susceptibility of robust redhorse, a state-listed endangered species until recently thought extinct, to entrainment. Similarly, the ANSP studies, conducted over several days in the fall of each year, do not capture any information about spawning migration or juvenile dispersion in the spring.<sup>5</sup> As Dr. Young testified, these studies “miss a dominant portion of the fish- population moving through the vicinity and then also their early life history coming back down through the facility.”<sup>6</sup> Similarly, the ANSP study methodology would not detect sturgeon or robust redhorse, thereby leading to a false conclusion that these species are not present in the vicinity of Plant Vogtle.<sup>7</sup> Likewise, none of the studies relied upon by SNC and the Staff address the decline of native mussel species in

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<sup>4</sup> See Id. at A9. (“Marcy et al. was not developed to provide an impact assessment.”); Young Rebuttal Testimony at A12 (Marcy et al. “does not have the level of specificity necessary for an analysis of potential impacts of two addition Units at the Vogtle site.”).

<sup>5</sup> See Post Tr. 685-686 (“And the philosophy is that if you go into an area at the end of the summer season, you see what survived, what has reproduced, what has survived.”).

Page references herein to the hearing transcript refer to the final version of the transcript following incorporation of the transcript corrections approved by the Licensing Board in its Memorandum and Order dated April 9, 2009. Due to time constraints, page references in Joint Intervenors’ Findings referred to the original version of the transcript before such corrections were incorporated.

<sup>6</sup> Post Tr. 877.

<sup>7</sup> See Post Tr. 878 (“So do you just presume, well, they’re not there, when in reality they may actually be there and you’re just not sampling correctly.”).

the Savannah River, especially whether their host fish species are impacted by cooling water intake structures.<sup>8</sup>

3. The Staff and SNC continue to downplay the potential cumulative impacts of the Unit 3 and 4 cooling structure because they rely on a faulty premise, that a small impact, when added to another small impact, will result in a small impact. Specifically, they suggest that the cumulative impact of entrainment from the Unit 3 and 4 intake structure will be small because the impact of the existing intake for Units 1 and 2 is small. Even if it is the case that the existing structure has only a small impact, a premise that is subject to dispute, it does not necessarily follow that doubling the impact by adding another intake would not result in significant cumulative impacts. As the Ninth Circuit Court of Appeals noted in a similar context: “the addition of a small amount here, a small amount there, and still more at another point could add up to something with a much greater impact, until there comes a point where even a marginal increase will mean that no salmon survive.”<sup>9</sup> “Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”<sup>10</sup>

4. Moreover, the Staff and SNC misapply the cumulative impacts analysis by totally disregarding “the incremental impact of the action when added to other past, present, and

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<sup>8</sup> See Post Tr. 734 (“[T]he hypothesis, at least, that some of the mussel declines have been due to changes in fish populations is certainly out there and acceptable in some cases and uncertain in others.”).

<sup>9</sup> Klamath-Siskiyou Wildlands Ctr. v. BLM, 387 F.3d 989, 994 (9th Cir. 2004). See also High Sierra Hikers Ass'n v. Blackwell, 390 F.3d 630, 645 (9th Cir. 2004) (“Cumulative impacts that result from individually minor but collectively significant actions are the crux of what the regulations implementing NEPA seek to avoid.”).

<sup>10</sup> 40 C.F.R. § 1508.7

reasonably foreseeable future actions.”<sup>11</sup> For example, the FEIS concludes that impacts of the cooling system will have only small impact on aquatic species, in part, because of the closed-cycle, instead of once-through, design.<sup>12</sup> At the evidentiary hearing, Dr. Coutant testified that the closed-cycle cooling system “reduces the potential mortality that you might have from an open cycle once through system by 95 to 98 percent.”<sup>13</sup> In response to questioning from the Board, SNC witnesses identified three power stations operating on the Savannah River with once-through cooling: Plant Kraft, the D-Area Powerhouse, and Urquhart Station.<sup>14</sup> Given the testimony regarding once-through versus closed-cycle cooling, it is likely that these three facilities have significant adverse impacts on aquatic species that are totally ignored in the FEIS.

5. The post-FEIS study of the Plant Vogtle Units 1 and 2 intake structure does not prove that the proposed intake structure for Units 3 and 4 will not have significant

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<sup>11</sup> Id.

Intervenors recognize that the Board has previously ruled that the impacts of other intakes and discharges on the Savannah River, except the Unit 1 and 2 intake, are beyond scope of the admitted contention. With all due respect, this conclusion is incorrect as a matter of law. By definition, a cumulative impact is the result of the proposed action when added to other past, present, and foreseeable future action. Thus, it is entirely arbitrary for the FEIS to disregard impacts associated with other river intake and discharge structures. Such impacts are included in EC 1.2, and have been from the outset. Additionally, both SNC and the Staff allude to other structures in their testimony and exhibits, and thereby open the door to Intervenors’ arguments.

<sup>12</sup> NRC000001 at 5-30, 5-33, 5-38,

<sup>13</sup> Post Tr. 698.

<sup>14</sup> Id. See also NRC000001 at 2-33 (listing average withdrawal rate for Plant Vogtle Units 1 and 2 (98.8 cfs), SRS (4.5 cfs), D-Area Powerhouse (68.4 cfs), and Urquhart Station (127.5 cfs)).

<sup>15</sup> The entrainment study, conducted during the worst drought on record, was limited to sampling once every two weeks from March through July of 2008, for a total of 20 sampling events.<sup>16</sup> Given the critically depleted baseline populations of these species and the small sample size, it is unsurprising that “no protected fish species were encountered in source water or entrainment samples.”<sup>17</sup> The entrainment study was not designed to test the impacts of the cooling system on these two species and, as such, provides little basis to conclude that shortnose sturgeon or robust redhorse are not entrained by the existing intake structure. Additionally, the sampling found that 20 percent of unidentified taxa were members of the catostomid (sucker) family, which includes the robust redhorse.<sup>18</sup> Despite this, SNC did not conduct genetic testing to determine whether these catostomidea were robust redhorse.<sup>19</sup>

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<sup>15</sup> SNC Finding of Fact at ¶93.

<sup>16</sup> Dodd and Montz Direct Testimony for EC 1.2 at A13.

<sup>17</sup> Id. at A19.

<sup>18</sup> Id. at A17.

<sup>19</sup> See Post Tr. at 738 (“would be just beyond the scope of an ID and enumeration survey which is what this amounts to.”)

## REPLY TO FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR EC 1.3

### The cursory treatment of dry cooling in the FEIS is insufficient

6. Both SNC and the NRC Staff asked this Board to find that the NRC Staff in its FEIS analyzed the dry cooling alternative in sufficient detail.<sup>20</sup> While the NRC Staff conceded that this analysis was not of great depth,<sup>21</sup> SNC took the curious position that the FEIS presented “a detailed analysis of dry cooling.”<sup>22</sup> The FEIS, however, contained less than one page of qualitative analysis regarding dry cooling.<sup>23</sup> Such analysis was in no way detailed.

7. The NRC Staff asserted that its cursory treatment of the dry cooling alternative was appropriate because it found that the impacts from the proposed wet cooling system would be SMALL.<sup>24</sup> However, as previously set forth by Joint Intervenors in their Findings, impacts from the proposed wet cooling system would likely be LARGE, and in any event, would certainly exceed the SMALL threshold.<sup>25</sup> Accordingly, and pursuant to

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<sup>20</sup> SNC Conclusions of Law at ¶17; NRC Staff Findings at ¶2.137.

<sup>21</sup> Staff Findings at ¶2.143, citing Post Tr. 1062 (Staff Direct Testimony for EC 1.3 at A16); see also Post Tr. 1070:7-9.

<sup>22</sup> SNC Findings at ¶108.

<sup>23</sup> NRC000001 at 9.3.2.

<sup>24</sup> Staff Findings at ¶2.143, citing Post Tr. 1062 (Staff Direct Testimony for EC 1.3 at A16).

<sup>25</sup> Joint Intervenors Findings of Fact for EC 1.2 at ¶9 and ¶15; see also Joint Intervenors Findings of Fact for EC 1.2 at ¶20. In their Findings, the NRC Staff asks this Board to find that “Joint Intervenors provided no additional evidence to support a claim that the impacts from the proposed wet cooling system would be greater than small.” Staff Findings at ¶2.142. That is simply not true. In their testimony, Joint Intervenors discussed several studies regarding the shortnose sturgeon, robust redhorse, and state-listed mussels. See generally Joint Intervenors Findings of Fact for EC 1.2 at ¶7-20.

the NRC Staff's own admissions,<sup>26</sup> a more detailed analysis of dry cooling was required in the FEIS.

### **Dry Cooling is Feasible**

8. NEPA requires an FEIS to include a “detailed statement” on an appropriate range of alternatives.<sup>27</sup> While Section 9.4.1 of the NRC’s Environmental Standard Review Plan (the “ESRP”) provides that the depth of analysis required in such a statement is governed by the nature and magnitude of the impacts of the proposed design, the ESRP in no way negates NEPA’s mandate that alternatives be considered.<sup>28</sup> Part of such a consideration necessarily includes analyzing the feasibility of cooling alternatives.<sup>29</sup> In fact, the ESRP provides that “the scope of review directed by this plan should be limited to alternative heat dissipation systems *considered feasible* ....”<sup>30</sup> Accordingly, the NRC

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These studies support Joint Intervenors’ claim that impacts from the proposed wet cooling system on these species would be LARGE. Moreover, Joint Intervenors’ highly qualified expert (and, notably, the only expert to have actually conducted field studies on the Savannah River), Dr. Young, testified at great length as to why impacts will exceed the small threshold. Young Rebuttal Testimony for EC 1.3 at A3-5 and 7-11; Post Tr. 830-882.

<sup>26</sup> Post Tr. 1070:23-1071:2, 1071:23-24; Staff Direct Testimony for EC 1.3 at A16; Staff Findings at ¶2.141 and ¶2.143.

<sup>27</sup> 42 U.S.C. §4332(2)(C)(iii); see also 10 C.F.R. §51.45(b)(3); Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage), LBP-03-30, 58 NRC 454, 479 (2003).

<sup>28</sup> NRC000009 at 9.4.1.

<sup>29</sup> SNC agrees, arguing “that, under NEPA, the extent to which an alternative must be evaluated depends on whether such alternative is feasible.” SNC Findings at ¶126.

<sup>30</sup> Id. (emphasis added).

Staff's proposed Finding that feasibility of a dry cooling system need not be considered is illogical and contrary to both law and guidance.<sup>31</sup>

9. While conceding that the feasibility of dry cooling must be considered, SNC asked this Board to find that such an alternative is not feasible.<sup>32</sup> In supporting its argument, SNC relied upon outdated data collected by Mr. Cuchens on a trip to the Matimba plant in South Africa numerous years ago.<sup>33</sup> As explained by Mr. Powers, wind skirts and the continuous operation of all fans (which is standard practice) solved Matimba's previous operating problems.<sup>34</sup>

10. Moreover, because Dominion has not yet submitted a combined license application for that unit, SNC asked this Board to completely ignore North Anna 4 when conducting its feasibility analysis.<sup>35</sup> The fact that a combined license application has not been submitted, however, is of no relevance. This is an early site permit proceeding, not a combined license proceeding. And, in the North Anna early site permit proceeding, a licensing board found it prudent and reasonable to condition the permit on the building of a 100% dry cooled facility for North Anna 4.<sup>36</sup> Joint Intervenors are simply asking the same of this Board.

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<sup>31</sup> Staff Findings at ¶2.127.

<sup>32</sup> SNC Findings, Conclusions of Law at ¶16.

<sup>33</sup> See generally SNC Findings at ¶142-153.

<sup>34</sup> Post Tr. 1274:8-1277:21.

<sup>35</sup> SNC Findings at ¶149.

<sup>36</sup> JTI000052.

11. The weight of the evidence, including evidence regarding the Matimba plant and North Anna 4, supports Mr. Powers' testimony that dry cooling is in fact feasible.<sup>37</sup>

**Extremely Sensitive Biological Resources Will be Impacted by a Wet Cooling System**

12. In addition to NEPA's general mandate that alternatives be considered, the U.S. Environmental Protection Agency (the "EPA") specifically addressed consideration of the dry cooling alternative in a 2001 rulemaking (the "EPA Rulemaking"). The EPA Rulemaking provides that:

"dry cooling may be the appropriate cooling technology for some facilities. This could be the case in areas with limited water available for cooling or waterbodies with extremely sensitive biological resources (e.g. endangered species, specially protected areas)."<sup>38</sup>

13. SNC asked the Board to arbitrarily impose a requirement to the EPA Rulemaking that extremely sensitive biological resources ("ESBRs") be at "significant risk" before dry cooling must be considered as an alternative.<sup>39</sup> The plain language of the EPA Rulemaking, however, states that "dry cooling may be the appropriate cooling technology for ... waterbodies *with* extremely sensitive biological resources."<sup>40</sup> These words must be ascribed their usual meaning.<sup>41</sup> The word "with" is defined by Merriam-Webster

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<sup>37</sup> See e.g. Powers Direct Testimony for EC 1.3 at A12, A19-23, A26-34; Powers Rebuttal Testimony for EC 1.3 at A4, 6-7; Post Tr. 1118:16-18, 1119:8-11, 1119:22-1120:5; see also Post Tr. 1012:1-2; see further Joint Intervenors Findings of Fact for EC 1.3 at ¶1-13.

<sup>38</sup> 66 Fed. Reg. 62,256, 62,282 (Dec. 18, 2001) (NRCR00035).

<sup>39</sup> SNC Findings at ¶116; see also Countant Direct Testimony for EC 1.3 at A6.

<sup>40</sup> 66 Fed. Reg. at 62,282.

<sup>41</sup> As SNC's witness, Dr. Coutant, explained, "fortunately or unfortunately I guess, EPA didn't explain what it meant by that term [ESBR] other than parenthetically mentioning threatening an endangered species." Post Tr. 1042:18-22. Without a specific definition

Dictionary as “a function word used to indicate presence.”<sup>42</sup> Nowhere in that definition is the notion of “significance.” Thus, the EPA Rulemaking provides that if ESBRS are *present*, then the dry-cooling alternative must be meaningfully considered. Accordingly, the presence of the robust redhorse and shortnose sturgeon at the VEGP site mandates full consideration of the dry cooling alternative.

14. Not only are the robust redhorse and shortnose sturgeon present at the VEGP site, they will likely be impacted by the construction and operation of the proposed wet cooled reactors. The NRC Staff asserted that “it is uncontroverted that it analyzed the impacts to all important species,” including impacts of wet cooling on ESBRS, and concluded that the impacts would be SMALL.<sup>43</sup> The Staff’s allegation that facts are uncontroverted, however, does not make it so. Joint Intervenors have repeatedly maintained that the FEIS failed to establish adequate baseline data for the robust redhorse and shortnose sturgeon, and failed to analyze the impacts the proposed wet cooling system would have on certain life stages of these fish.<sup>44</sup> Therefore, Joint Intervenors contended that any conclusion in the FEIS regarding impacts to ESBRS is inadequately supported.

15. In an attempt to rectify this shortcoming in the FEIS, SNC relied upon an incomplete and flawed entrainment study (the “2008 Entrainment Study”) to support its

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clearly set forth, words must be ascribed their plain meaning. See generally Hydro Resources, Inc., 63 NRC 483, 491 (April 3, 2006).

<sup>42</sup> “with.” Merriam-Webster Online Dictionary, definition 4a. (2009). (Retrieved May 5, 2009 from <http://www.merriam-webster.com/dictionary/with>.)

<sup>43</sup> Staff Findings at ¶2.146.

<sup>44</sup> See e.g. Young Direct Testimony for EC 1.2 at A11-13, 28; Young Rebuttal Testimony for EC 1.2 at A1, 4-5; Young Rebuttal Testimony for EC 1.3 at A2, 4, 5-11.

conclusion that ESBRs would suffer no impact from the wet cooling system.<sup>45</sup> Several SNC witnesses testified that, although numerous catostomid eggs were collected in the 2008 Entrainment Study,<sup>46</sup> no robust redhorse were identified.<sup>47</sup> When pressed on this issue, Mr. Dodd backtracked on his original testimony, and conceded that he could not determine whether any robust redhorse were included within the large number of catostomid eggs entrained.<sup>48</sup> Thus, at best, the results of the 2008 Entrainment Study were inconclusive regarding entrainment of robust redhorse. In any event, the results cannot support a finding that robust redhorse eggs were absolutely not entrained. Therefore, this Board cannot take the position advanced by SNC that no robust redhorse will be impacted by the wet cooling system.

16. In addition, SNC asked this Board to find that shortnose sturgeon would not be adversely impacted, as confirmed by a letter from the National Marine Fisheries Service (“NMFS”).<sup>49</sup> As Dr. Young testified, the letter from NMFS did not analyze year-round impacts and contained overly-broad generalizations that construction would only occur during the months analyzed.<sup>50</sup> Contrary to such an assumption, SNC repeatedly testified

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<sup>45</sup> SNC Finding at ¶119; see Young Rebuttal Testimony for EC 1.2 at A3-4 for explanation of additional flaws in the 2008 Entrainment Study.

<sup>46</sup> Dodd and Montz Direct Testimony for EC 1.2 at A17.

<sup>47</sup> Coutant Direct Testimony for EC 1.3 at A8 (referring to SNC000004 and SNC000005); Dodd and Montz Direct Testimony for EC 1.2 at A19; Post Tr. 706:6-8.

<sup>48</sup> Post Tr. 630:23-631:14.

<sup>49</sup> SNC Findings at ¶121, ¶123-124 (referring to SNC000022).

<sup>50</sup> Young Rebuttal Testimony for EC 1.3 at A5.

that construction would occur over a period spanning at least two years.<sup>51</sup> Thus, the NMFS letter cannot support a finding that the shortnose sturgeon will not be impacted by the wet cooling system, especially during those months not analyzed by NMFS.

#### **REPLY TO FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR EC 6.0**

17. In their Findings, both SNC and the NRC Staff asked this Board to conclude that the FEIS adequately assessed the impacts associated with shipping components of Units 3 and 4 by barge on the Savannah River Federal Navigation Channel (the “FNC”).<sup>52</sup>

However, as explained below, neither the direct nor cumulative impacts associated with such navigation were meaningfully addressed.

18. In asking this Board to reject EC 6.0, the NRC Staff, and to a lesser extent, SNC, conflate two arguments, and mistakenly assume that direct and cumulative impacts analyses are triggered by the same standard. However, two separate tests must be applied.<sup>53</sup>

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<sup>51</sup> See e.g. Neubert Smith and Scott Direct Testimony for EC 6.0 at A7; Post Tr. 1322:15-18, 1323:8-12.

<sup>52</sup> Staff Findings at ¶2.177; SNC Findings, Conclusions of Law at ¶21 and ¶28.

<sup>53</sup> Loretto O’Reilly, Jr., et al. v. US Army Corps of Engineers, 477 F.3d. 225, 236 (5<sup>th</sup> Cir. 2007) (“O’Reilly”) (“An assessment of cumulative effects asks whether a project with individually “mitigated-to-insignificant” effects may yet result in significant environmental impacts when those effects are aggregated with foreseeable effects of other human activities and natural occurrences. An analysis of improper segmentation [of connected actions], however, requires that where proceeding with one project will, because of functional or economic dependence, foreclose options or irretrievably commit resources to future projects, the environmental consequences of the projects should be evaluated together ... Scholars have noted that the “cumulative effects” and “improper segmentation” issues raise separate-but-similar questions.”)(internal quotations, citations, and footnotes omitted).

19. As explained in Joint Intervenors Findings,<sup>54</sup> and as further explained below, the direct impacts associated with navigation on the FNC (i.e. the impacts associated with dredging and releases from upstream reservoirs) must be assessed because construction and operation of Units 3 and 4, and navigation on the FNC, are “connected actions.”<sup>55</sup> Assuming, *arguendo*, that the actions are not “connected,” the cumulative impacts associated with navigation on the FNC must nonetheless be assessed because such impacts are “reasonably foreseeable.”<sup>56</sup>

### **Direct Impacts of Dredging**

20. SNC and the NRC Staff asked this Board to find that dredging of the FNC and issuance of the ESP are not connected actions, and thus are not required to be analyzed together in a single NEPA document.<sup>57</sup> The record clearly establishes, however, that (i)

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<sup>54</sup> Joint Intervenors Findings for EC 6.0 at ¶1-6.

<sup>55</sup> 10 C.F.R. §1508.25(a)(1). “Actions are connected if they: (i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously. (iii) Are independent parts of a larger action and depend on the larger action for their justification.”

<sup>56</sup> City of Oxford, GA vs. FAA, 428 F.3d. 1346, 1356 (11<sup>th</sup> Cir. 2005) (“The regulations ask whether future actions are *foreseeable*, not whether they are *interdependent*.”)(emphasis added). See also 40 C.F.R. §1508.25(c) (A cumulative impacts analysis must consider “the impact on the environment which results from the incremental impact of the action when added to other past, present, and *reasonably foreseeable future actions* regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”) (emphasis added).

<sup>57</sup> Staff Findings at ¶2.172 (“In particular, we agree that the evidence supports a conclusion that dredging of the Savannah River FNC is not necessary for the construction of Vogtle Units 3 and 4 and that such dredging does not represent a connected action within the meaning of NEPA.”), ¶2.176 (“We conclude that dredging of the Savannah River FNC is not a “connected” action under NEPA.”), and ¶2.178 (“Neither barging of

the project, as planned, depends on using the FNC to transport heavy components via barge to the VEGP site, and (ii) no dredging of the FNC would occur but for SNC's need to navigate barges upon it. By definition, these actions are therefore connected.<sup>58</sup>

### ***Improper Segmentation***

21. In an effort to avoid assessing the direct impacts of dredging, SNC and the NRC Staff asked this Board to segment dredging from the remainder of the project.<sup>59</sup> Such improper segmentation has been characterized as “an attempt by an agency to divide artificially a major Federal action into smaller components to escape the application of NEPA to some of its segments,” and is simply not permitted by the law.<sup>60</sup>

22. The FEIS purports to examine all of the environmental impacts associated with constructing the two additional Units at Plant Vogtle, including impacts associated with transporting people and material to the VEGP site.<sup>61</sup> Such an examination necessarily includes an assessment of navigation-related impacts.

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components to the Vogtle site nor dredging of the Savannah River FNC are necessary for any activities authorized by the ESP and LWA.”); SNC Findings, Conclusions of Law at ¶20 (“The NRC’s issuance of an ESP and the Corps’ potential dredging of the Savannah River Federal navigation channel are not connected actions.”)

<sup>58</sup> 10 C.F.R. § 1508.25(a)(1).

<sup>59</sup> Staff Findings at ¶2.172; SNC Findings, Conclusions of Law at ¶20.

<sup>60</sup> O’Reilly, 477 F.3d.t 236.

<sup>61</sup> See, e.g., NRC000001 at 1-2 (“this EIS focuses on the environmental effects of construction and operation of two Westinghouse AP1000 reactors ...”); 4-7 (“the impact on local air quality from the increase in vehicular traffic would be temporary and SMALL ...”); 4-30 (“The area of disruption for mussels during construction of the intake, discharge and barge slip, and potential dredging between the barge slip and the Federal navigation channel is small relative to the extent of the Savannah River benthic habitat at this location and the impact would be temporary and largely mitigable.”); 4-41 (“Burke County has a well-developed transportation system and would not be

***Dredging and Issuance of the ESP are Connected Actions***

23. The record unequivocally establishes that dredging the FNC, which is necessary to SNC's construction plans, would not occur but for SNC's desire to use it to facilitate transportation of heavy equipment to the VEGP site. The FNC was last dredged in 1979 and regular commercial barge traffic ceased in the 1980's.<sup>62</sup> While the FNC receives sporadic use, there is no evidence of any demand that the Corps maintain the channel for commercial barging, with the exception of SNC's current needs.<sup>63</sup> Mr. Maciejewski, the Corps' official responsible for "budgeting and construction of the [dredging] work that goes on or would go on,"<sup>64</sup> testified that he "can think of *no reason that we would dredge*" other than at the request of someone who wished to use the FNC.<sup>65</sup> Thus, if the Corps dredges the FNC to accommodate SNC's delivery schedule, it will be solely at SNC's behest, in support of constructing Units 3 and 4.

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significantly impacted as a result of Southern's proposed construction activities."); 4-48 ("The staff concludes construction workers would impose a SMALL to MODERATE impact on the two-lane highways in Burke County, particularly River Road and the highways that feed into it."); 4-49 ("Southern recently upgraded the spur to support the transfer of heavy equipment to the VEGP site, and it is likely that this spur would be used to transfer equipment during the construction of Units 3 and 4 at the VEGP site. Since a number of new residential subdivisions have been developed near the rail spur in Waynesboro, it may be necessary to upgrade rail crossings with additional safety features."); 4-70 ("The total annual construction fatalities represents about a 2 percent increase above the traffic fatalities that occurred in Burke County in 2006.").

<sup>62</sup> NRC000001 at 4-27, 7-20, and E-56.

<sup>63</sup> See Staff Direct Testimony for EC 6.0 at A7 ("Transportation of large components upstream by barge has occurred several times in the last 10 years.").

<sup>64</sup> Post Tr. 1389.

<sup>65</sup> Post Tr. 1448 (emphasis added); see also *id.* ("the Corps typically does not do maintenance for one user.").

24. As an alternative to the Corps' dredging, SNC could seek a permit from the Corps to conduct the necessary dredging itself. The Corps' NEPA regulations require that requests for both on-site and FNC dredging be tied together, as a single project. Because SNC wishes to conduct its on-site dredging without being hindered by complications arising from dredging the FNC, Mr. Moore testified that SNC would not seek such a permit.<sup>66</sup>

25. NRC Staff witness, Ms. Bernstein, explained the purpose of the Corps' regulations which tie the on-site and FNC dredging requests together:

Our regulations require us to look at projects as a single and complete project. So in one sense, if an applicant comes in for one piece over on the site proper, on land, and they don't tell us about the other parts, we may view it as piecemealing. And some applicants will deliberately attempt to do that so that the project in totality appears to be smaller.

So our regulations require us to look at single and complete projects and then the NEPA side of the regulation again, you want to look at things cumulatively and holistically.<sup>67</sup>

26. In other words, if SNC conducted on-site and FNC dredging, but both segments of the project were not considered in the environmental analysis, then NEPA would be violated. The Corps' NEPA regulations avoid this violation by requiring all of the permit requests to be analyzed together as a single project. As explained above, the duty to avoid segmenting by analyzing an entire project in one environmental document is

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<sup>66</sup> See Post Tr. 1348 (“MR. MOORER: Well, as I understand the Corps' rules, if we were to get a permit to dredge the entire river at the same time we were pursuing permit actions for the other mechanisms, that those permits would be consolidated into one action. *They can't segment* under their rules, and because of that, that then makes it one big permit, and I think that was the concern, is that we would tie those other permits up with this action.”)(emphasis added).

<sup>67</sup> Post Tr. 1402-1403.

compelled by NEPA, not merely the Corps regulations, and applies equally to NRC and the Corps.<sup>68</sup>

***Alternatives to Barging were not Considered***

27. To further justify its complete failure to analyze the direct impacts associated with barging on the FNC, the NRC Staff alleged that components could be delivered by rail or road.<sup>69</sup> SNC echoed this allegation.<sup>70</sup> Because of the existence of these transportation alternatives, the NRC Staff and SNC asked this Board to find that barging may not be “necessary.”<sup>71</sup> However, use of these alternatives was not meaningfully considered by either SNC or the NRC Staff.

28. The NRC Staff did not consider highway or rail shipment as an alternative to barging heavy components, as the following colloquy from the Evidentiary Hearing illustrates:

JUDGE BOLLWERK: A couple of other questions. We heard some information yesterday about transportation alternatives, and it appears that there are, as I think you have already indicated, there is Plan A, and Plan B slash C. Plan A, at least from Southern’s perspective I think made pretty clear, was to be able to use barging. Plan B slash C would be to use some alternative transportation, either rail or highway transportation.

Could you give me a sense of what, again for the record, the alternative analysis you did relative to transportation besides barging? In terms of the

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<sup>68</sup> O’Reilly, 477 F.3d.at 236.

<sup>69</sup> Staff Findings at ¶2.179 (“the Applicant has conducted detailed evaluations of alternatives to barge delivery and found that delivery of heavy components could be achieved by utilizing highway or railroad routes in lieu of barging.”) and ¶2.186 (“Delivery of components to the Vogtle site by transportation methods other than barging is possible ...”).

<sup>70</sup> SNC Findings at ¶197-199.

<sup>71</sup> Staff Findings at ¶2.172; SNC Findings, Conclusions of Law at ¶20.

components you are talking about, either rail or highways? If you need a second to look through, you certainly can do that.

MS. KRIEG: Thank you.

We did - and I'm not sure I actually have the sections in here anyway - we did mention the possibility of rail and truck transport of construction equipment, and I know there were analyses related to transportation and transportation impacts on the roads. They did not specifically look at large components, however.

JUDGE BOLLWERK: So this was basically just general construction equipment being brought onto the site or leaving the site?

MS. KRIEG: That is correct.

JUDGE BOLLWERK: Was there anything with respect to rail?

MS. KRIEG: Yes, rail is mentioned also, and it was mentioned that there was a rail spur.

JUDGE BOLLWERK: But was there any discussion in particular of these types of large components and their transportation?

MS. KRIEG: Not that I recall.<sup>72</sup>

29. SNC also failed to assess the impacts of shipping heavy components by highway or rail.<sup>73</sup> The NRC Staff incorrectly asserted that “the Applicant has conducted detailed evaluations of alternatives to barge delivery and found that delivery of heavy components

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<sup>72</sup> Post Tr. 1521-1522.

<sup>73</sup> SNC and the NRC Staff cannot simply ignore impacts associated with transporting heavy components. While it is true that SNC expert, Mr. Neubert, testified that “we don’t plan on using barge delivery for the Vogtle project for the modules,” numerous barge trips for large components are still required. Post Tr. 1319.

could be achieved by utilizing highway or railroad routes in lieu of barging.”<sup>74</sup> In fact, SNC witness, Mr. Neubert, testified that no such analysis has occurred.<sup>75</sup>

30. Thus, as Ms. Krieg and Mr. Neubert testified, any impacts analysis in the FEIS (and the record) regarding use of roads and railways was limited to transportation of construction materials and workers only.<sup>76</sup> The reason for such a limited analysis is clear: the NRC Staff, in preparation of the FEIS, presumed that heavy components would be delivered to the VEGP site by barges on the FNC.<sup>77</sup>

31. Despite this presumption, SNC and the NRC Staff point to testimony indicating that it may be possible to construct Units 3 and 4 without using the FNC.<sup>78</sup> Such testimony misses the point. It does not matter what is *theoretically possible*; a NEPA analysis must focus on the project, *as proposed by SNC and as discussed by the NRC Staff in the FEIS*.<sup>79</sup>

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<sup>74</sup> Staff Findings at ¶2.179.

<sup>75</sup> See Post Tr. 1320 (“We’re currently working on additional details of those evaluations.”).

<sup>76</sup> See NRC000001 at 4-41 (“Public roads and railways would transport construction materials and equipment.”); 4-46 – 4-50 (discussing impacts on transportation and traffic).

<sup>77</sup> Staff Findings at ¶2.181, citing Staff Direct Testimony for EC 6.0, Post Tr. 1477 (“NRC staff witnesses testified that, in performing the FEIS analysis, they assumed that heavy components would be delivered to the Vogtle ESP site by use of barges on the Savannah River.”); see also NRC000001 at 4-50 (“Southern plans to use the Savannah River navigation channel to support delivery of large components and modules for construction of VEGP Units 3 and 4.”).

<sup>78</sup> Staff Findings at ¶2.178-1.282; SNC Findings at ¶197-199.

<sup>79</sup> See Staff Direct Testimony for EC 6.0 at A10 (“While road and rail transportation are other available options, the Staff evaluated the barging because this was the transportation option that was being contemplated by Southern in the ER.”).

32. Joint Intervenors did not simply *assume* barging, and thus dredging of the FNC, would be required to construct Units 3 and 4; instead, they *relied* upon SNC's own statements in its ESP application. The Environmental Report (the "ER"), a part of the ESP application, states unequivocally: "SNC plans to utilize the Savannah River navigation channel to support delivery of large components and modules for construction of Units 3 and 4."<sup>80</sup> The ER goes on to discuss SNC's plan to work with the Corps to facilitate using the FNC:

Close coordination with the Corps will be necessary. SNC has contacted the Corps and will be working with them to develop a strategic plan to support the required shipments for VEGP Units 3 and 4. The plan will include a schedule of shipments, identify maintenance needs and navigation aids, and identify contingencies, where appropriate.<sup>81</sup>

33. Moreover, it is undisputed that SNC's construction plan includes enlarging the existing barge slip<sup>82</sup> and constructing a heavy haul road to transport materials from the Savannah River to the construction site.<sup>83</sup>

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<sup>80</sup> SNC ESP Application, Part 3, Environmental Report at 2.5-10 (ML081020177). SNC introduced only part of the ESP Application into the record as SNC00001. Because the issue before this Board concerns the sufficiency of the ESP Application, to the extent that any information contained therein was not introduced into the record, Joint Intervenors request that this Board take judicial notice of such information pursuant to 10 C.F.R. § 2.1210. See also Staff Direct Testimony for EC 6.0 at A10 ("While road and rail transportation are other available options, the Staff evaluated the barging because this was the transportation option that was being contemplated by Southern in the ER.").

<sup>81</sup> Id.

<sup>82</sup> See NRC000001 at 4-3 ("The barge slip, also located in the Savannah River floodplain, would be expanded."); 4-25 ("Impacts on the aquatic ecosystem from construction of VEGP Units 3 and 4 would mainly be associated with impacts to the Savannah River from the construction of a new CWIS, a new cooling water discharge line, and a barge slip."); 4-28 ("A greater amount of river habitat would be disturbed during the barge slip construction activities.").

34. Thus, the fact remains that barging is, and always has been, integral to SNC's construction plan for the Plant Vogtle expansion project – so integral, in fact, that no other alternative was considered.

***Current River Flows Cannot Support Navigation without Dredging***

35. As an additional justification for its complete failure to analyze the direct impacts associated with barging on the FNC, the NRC Staff asked this Board to find that navigation on the FNC could be supported without dredging.<sup>84</sup> However, the testimony adduced at the evidentiary hearing unequivocally revealed that some dredging will be required for SNC to reliably transport 60 barge trips over the two-and-a-half year construction schedule.<sup>85</sup>

36. Barges can navigate on the FNC without dredging if the river flow is approximately 10,000 cfs.<sup>86</sup> The Corps can release water from upstream reservoirs to

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<sup>83</sup> See NRC000001 at 4-2 (“A heavy-haul road would be constructed from the barge slip on the Savannah River to the construction site.”); 4-18 (“Construction of the heavy-haul road and the new switchyard could result in sediment transport into Mallard Pond after heavy rainfall events.”); 4-28 (“Construction of the new switchyard and a proposed heavy-haul road could convey stormwater into the head of Mallard Pond.”).

<sup>84</sup> Staff Findings at ¶2.186 and ¶2.187.

<sup>85</sup> See Joint Intervenors Findings for EC 6.0 at ¶4.

<sup>86</sup> See Corps Direct Testimony for EC 6.0 at A7 (“Transportation of large industrial components upstream by barge is not currently possible due to the shallow river depths. However, transportation of large components upstream by barge has occurred several times in the last 10 years. Shipment was made by Chem Nuclear of contaminated power plant reactor vessels to Barnwell, South Carolina (SC) for disposal. However, *it required about a 10,000 cubic feet per second (cfs) discharge.*”) (emphasis added).

provide sufficient river flow for navigation;<sup>87</sup> however, the Corps' ability to do so is limited. For instance, NRC Staff witness, Mr. Simpson, testified: "any time we're in that Drought Contingency Plan, we will not be making releases for barge shipments."<sup>88</sup>

37. Even when the Drought Contingency Plan is not in effect, the Corps' ability to augment the river flow is limited by the amount of water stored in the reservoirs. At the evidentiary hearing, NRC Staff witness, Mr. Simpson, testified that the Corps does not normally release water from reservoir storage specifically for navigation:

For the most part in the last 20 years, all navigation has been incidental to other operations, just our normal operation. So in times of flood control that's when they would make their shipments, when we had ample water to provide them with -- there have been instances where we knew something was coming up and we actually stored some water in the flood pools for them.<sup>89</sup>

38. While the Corps will alter its routine operations to support navigation "in some instances," it would be problematic, if not impossible, for the Corps to provide sufficient regular flow to support navigation on the scale being contemplated by SNC, as the following colloquy from the Evidentiary Hearing illustrates:

JUDGE BOLLWERK: And we heard, I guess, testimony today there may be as many as 30 of these trips that may be necessary; does that --

MR. SIMPSON: Cause a problem?

JUDGE BOLLWERK:-- cause you any concern one way or the other? Anything you want to comment on?

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<sup>87</sup> See Post Tr. 1439 ("But typically we would water up the river, have to go to 10,000 cfs."); Post Tr. 1440 (The river has been raised for two-week periods to allow barges to navigate "probably three or four times in the last 20 years.")

<sup>88</sup> Post Tr. 1440.

<sup>89</sup> Id.

MR. SIMPSON: That would be a concern, especially if we were not in a wet situation because when we use up 10,000 cfs over a couple of weeks, we've probably drafted the pools two to three feet.<sup>90</sup>

Thus, SNC can either wait for a "wet situation," when the Corps' normal flood control operations will provide flows sufficient for navigation, or the FNC can be dredged to a depth where navigation is possible at lower flows.

39. The NRC Staff unreasonably assumed "that large components could be barged during periods of naturally occurring high flow," and that SNC would accept the financial risk and possible construction delays while waiting for rain to enable transporting heavy components to the VEGP site.<sup>91</sup> This assumption does not comport with the NEPA "rule of reason." As SNC witness, Mr. Moorer, explained at the evidentiary hearing:

[O]ne of the reasons that we believe we're pursuing this avenue of the dredging, is that we don't believe we can be prudent in planning and wait on it to rain. So we feel that we have to exercise this mechanism as part of our prudent planning process.<sup>92</sup>

40. While the NRC Staff cavalierly dismissed financial risk and delays as "not material to NRC's review of environmental impacts," they ignored the fact that dredging the FNC would eliminate these risks to SNC. It is, simply, laughable to expect that SNC would wait for rain under these circumstances.

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<sup>90</sup> Post Tr. 1446-1447.

<sup>91</sup> Staff Direct Testimony for EC 6.0 at A12.

<sup>92</sup> Post Tr. 1347-1348.

*Incomplete Information for Direct Impacts Analysis*

41. The NRC Staff and SNC also asked this Board to find the NRC Staff did not have the information necessary to conduct a detailed assessment of navigation-related impacts.<sup>93</sup>

42. However, “the purpose of an EIS is to obviate the need for speculation by insuring that available data are gathered and analyzed prior to implementation of the proposed action.”<sup>94</sup> Thus, the NRC Staff had an obligation to gather and analyze any data available regarding dredging the FNC – at the least, the NRC Staff should have sought such data from SNC. The NRC Staff failed to meet this obligation, and conceded that it did not issue any requests for additional information regarding the planned dredging.<sup>95</sup>

43. In an attempt to justify this failure, SNC and the NRC Staff assert that the Corps could conduct the requisite studies at a later date.<sup>96</sup> This argument is without merit. As Joint Intervenors have repeatedly explained, the NRC Staff cannot justify its cursory

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<sup>93</sup> SNC Findings at ¶¶186, 187, and 200; SNC Findings, Conclusions of Law at ¶¶22 and 24; Staff Findings at ¶¶2.209, 2.210, and 2.230.

<sup>94</sup> Nat'l Parks & Conservation Ass'n v. Babbitt, 241 F.3d 722, 732 (9<sup>th</sup> Cir. 2000); see also id. at 733 (“Before one brings about a potentially significant and irreversible change to the environment, an EIS must be prepared that sufficiently explores the intensity of the environmental effects it acknowledges. A part of the preparation process here could well be to conduct the studies that the Park Service recognizes are needed ... The point is, however, that the “hard look” must be taken before, not after, the environmentally-threatening actions are put into effect.”)

<sup>95</sup> Post Tr. 1560.

<sup>96</sup> SNC also asserts that the information gathered by SNC after issuance of the FEIS is sufficient. See SNC Findings at ¶¶216-223. Joint Intervenors explained the inadequacy of this information in Joint Intervenors Findings for EC 6.0 at ¶¶14-22.

treatment of dredging impacts by assuming that “these impacts would be evaluated in more detail in the NEPA analysis that would be conducted by the [Corps].”<sup>97</sup> Navigation impacts are connected to issuance of the ESP, and thus NRC must take a “hard look” at these impacts now. The NRC cannot delegate its NEPA obligations to another agency.<sup>98</sup>

### **Cumulative Impacts of Dredging**

#### ***Dredging the FNC is Reasonably Foreseeable***

44. As previously noted, the NRC has an obligation to analyze the impact on the environment of issuance of the ESP in connection with the impacts of other past, present, and reasonably foreseeable future actions.<sup>99</sup>

45. Despite the overwhelming evidence that dredging the FNC would be required to implement SNC’s construction plan for Units 3 and 4, both SNC and the NRC Staff ask this Board to find that such impacts need not be considered in the cumulative impacts section of the FEIS because they are not “reasonably foreseeable.”<sup>100</sup> The facts belie SNC’s and the NRC Staff’s claims. Not only is the likelihood of dredging reasonably

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<sup>97</sup> NRC000001 at 7-21; see also SNC Findings at ¶232-237.

<sup>98</sup> Idaho v. ICC, 35 F.3d 585 (D.C. Cir. 1994) (“Instead of taking its own hard look, the Commission deferred to the scrutiny of others by authorizing salvage subject to conditions that require Union Pacific to consult with various federal and state agencies about the specific environmental impacts that fall within their jurisdictions. An agency cannot delegate its NEPA responsibilities in this manner.”).

<sup>99</sup> 40 C.F.R. §1508.25(c). A cumulative impacts analysis must consider “the impact on the environment which results from the incremental impact of the action when added to other past, present, and *reasonably foreseeable future actions* regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (emphasis added).

<sup>100</sup> Staff Findings at ¶2.188; NRC Findings, Conclusions of Law at ¶21.

foreseeable, it was in fact foreseen by numerous state and federal agencies, and non-governmental organizations, as set forth in the Appendix E to the FEIS:

- **South Carolina Department of Natural Resources**

Comment: SCDNR has a number of concerns regarding natural resource impacts of the planned facility expansion to include at least the following: 4. Water quality impacts associated with construction activities including planned dredging of the Savannah River at the plant site as well as potential dredging of the navigation channel.<sup>101</sup>

Comment: SCDNR has a number of concerns regarding natural resource impacts of the planned facility expansion to include at least the following: 5. *(Undetermined fish and wildlife impacts over the length of the Savannah River from the plant site to the Savannah Harbor and Savannah River estuary.)*<sup>102</sup>

Comment: There will be a host of undetermined fish and wildlife impacts over the length of the Savannah River from the plant site to the Savannah Harbor and Savannah River estuary related to construction activities as described in the DEIS. We do not believe the DEIS adequately describes the range of fish and wildlife impacts, and we recommend development of supplementary information in consultation with required agencies as defined by the Fish and Wildlife Coordination Act . . . the National Environmental Policy Act (NEPA), the Environmental Quality Improvement Act of 1970 . . . the Clean Air Act . . . and E.O. 11514.<sup>103</sup>

- **U.S Department of Interior**

Comment: Channel Dredging. The document does not address dredging of the Savannah River channel that is likely needed to move required construction material up the river from Savannah harbor to the site. The U.S. Corps of Engineers, Savannah District (USACE) has not maintained the Savannah River below Augusta, Georgia for navigation since the late 1970's. According to the USACE, previous barge shipments to Barnwell for reactor disposal required a discharge of between 10,000 cfs and 15,000 cfs in December of 2004. Vogtle construction will likely require many shipments (15-30) and it would be impossible to plan and provide that many shipment windows with releases that

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<sup>101</sup> NRC000001 at E56.

<sup>102</sup> Id. at E69.

<sup>103</sup> Id. at E69-70.

are incidental to flood control or pulse flow releases; therefore, it appears dredging of the Federal navigation channel would be required.<sup>104</sup>

Comment: The channel dredging would be a major impact of the project and, if it is necessary for construction, needs to be disclosed and thoroughly evaluated in the DEIS. Channel dredging would likely impact mussel beds because the beds are found in the sediment deposition areas where there is some protection from scouring flows occurring in the main channel. Habitat for fish and other aquatic organisms would also be impacted.<sup>105</sup>

Comment: Dredging the river will have direct impacts on freshwater mussels by: (1) physical removal of the animals with the dredge spoil, (2) alteration of habitat, including eliminating sediment bars and removal of debris and other in-stream structures that provide refugia from scouring high- water flow, (3) alteration of habitat for fish spawning, potentially reducing numbers of host fish available for successful mussel reproduction, and (4) depending on the site selection for spoil disposal, potential degradation of backwater slough or oxbow habitat, which supports a variety of mussel species.<sup>106</sup>

- **Southern Alliance for Clean Energy**

Comment: The dredging of the Savannah River that would be needed to allow for delivery of the necessary construction materials, reactor components, etc. was not fully analyzed especially in light of the drought conditions that exist and may worsen.<sup>107</sup>

Comment: The NRC did not look at how lower river flows downstream of Vogtle would impact possible navigation upstream to the plant nor what the then required dredging would do to water quality, sensitive species, etc. This needs to be done before the final EIS is issued.<sup>108</sup>

- **Corps of Engineers**

Comment: Transportation of construction materials by barge was not mentioned in the EIS. The Savannah River Below Augusta (SRBA) is not maintained for

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<sup>104</sup> Id. at E-56.

<sup>105</sup> Id. at E-69.

<sup>106</sup> Id.

<sup>107</sup> Id. at E-56.

<sup>108</sup> Id.

navigation therefore dredging would likely be required to provide viable commercial navigation for the construction of units 3 and 4. Existing channel depths are not adequate to provide adequate draft depths for barges carrying heavy construction components. Has Southern considered the environmental impact of dredging the reach to restore adequate draft depths for navigation?<sup>109</sup>

- **The Nature Conservancy**

Comment: We would also like to encourage that this draft EIS to address the significant dredging needs of the entire river that may be needed for the construction phase of the additional two reactors. Since the 1980's commercial navigation of the channel above the Savannah Harbor has virtually ceased. The navigation channel of the Savannah River has not been maintained by the USACE for over 27 years. Since the last time that the river was dredged to support navigation, information about endangered and globally rare species that depend on habitats within and surrounding the river channel has significantly increased. For example: approximately 39 species of freshwater mussels have been recorded in the Savannah River. Eleven of which have been Globally ranked as imperiled or critically imperiled, 13 of which as listed by the State of Georgia Non-Game Heritage Conservation Program as imperiled or critically imperiled in the State of Georgia. Although we understand it to be the responsibility of the USACE to examine the environmental impacts of maintaining the channel for navigation, the negative environmental impacts may be severe to endangered and rare species. We suggest that the environmental impacts of this action should also be addressed by this EIS for a comprehensive look at the full impacts of this expansion project. We would like to see this EIS consider alternatives to dredging the channel for barge transport of construction materials.<sup>110</sup>

Comment: We also recommend that any EIS for the expansion of Plant Vogtle should include the environmental impacts associated with all dredging for the construction phase of the project including the navigation channel.<sup>111</sup>

Comment: We would also like to encourage that this draft EIS to address the significant dredging needs of the entire river that would be needed for the construction phase of the additional two reactors. Since the 1980's commercial navigation of the channel above the Savannah Harbor has virtually ceased. The navigation channel of the Savannah River has not been maintained by the USACE for over 27 years. There have been no recent requests to dredge the channel and since the request to the USAGE for dredging of the navigation channel above the

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<sup>109</sup> Id. at E-55.

<sup>110</sup> Id. at E-56.

<sup>111</sup> Id. at E-57.

harbor would be exclusively for the expansion of Plant Vogtle, we believe that the environmental impacts of this action should be addressed by this EIS and consider alternatives to dredging the channel for barge transport of construction materials.<sup>112</sup>

Comment: We also recommend that any EIS for the expansion of Plant Vogtle should include the environmental impacts associated with all dredging for the construction phase of the project (including the navigation channel), since dredging of the navigation channel would mostly be for the benefit of this specific project.<sup>113</sup>

- **U.S. Fish and Wildlife Service**

Comment: Channel Dredging The document does not address dredging of the Savannah River channel that is likely needed to move required construction material up the river from Savannah Harbor to the site. The U. S. Corps of Engineers, Savannah District (USACE) has not maintained the Savannah River below Augusta, Georgia for navigation since the late 1970's. According to the USACE, previous barge shipments to Barnwell for reactor disposal required a discharge of between 10,000 cfs and 15,000 cfs in December of 2004. Vogtle construction will likely require many shipments (15-30) and it would be impossible to plan and provide that many shipment windows with releases that are incidental to flood control or pulse flow releases; therefore, it appears dredging Of the federal navigation channel would be required. The channel dredging would be a major impact of the project and, if it is necessary for construction, needs to be disclosed and thoroughly evaluated in the DEIS. Channel dredging would impact mussel beds because the beds are found in the sediment deposition areas where there is some protection from scouring flows occurring in the main channel. Habitat for fish and other aquatic organisms would also be impacted. Dredging the river will have direct impacts on freshwater mussels by: (1) physical removal of the animals with the dredge spoil, (2) alteration of habitat, including eliminating sediment bars and removal of debris and other in-stream structures that provide refugia from scouring high-water flow, (3) alteration of habitat for fish spawning, potentially reducing numbers of host fish available for successful mussel reproduction, and (4) depending on the site selection for spoil disposal, potential degradation of backwater slough or oxbow habitat, which supports a variety of mussel species.<sup>114</sup>

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<sup>112</sup> Id. at E-69.

<sup>113</sup> Id.

<sup>114</sup> Id. at E57.

46. In light of the number of similar comments expressing concern with potential negative consequences of dredging the FNC, the NRC Staff response is remarkable in its inadequacy. The NRC Staff did not even follow-up with the Corps, the federal agency with jurisdiction over the FNC, after receiving its comments.<sup>115</sup> Yet, the FEIS states:

After reviewing the Federal activities in the vicinity of the VEGP site, the staff determined that there were no Federal project activities that would make it desirable for another Federal agency to become a cooperating agency for preparation of this EIS.<sup>116</sup>

47. NRC Staff witness, Mr. Vail, testified at the evidentiary hearing that he did indeed have “conversations” with Mr. Simpson of the Corps, where dredging was “mentioned;” however, it is readily apparent from the record that the NRC Staff did not truly consult with the Corps regarding dredging.<sup>117</sup>

48. Moreover, upon receiving letters from state and federal resource agencies with specific concerns over potential impacts to important species, particularly mussels, the

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<sup>115</sup> See Post Tr. 1551-1552 (“JUDGE BOLLWERK: All right. And then did you subsequently have any additional meetings with the Corps [after receiving comments on the DEIS] to discuss the channel and dredging? DR. COOK: I did not, no. MR. VAIL: No meetings I’m aware of. MR. NOTICH: No, Your Honor. MS. KRIEG: Same here. I do want to add, though, that we did in our conversations, continued conversations, with the applicant, ask them if they were indeed putting in an application, what the status was, were they now planning to have the Federal navigation channel dredged, and then every conversation that the subject was dredging was that they were not planning to do it, they were not planning to put in an application. They had had - that had continued talks with the Army Corps of Engineers and they did inform us of those talks. JUDGE BOLLWERK: So you didn’t contact them thereafter or discuss this with them? MS. KUNTZLEMAN: No, I did not, Your Honor.”)

<sup>116</sup> NRC000001 at 2-123; see also *id.* at 2-124 (“NRC consulted with the FWS and NOAA Fisheries;” no mention of the Corps); *id.* at Appendix F.

<sup>117</sup> Post Tr. 1552-1553.

NRC Staff did not contact those agencies to explore their concerns.<sup>118</sup> The U.S. Fish and Wildlife Service submitted lengthy letter with comments advising the NRC that “channel dredging would be a major impact of the project” that “needs to be disclosed and thoroughly evaluated.”<sup>119</sup> NRC Staff witness, Ms. Kuntzleman, testified that subsequent conversations with the Fish and Wildlife Service concerned “other aspects of their letter,” not dredging.<sup>120</sup>

49. Not only did the NRC Staff fail to investigate the matter with the Corps and the resources agencies, they did not request any additional information from SNC.<sup>121</sup> As a result, the discussion of dredging the FNC in the FEIS cumulative impacts section is nothing more than generalized speculation, “based on the Staff’s familiarity with previous dredging projects and the fact that the Savannah River Federal navigation channel had previously been dredged.”<sup>122</sup> The problem here is not that the NRC Staff performed a qualitative analysis, and Joint Intervenors demand a quantitative analysis;

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<sup>118</sup> See Post Tr. 1555: (“JUDGE BOLLWERK: And any discussions with other federal agencies about dredging, put aside the Corps of Engineers? MS. KUNTZLEMAN: Well, we did receive comment letters from - also one from the Fish & Wildlife Service, and the state of Georgia. There was a Department of Interior one, and I think the state of Georgia and the state of South Carolina. JUDGE BOLLWERK: And basically those letters, you had no contacts with them, you just received their letters and read them? MS. KUNTZLEMAN: We did have further contact with the Fish & Wildlife Service over other aspects of their letter that did not apply to dredging.”)

<sup>119</sup> NRC000001 at E60.

<sup>120</sup> Post Tr. 1555.

<sup>121</sup> See Post Tr. 1559-1560 (“JUDGE BOLLWERK: But I take it it didn't rise to the level that you felt you needed to send an RAI for instance to Southern to try to put something on the record necessarily? MS. KUNTZLEMAN: Now I wish I would have.”)

<sup>122</sup> Staff Direct Testimony for EC 6.0 at A27.

rather, the problem is that the NRC Staff preformed no meaningful analysis at all.<sup>123</sup> The NRC Staff cannot overcome this shortfall by simply asking this Board to find that the impacts of dredging were not “reasonably foreseeable.”<sup>124</sup>

***Lack of Meaningful Analysis***

50. Thus, to the extent any cumulative analysis was conducted, this analysis was woefully insufficient. “A proper consideration of the cumulative impacts of a project requires some quantified or detailed information; . . . general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided.”<sup>125</sup> Accordingly, a cumulative impacts analysis “must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects.”<sup>126</sup>

51. In other words, a cumulative impacts analysis must contain more than “general statements about possible environmental effects” to satisfy the “hard look” required under NEPA.<sup>127</sup> The same is true for an analysis of mitigation measures.<sup>128</sup>

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<sup>123</sup> See Post Tr. 1554 (“I did an analysis based on the process that would be followed as part of a [Corps] permit application.”)

<sup>124</sup> The Improper Segmentation argument in ¶21-22 above is also relevant to this cumulative impacts argument. “NEPA requires a federal agency to analyze the cumulative impacts of a proposed project in conjunction with any other, related actions. This requirement prevents a proponent from breaking a proposal into small pieces that, when viewed individually, appear insignificant, but that are significant when viewed as a whole.” Oxford 428 F.3d. at 1353 (internal citations omitted).

<sup>125</sup> Klamath-Siskiyou Wildlands Center v. Bureau of Land Management, 387 F.3d 989 (9<sup>th</sup> Cir. 2004).

<sup>126</sup> Id.

<sup>127</sup> Nat’l Parks at 733, citing Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208,1213 (9<sup>th</sup> Cir. 1998) (internal citations omitted).

52. In reaching its conclusion that the impacts “could be MODERATE” the NRC Staff had no idea of the number of barge trips were being contemplated, even though that information is critical to analyze whether dredging would be required.<sup>129</sup> The NRC Staff did not enquire of SNC or the Corps the amount of dredging that would be necessary, or conduct an independent analysis.<sup>130</sup> As a result, the MODERATE finding was not based on any site-specific information.<sup>131</sup> At best, it was impermissibly based on general statements about possible environmental effects.

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<sup>128</sup> O’Reilly, 477 F.3d. at 231 (“We have still required that an EIS involving mitigation must include a serious and thorough evaluation of environmental mitigation options for a Project to allow its analysis to fulfill NEPA’s process-oriented requirement.”)(internal quotations omitted).

<sup>129</sup> See Post Tr. 1495-1496 (“MR. VAIL: Well, at the time we had done the FEIS, I’m not sure we had any insight into the number of barge shipments that were being proposed at that time. So to my knowledge we had no information about the number of barge shipments that would be involved. MS. KUNTZLEMAN: And I concur with Mr. Vail on that. JUDGE BOLLWERK: And when did you find out how many barge shipments were involved? MS. KUNTZLEMAN: Yesterday. JUDGE BOLLWERK: So you never asked Southern how many barge shipments they intended to send up the river, up I guess - until yesterday you had no knowledge that it was that many? MS. KUNTZLEMAN: Our understanding was that they were going to barge the large components, and that is - my understand was, there are only two types of large components, which would be the steam generator and the reactor vessel. So we didn’t – did not ask about additional transport .of other items.”).

<sup>130</sup> See Post Tr. 1554-1555 (“JUDGE BOLLWERK: Up to moderate? Okay. So you haven’t ever done any independent analysis or investigation about how much dredging might be required there, other than you looked at the expanse of the river and just assumed that that - it had a lot of stuff in it, and that would require as you said a fairly significant amount of dredging if in fact that was the case. MS. KUNTZLEMAN: Yes, Your Honor. The variable could be from example 36,000 cubic yards to millions of cubic yards, orders of magnitude.”).

<sup>131</sup> See Post Tr. 1528 (“We have not looked at the mussels at those locations that they said need to be dredged.”).

53. At the evidentiary hearing, NRC Staff witness, Ms. Kuntzleman candidly admitted that “without details, I *selected moderate*.”<sup>132</sup> Without any information about the actual conditions on the river, Ms. Kuntzleman speculated that “it could end up being small,” and further opined that “it’s unlikely the project would have a large impact.”<sup>133</sup> Such a selection falls substantially short of the “hard look” requirement set forth by NEPA.

#### ***Incomplete Information for Cumulative Impacts Analysis***

54. Both SNC and the NRC Staff asked this Board to conclude that the impacts of dredging need not be fully assessed because the extent of dredging required is unknown. However, “when the *nature* of the effect is reasonably foreseeable but its *extent* is not ... an agency may not simply ignore the effect.”<sup>134</sup> Thus, certain missing information cannot be used to justify a completely inadequate cumulative impacts analysis.

55. Moreover, SNC cannot rely on 40 C.F.R. §1502.22 to explain this inadequacy.<sup>135</sup> 40 C.F.R. §1502.22, provides, in pertinent part:

(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

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<sup>132</sup> Post Tr. 1525; see also id. (“could be moderate in this case meant that we did not have adequate information to do a quantitative analysis”).

<sup>133</sup> Id.; see also Post Tr. 1526 (“I see it very unlikely that you would have a permit issue with a large impact.”).

<sup>134</sup> Mid States Coalition for Progress v. Surface Transportation Board, 345 F.3d 520, 549 (8<sup>th</sup> Cir. 2004).

<sup>135</sup> SNC Findings, Conclusions of Law at ¶24.

(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement: (1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating the reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

56. The information regarding dredging impacts would certainly not be exorbitant to obtain. In light of the \$7 billion cost of each proposed Unit, the additional research and studies required to adequately assess dredging impacts would likely be minimal.

Accordingly, 40 C.F.R. §1502.22(a) required the NRC Staff to include the information regarding dredging impacts in its cumulative impacts analysis.

57. Assuming, *arguendo*, that 40 C.F.R. §1502.22(a) did not require the NRC Staff to include information regarding dredging impacts, the FEIS (and the record as a whole) still fails to satisfy the mandate of §1502.22(b). Nowhere in the two pages devoted to dredging impacts in the FEIS,<sup>136</sup> is a statement regarding the relevance of the missing information needed to assess the impacts of dredging (as required by §1502.22(b)(2)), a summary of existing scientific evidence relevant to evaluating dredging impacts (as required by §1502.22(b)(3)), or an evaluation of dredging impacts based upon theoretical approaches (as required by 1502.23(b)(4)). Neither SNC nor the NRC Staff cite to any place in the record which resolves these failures.<sup>137</sup>

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<sup>136</sup> NRC000001 at 7-20 – 7-21.

<sup>137</sup> When impacts are reasonably foreseeable, enough site-specific information must be made available to enable the NRC and the public to make a reasoned choice as to whether

## Conclusions of Law

1. The proposed cooling water system for Plant Vogtle Units 3 and 4 will have direct, indirect, and cumulative impacts on important aquatic resources, particularly shortnose sturgeon and robust redhorse. Given their protected status and low baseline population, loss of any larval or juvenile robust redhorse or shortnose sturgeon could potentially destabilize the resource. As a result, the impact of Units 3 and 4 would be LARGE, and therefore the ESP must be denied.
2. The FEIS and the evidence adduced at the evidentiary hearing are insufficient to conduct an adequate cumulative impacts analysis under NEPA. A meaningful cumulative impact analysis must identify:

(1) the area in which the effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions--past, present, and proposed, and reasonably foreseeable--that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate.<sup>138</sup>

The discussion of cumulative impacts from the proposed cooling water intake structure fails on all counts and, as a result EC 1.2 must be resolved in favor of Joint Intervenors, and the requested ESP must be denied.

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to issue the ESP. To this end, the NRC must articulate its rationale for any assumptions made in the FEIS, and then specify the probable environmental effects. Conservation Law Foundation of New England v. General Services Administration, 707 F.2d 626 (1<sup>st</sup> Cir. 1983). Such an articulation, as required both by 40 C.F.R. §1502.22(b) and relevant case law, is notably absent from the record.

<sup>138</sup> Grand Canyon Trust v. FAA, 290 F.3d 339, 345 (D.C. Cir. 2002)

3. Because dry cooling is feasible, its environmental impacts must be weighed against the impacts of a wet cooling system. As noted in the Joint Intervenors' Findings, the benefits of dry cooling (including its elimination of impacts to the robust redhorse and shortnose sturgeon) outweigh the benefits of wet cooling. Accordingly, this Board must deny the ESP, which requests a wet cooled facility.
4. In the alternative, should the Board choose to issue the ESP, such issuance must be conditioned upon proposed Units 3 and 4 adopting a 100% dry cooling system.
5. The FEIS failed to adequately assess both the direct and cumulative impacts of dredging the FNC. Because dredging is both an action "connected" to issuance of the ESP and "reasonably foreseeable," the lack of assessment violates NEPA's "hard look" requirement. Accordingly, EC 6.0 must be resolved in favor of Joint Intervenors, and the requested ESP must be denied.

Respectfully submitted this 8<sup>th</sup> day of May, 2009,

**/signed (electronically) by/**

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
)  
SOUTHERN NUCLEAR OPERATING ) Docket No. 52-011-ESP  
COMPANY )  
)  
(Early Site Permit for the Vogtle ESP Site) ) May 8, 2009

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **JOINT INTERVENORS' REPLY TO NRC STAFF'S AND SOUTHERN NUCLEAR OPERATING COMPANY'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW CONCERNING CONTESTED ENVIRONMENTAL MATTERS** were served upon the following persons by Electronic Information Exchange and/or electronic mail.

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Dated: May 8, 2009

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