

Westinghouse Non-Proprietary Class 3



Westinghouse Electric Company
Columbia Fuel Site
5801 Bluff Road
Hopkins, South Carolina 29061-9121
USA

Office of Administration
Mail Stop: TWFN-7-A60M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Program Management, Announcements
and Editing Staff

Direct tel: (803) 647-3338

e-mail: parrnb@westinghouse.com

LTR-RAC-19-94
November 25, 2019

Subject: Transmittal of Westinghouse Electric Company Comments on Columbia Fuel Fabrication Facility Environmental Assessment [Docket ID NRC-2015-0039]

Westinghouse Electric Company (Westinghouse) appreciates the opportunity to comment on NRC's draft Environmental Assessment (EA) and finding of no significant impact (FONSI) for the Columbia Fuel Fabrication Facility (CFFF). Westinghouse agrees with the FONSI in the draft EA. Westinghouse further appreciates NRC's efforts to efficiently complete its environmental review and proceed to issue the renewed license for CFFF for an additional 40 years. The enclosure of this letter contains comments on the draft EA to provide edits and clarifications for your consideration.

If you need additional information, please contact me at 803-647-3338 or parrnb@westinghouse.com.

Nancy Blair Parr
Environmental Protection Manager
Westinghouse Columbia Fuel Fabrication Facility

cc Jessie Quintero
Marilyn Diaz
Tom Vukovinsky

| Page | Line | Current Wording | Suggested Wording | Justification |
|------|-------|---|---|---|
| i | 12 | "...in uranium entering the subsurface...." | "...in uranium <u>uranyl nitrate containing hydrofluoric acid</u> entering the subsurface...." | Metallic uranium (U) did not enter the subsurface. The chemical that would have entered the subsurface is uranyl nitrate with up to 5% hydrofluoric acid. |
| i | 14 | "...that also allowed uranium to enter the..." | "...that also allowed <u>process wastewaters containing</u> uranium to enter the..." | Metallic uranium did not enter the subsurface. The material that contacted the soil was process wastewater containing uranium. |
| i | 25 | "...uranium and technetium-99 in the groundwater, onsite, above drinking water standards." | "...uranium and technetium-99 in <u>five of the ninety-the</u> groundwater <u>wells</u> ; onsite, above drinking water standards." | As written, the public could misunderstand that U and Tc-99 detections at the drinking water standard are more extensive. |
| i | 26 | "The source of the uranium is believed to be from..." | "The source of the uranium <u>close to the building</u> is believed to be from..." | The detections of U above drinking water standards are all close to the building and have not migrated further. |
| i | 28-29 | "...related to the investigation and remediation of contamination at the site as well as responses to future releases." | "...related to the investigation and remediation of <u>historical</u> contamination at the site as well as responses to future releases ." | New WEC Procedures RA-433, RA-434, and RA-435 were written and implemented to establish programmatic controls that will ensure consistent, risk-based decision making and predictable responses to any new issues that could occur from future operations. The comprehensive Consent Agreement (CA) between DHEC and WEC will assess and address environmental impacts from historical practices at the site. |
| i | 34 | "...will assess next steps." | "...will assess next steps <u>as required by the Consent Agreement</u> ." | The Consent Agreement requires WEC to follow the entire CERCLA process. |
| ii | 9 | "...uncertainty of the migration pathways..." | "... uncertainty of the migration pathways ..." | Migration pathways have been assessed in an updated risk assessment. In addition, data from the Remedial Investigation Work Plan is used to update and continually refine the Conceptual Site Model (CSM) and risk assessment. |

| | | | | |
|-----|---------------------|--|---|--|
| 1-3 | Section 1.4 5-24 | The current wording does not list the site's air permit. | Suggest incorporating the air permit renewal application. | WEC performed extensive air emissions analysis and modeling as part of the updated air permit renewal application submitted to DHEC on May 30, 2019 (LTR-RAC-19-41). |
| 2-1 | 22 | "Manufacturing of the fuel assemblies is mostly conducted in the main manufacturing building..." | "Manufacturing of the fuel assemblies is mostly conducted in the main manufacturing building..." | All fuel assembly manufacturing occurs in the main building. |
| 2-1 | 25-27 | No mention of the uranyl nitrate process | Suggest incorporating language from the license renewal application. | WEC uses UF ₆ and UN to manufacture nuclear fuel. |
| 2-5 | 6 | "...metal fabrication, quality control testing, and shipping container painting." | "...metal fabrication, quality control testing, and shipping container painting refurbishment." | WEC discontinued the paint booth operations for MCC containers. MCC containers are being phased out and only incidental spot spray painting occurs presently. |
| 2-5 | 7 | "Figure 2-5 shows the chemical process streams at CFFF." | "Figure 2-5 shows the chemical <u>Uranium Recycle and Recovery Services</u> process streams at CFFF." | This figure illustrates the Uranium Recycle and Recovery Services at the CFFF. |
| 2-5 | Figure 2-5 | "Figure 2-5 CFFF Process Streams (Source: WEC 2019b)" | "Figure 2-5 CFFF-URRS Process Streams (Source: WEC 2019b)" | This figure illustrates the Uranium Recycle and Recovery Services at the CFFF. |
| 2-6 | 27 | "...leak was discovered, nor is any remediation planned that NRC is aware." | "...leak was discovered, nor is any remediation planned that NRC is aware. <u>There are no immediate risks to human health or the environment. As a result, this area will continue to be monitored. The monitoring results will inform when the affected area will be remediated.</u> " | The area is being monitored and appropriate action will be taken as per the risk based, remediation procedure. |
| 2-7 | 4 | "...waste containing uranium, WEC discovered the structural..." | "... waste materials containing uranium, WEC discovered the structural..." | The drums contain valuable material destined for incineration and uranium recovery. |

| | | | | |
|------------|--------------|---|--|--|
| 2-7 | 7 | “...the soil underneath those containers. The WEC is currently investigating this area as part ...” | “...the soil underneath those containers. <u>The affected soil was remediated.</u> The WEC is currently investigating this the Southern Storage a Area as part ...” | Reports detailing WEC progress on the removal of intermodal containers have been issued and are publicly available on DHEC’s website. See LTR-RAC-19-65, Southern Storage Area Operable Unit Remedial Investigation Work Plan Addendum 1 Assessment Report and LTR-RAC-19-87, Southern Storage Area Operable Unit Intermodal Container Work Plan. |
| 2-7 2-8 | 10-42 1-6 | Entire Section entitled “Scrubber Event” | | This event, although significant did not have any environmental impact. |
| 2-8 | 26-27 | “The emissions are normally treated and sampled prior to release to the environment.” | “The emissions are normally treated and sampled prior to release to the environment. <u>Continuous sample collection is performed for uranium analysis of the gaseous effluent with the potential for radiological emissions.</u> ” | Periodic sampling and modelling are performed for other gaseous effluents such as ammonia and fluoride. |
| 2-9 | 1 | Table 2-1 lists ammonia and fluoride. | Remove ammonia and fluoride. | The preceding paragraph on page 2-8 discusses WEC action levels that trigger further investigation. Ammonia and fluoride are not regulated air pollutants, nor is there a specified regulatory limit. These worst case, most conservative values were provided as part of the air permit renewal to demonstrate that these emissions are very low and do not require monitoring. |
| 2-9 | 15-19 | “The other process stream is...lime addition, distillation, and precipitation (WEC 2019b).” | Suggest rewording by using existing language in section 1.1.2.1 (c) of the license application. “Liquid process wastes are treated prior to discharge to the Congaree | As written, the text can be misleading. Wastewater treatment at CFFF occurs after the liquid effluent is collected into sanitary, process, and contaminated wastewater sumps (prior to them being combined in the lift station). Treatments for each wastewater type |

| | | | | |
|------|----|---|---|--|
| | | | River. Waste treatment for removal of uranium, ammonia and fluorides, consists of filtration, flocculation, lime addition, distillation and settling (in a series of holding lagoons). Site sanitary sewage is treated in an extended aeration package plant prior to discharge, either directly or through a polishing lagoon. The discharged effluent is chlorinated and mixed with treated liquid process waste at the facility lift station. The combined waste is then passed through a final aerator, followed by pH adjustment as necessary and subsequently pumped to the river via a 4-inch pipeline.” | are targeted to remove specific parameters from the water prior to discharge. The current wording in the license renewal provides an accurate and brief explanation of the liquid effluent treatments. |
| 2-9 | 23 | “...West II Lagoons were relined with 80-mil HDPE in 2012 after...” | “...West II Lagoons were relined with 80-mil HDPE in <u>between 2008 and</u> 2012 after...” | Correction. In addition, Westinghouse has developed preventative maintenance and instituted life cycle management practices for its lagoons. These maintenance activities are required in the site’s draft NPDES permit. |
| 2-10 | 6 | “...for July through December 2018 was 210 pCi/L for uranium, compared to the NRC limit of 300 pCi/L, and was...” | “...for July through December 2018 was 210 <u>20.6</u> pCi/L for uranium, compared to the NRC limit of 300 pCi/L, and was...” | LTR-RAC-19-15, NRC Semiannual Discharge Report (July-Dec 2018) lists the Total U concentration released as 2.06x10-08 µCi/ml on the excel spreadsheet and 2.1E-08 µCi/ml on the cover letter. |
| 2-10 | 16 | “The East Lagoon has a 36-mil HDPE liner that was...” | “The East Lagoon has a 36-mil HDPE <u>Hypalon</u> liner that was...” | The existing Hypalon lining has been in place since the early 1980s. A project is underway to close the East Lagoon as per the Work Plan |

| | | | | |
|------|----|---|---|---|
| | | | | submitted to DHEC on June 27, 2019. LTR-RAC-19-49-R1 is publicly available on DHEC's webpage, and the sludge characterization report is due 12/6/19. The closure plan for the lagoon will be submitted in 2020. |
| 2-10 | 14 | "The East Lagoon provides overflow from the other lagoons..." | "The East Lagoon provides overflow <u>capacity if needed</u> from the other lagoons..." | Clarification. |
| 2-11 | 25 | "...attributed to CFFF operations was not clear." | "...attributed to CFFF operations was not clear <u>because of naturally occurring alpha emitters.</u> " | Clarification. |
| 2-11 | 26 | "Because there is known uranium in the subsurface, WEC will be..." | "Because there is known <u>naturally occurring</u> uranium in the subsurface environment , WEC will be..." | Clarification. |
| 2-11 | 28 | "...accurately delineating areas of subsurface residual radioactivity..." | "...accurately delineating areas of subsurface -residual radioactivity..." | Clarification. |
| 2-11 | 31 | "...WEC developed a site conceptual model (CSM)..." | "...WEC developed a site <u>site</u> conceptual <u>site</u> model (CSM)..." | WEC has established a CSM. |
| 2-12 | 1 | "...activity-based limit of 84 pCi/L to account for..." | "...activity-based limit of 84 pCi/L <u>(equivalent to drinking water MCL of 30µg/L)</u> to account for..." | Provide clarification and equivalent value in alternate units for those readers not as familiar with the conversion from µg/L to pCi/L. |
| 2-16 | 4 | "...analyzed samples annually for gross alpha, gross beta, and ammonia (WEC 2007)." | "...analyzed samples annually <u>quarterly</u> for gross alpha, gross beta, and ammonia (WEC 2007). " | WEC has sampled quarterly since the last license renewal, although only required to sample semi-annually. WEC 2007 is not listed in the references section of this draft EA. |
| 2-16 | 7 | "...(2) if existing, known or unknown, uranium and Tc-99 is moving off-site." | "...(2) if existing, known or unknown, uranium and Tc-99 is | There are no known off-site impacts. Groundwater well detections would provide |

| | | | | |
|------|-------|---|---|---|
| | | | moving off-site <u>migrating toward the site boundary.</u> | information about the migration and <i>potential</i> for off-site movement of COPCs. |
| 2-16 | 11 | “Perimeter wells will help WEC detect if groundwater contamination is leaving the site.” | “Perimeter wells will help WEC detect if groundwater contamination is leaving the site <u>migrating from the known areas of contamination.</u> ” | The perimeter groundwater wells are not close to the site boundary. The detection of COPCs in perimeter wells will not necessarily mean that the COPCs are leaving the site. |
| 2-16 | 13 | “NPDES wells are those identified in the NPDES permit to detect leaks from the WWTP.” | “NPDES wells are those identified in the NPDES permit to detect <u>potential</u> leaks from the WWTP.” | There are no known active leaks from the WWTP facility at this time. |
| 2-16 | 14 | “Sentinel wells are those wells to monitor for releases from each...” | “Sentinel wells are those wells <u>installed</u> to monitor for <u>potential</u> releases from each...” | There are no known active leaks from the facility at this time. |
| 2-16 | 18 | “These wells are expected to change as the plume moves.” | “These wells are expected to change if <u>as</u> the plume moves.” | There is no evidence that the plumes will move. |
| 2-16 | 23-24 | “...WEC monitors and collects both Congaree River and groundwater samples.” | “...WEC monitors and collects both its discharges to the Congaree River and <u>collects</u> groundwater <u>well</u> samples.” | The site does not monitor groundwater wells in real time, as it does with elements of the Congaree River discharge. |
| 2-16 | 34-36 | “...submit the annual NPDES groundwater.....during the license renewal period (WEC 2019c).” | “...submit the annual -NPDES groundwater.....during the license renewal period (WEC 2019c) <u>in accordance with the NPDES reporting criteria.</u> ” | With the permit renewal, submission requirements may increase from annually to semi-annually. Rephrasing provides flexibility to have the reports submitted to the NRC on the same frequency as SCDHEC. |
| 2-17 | 1 | Figure 2-8a is not the most current. | Replace with more current figure. | N/A |
| 2-18 | 1 | Figure 2-8b is not the most current. | Replace with more current figure. | N/A |
| 2-19 | 16-17 | “...at the CFFF and response to future releases.” | “...at the CFFF and response to future releases. ” | Procedures RA-433, RA-434, and RA-435 were written and implemented to establish programmatic controls that will ensure consistent, risk-based decision making and |

| | | | | |
|------|-------|--|--|---|
| | | | | predictable responses to any new issues that could occur from future operations. The comprehensive Consent Agreement (CA) between DHEC and WEC will assess and address environmental impacts from historical practices at the site. |
| 2-19 | 25-26 | "...currently divided the CFFF site into eight OUs (see Figure 2-9)." | "...currently divided the CFFF site into eight OUs <u>and one Area of concern (AOC)</u> (see Figure 2-9)." | The AOC is on the image utilized in the EA. |
| 3-2 | 8 | "The Alvin C. Glenn..." | "The Alvin <u>CS</u> Glenn..." | The name of the detention center is "Alvin S. Glenn." |
| 3-5 | 21 | "...Okefenokee Formation is between 6 and 12 m (20 to 40 ft)..." | "...Okefenokee Formation is between 6 and <u>1742</u> m (20 to <u>5540</u> ft)..." | Recent subsurface investigations as part of the RI Work Plan and CSM development indicated that this thickness interval is greater than previously understood. |
| 3-5 | 34,35 | "The WEC did not report a thickness for or a description of the floodplain sediments." | <u>"The WEC did not report a thickness for or a description of the floodplain sediments. The thickness of the floodplain sediments is between 5 and 25 m (17 to 83 ft). Based upon borings completed by WEC, the floodplain sediments are described as fining upward fluvial sequences grading from angular to rounded coarse sands, gravel and cobble river channel deposits to silty to clayey overbank deposits."</u> | Recent subsurface investigations as part of the RI Work Plan and CSM including investigation within the floodplain provide much greater insight into the geology of these sediments. |
| 3-5 | 35,36 | "However, based on the thickness and depth of the underlying confining unit,..." | "However, based on the thickness and depth of the underlying confining unit <u>and the published Fort Jackson South Geologic</u> | The geologic quadrangle map provides further evidence that the Congaree River did not erode through the Black Mingo Confining Unit. |

| | | | | |
|-----|-------|--|--|--|
| | | | <u>Quadrangle map (SCDNR, 2011),..."</u> | |
| 3-5 | 40-42 | "...aquifer underlying the Black Mingo (Middendorf Aquifer) is affected by the Congaree River from Columbia to the CFFF site in the area west of the site (Hockensmith 2003), and that the confining units above the Middendorf Aquifer are missing in the same area (Aucott et al 1987)." | "...aquifers underlying the Black Mingo (<u>Black Creek and Middendorf Aquifers</u>) is <u>are</u> affected by the Congaree River <u>within their catchment areas</u> from <u>the fall line near</u> Columbia to <u>an area upstream of</u> the CFFF site in the area west of the site (Hockensmith 2003), and that the confining units above the Middendorf Aquifer are missing in the Columbiasame area (Aucott et al 1987). <u>Coastal Plain sediments beneath the CFFF site are estimated to be 600 feet thick. WEC estimates that the Black Creek Aquifer is approximately 76 m (250 feet) thick in the vicinity of the CFFF site. The Black Mingo and Black Creek Aquifers are separated from the Middendorf Aquifer by a confining bed beneath the CFFF site (Colquhoun et al. 1983)."</u> | This sentence as currently written seems to indicate that the Congaree River is in hydraulic communication with the Middendorf Aquifer at the CFFF site. The Black Creek Aquifer System unconformably underlies the Black Mingo Aquifer at the CFFF site. The 2013 AECOM report errantly omitted this aquifer in its discussion of the regional geology and underestimated the thickness of the Coastal Plain at the CFFF site. Aucott et al. 1987 also reference the Black Creek Aquifer. Although the confining bed of the Black Creek Aquifer pinches out before the CFFF site, a confining bed does separate these aquifer systems from the Middendorf Aquifer below. The catchment area of the Middendorf and Black Creek aquifers does not extend as far east as the CFFF site. Reference: Colquhoun, Donald J., et. al. 1983. Surface and Subsurface Stratigraphy, Structure and Aquifers of the South Carolina Coastal Plain. Department of Geology, University of South Carolina. |
| 3-9 | 20 | "Historic data on the subsurface soil quality are limited." | "Historic data on the subsurface soil quality are limited. <u>However, from 2017-2019, WEC conducted a study of soil conditions outside the facility's property boundary. The results were found to be consistent with naturally occurring uranium. The study indicates there are no</u> | Baseline soil sample results indicated naturally occurring uranium in offsite surface soils (thus background uranium levels). |

| | | | | |
|------|-----|---|---|---|
| | | | <u>off-site impacts to soil by CFFF operations, as the recent results are consistent with background levels of uranium.”</u> | |
| 3-12 | 4-7 | “Significant surface water and groundwater interaction (e.g. through shallow groundwater table recharge north of the bluff, seepage off the bluff surface and ditch embankment, and through potential seasonal variation of groundwater table in the floodplain surrounding Sunset Lake and Mill Creek) may exist within the plant site.” | <p>“Significant sSurface water and groundwater interaction (e.g. through shallow groundwater table recharge north of the bluff <u>and subsequent</u>, seepage off the bluff surface and from ditch embankment <u>embankment</u>), and through potential seasonal variation of groundwater table in the floodplain surrounding Sunset Lake and Mill Creek) may exist within the plant site. <u>Recent geologic assessment at the CFFF site indicates that a silty clay overbank deposit caps much of the developed area of the site, the bluff and the floodplain. Surface water and groundwater interactions at the CFFF site appear to be primarily within the stormwater ditches and the Gator Pond. Recent COPC fate and transport assessment indicate that this natural, low permeability cap limits or eliminates groundwater discharge or recharge from Mill Creek and Sunset Lakes.”</u></p> | Based upon greater geologic understanding of the developed portion of the site and Congaree River floodplain, better hydrogeologic understanding of the connections of permeable units above and below the bluff, and bathymetric data from Sunset Lakes, it appears that surface water and groundwater interaction are not as significant within the plant site as previously thought. Continued investigation to further the site’s understanding is on-going and refined with each assessment. |

| | | | | |
|------|-------|--|---|---|
| 3-13 | 1 | "...concentrations are less than 10 pCi/L, which is lower than the 15 pCi/L MCL." | "...concentrations are less than 10 pCi/L, which is lower than the <u>site's internal investigation level of 15 pCi/L MCL, which initiates uranium speciation.</u> " | The 2013 AECOM Remedial Investigation Report incorrectly applied the 15 pCi/L MCL for gross alpha to the manufacturing operations at CFFF. |
| 3-14 | 13-14 | "Gross alpha was noted above its 15 pCi/L MCL in the drainage ("middle") ditch." AECOM 2013 | "Gross alpha was noted above its 15 pCi/L <u>MCL-investigation level</u> in the drainage ("middle") ditch." AECOM 2013 | The MCL for gross alpha does not apply, as the source of potential alpha contamination would be from uranium, which is excluded from the 15 pCi/L MCL per EPA guidance. |
| 3-14 | 19 | "...the MCL (15 pCi/L) for all sampling locations except..." | "...the <u>MCL-(investigation level of 15 pCi/L)</u> for all sampling locations except..." | https://www.epa.gov/dwreginfo/radionuclides-rule Prior to speciation of all samples, the site had an investigation level of 15 pCi/L for all gross alpha samples. If the investigation level was exceeded, the isotopic analysis was performed. |
| 3-13 | 7-8 | "Fish were not consistently analyzed for Tc-99, but when they were, gross beta counts ranging from 8-65 pCi/g (WEC 2019c)." | "Fish were not consistently analyzed for Tc-99 <u>from 2008-2018, because they did not exceed the investigation level of 50pCi/g. but w</u> When they were Tc-99 was analyzed, the values ranged from <u>0.2 to 3.1 pCi/g.</u> Gross beta counts <u>during the same time period</u> ranging from 8-65 pCi/g (WEC 2019c)." | Gross beta and Tc-99 are not necessarily the same. |
| 3-16 | 2-4 | "The depths of the aquifer vary between 6 and 12 m (20 to 40 ft) below the CFFF site (AECOM 2013). The aquifer is derived from the sediments of the Okefenokee and Wicomico formations." | "The depths of the aquifer vary between 6 and <u>1217</u> m (20 to <u>40-55</u> ft) below the CFFF site (AECOM 2013). The aquifer is derived from the sediments of the Okefenokee <u>and Wicomico</u> formation." | Recent assessment indicated the thickness of the shallow aquifer is thicker than previously understood. Based upon recent review of local geology, the Wicomico formation pinches out south of the CFFF site. |

| | | | | |
|------|-------|---|---|--|
| 3-16 | 8-9 | "The shape of the shallow groundwater table generally is a subdued replica of the topography, except locations below the plant building and facilities." | "The shape of the shallow groundwater surface onsite table generally is a subdued <u>reflection replica</u> of the topography surface, except locations below the plant building and facilities. " | The amount of variation that happens under the building footprints on site does not cause sufficient change in the rate or direction of flow to deem it relevant. |
| 3-16 | 12-14 | "Thus, the shallow groundwater could potentially exit the aquifer in the southern portion of the site, discharging into Gator Pond and Sunset Lake (NRC 1985)." | "Thus, the shallow groundwater could potentially exit the aquifer by in the southern portion of the site, discharging into <u>the</u> Gator Pond and <u>stormwater ditches which discharge into Mill Creek. Based upon recent geologic and hydrogeologic assessment at the CFFF site, it appears that a silty cap minimizes or eliminates discharge of shallow groundwater to</u> Sunset Lakes and Mill Creek (NRC 1985). " | Revision to be consistent with the comment for page 3-12, lines 4-7 regarding surface water and groundwater interaction. |
| 3-16 | 18 | "...as the underlying Middendorf aquifer." | "...as the underlying <u>Black Creek and</u> Middendorf aquifers." | Revision to be consistent with the comment on page 3-5, lines 40-42 regarding aquifers below the CFFF site. |
| 3-16 | 20,21 | "...the top of the confining BMCU forms a structural ridge plunging from West Lagoon..." | "...the top of the confining BMCU forms a structural ridge plunging <u>dipping</u> from West Lagoon..." | The term plunging implies a structural fold. Dipping may be a better term for this geometry. |
| 3-16 | 25-27 | "Below the Black Mingo is the Tuscaloosa Formation, which hosts the regional Middendorf Aquifers, but there is not an apparent boundary between the Middendorf Aquifers and the lower Black | "Below the Black Mingo <u>Aquifer are is the Tuscaloosa Formation, which hosts the regional Black Creek and Middendorf Aquifers. The Black Mingo and Black Creek Aquifers are separated from the Middendorf Aquifer by a confining</u> | Revision to be consistent with the comment regarding aquifers (page 3-5, lines 40-42) below the CFFF site. The reference to the Tuscaloosa Formation came from historical documents for the CFFF site. The 2013 AECOM report did not indicate that there "is not an apparent boundary". Aucott et al. and Colquhoun et al. |

| | | | | |
|------|-------|--|---|---|
| | | Mingo Aquifer (AECOM 2013). The Tuscaloosa Formation..." | bed beneath the CFFF site (Colquhoun et al. 1983), but there is not an apparent boundary between the Middendorf Aquifers and the lower Black Mingo Aquifer (AECOM 2013). The Tuscaloosa Middendorf Formation..." | indicate that there is a confining unit above the Middendorf Aquifer. As far back as 1985, the former Tuscaloosa Formation was revised to the Middendorf formation by the USGS and SC Geological Survey. |
| 3-16 | 29-30 | "The upward gradient from the Middendorf Aquifers through the Black Mingo Aquifer...." | "The upward gradient from the Middendorf Aquifers through the <u>Black Creek and Black</u> Mingo Aquifers..." | Revision to be consistent with the comment above (page 3-5, lines 40-42) regarding aquifers below the CFFF site. |
| 3-17 | 3 | "...CFFF site must meet drinking water standards (i.e. MCLs)." | "...CFFF site must meet drinking water standards (i.e. MCLs), <u>although not used for drinking water.</u> " | It is important to emphasize the fact that the site does not use any groundwater for drinking water, even though classified as such by SCDHEC. |
| 3-17 | 11-13 | "...within a one-mile radius, however, there is no information about domestic or irrigation wells on these properties (WEC 2019e). The SCDHEC attempted to contact lodge ownership to sample that well but have not been able to do so yet (NRC 2019b)." | "...within a one-mile radius, however, there is no information about domestic or irrigation wells on these properties (WEC 2019e). The SCDHEC attempted to contact lodge ownership to sample that well but have not been able to do so yet (NRC 2019b). Under the Remedial Investigation Work Plan, WEC contacted these property owners and identified three lodges with well water and one pond. These were sampled and the results are pending." | WEC provided a figure with these water supply well locations to the NRC. |
| 3-18 | 11 | "...include VOCs, fluoride, nitrate, ammonia, gross alpha, uranium, and Tc-99." | "...include VOCs, fluoride, nitrate, ammonia, gross alpha , uranium, and Tc-99." | https://www.epa.gov/dwreginfo/radionuclides-rule The MCL for gross alpha does not apply, as the source of potential alpha contamination would |

| | | | | |
|------|-------|---|--|--|
| | | | | be from uranium, which is excluded from the 15 pCi/L MCL. |
| 3-18 | 32 | “...to characterize the lagoon sediments as noted in the RI Work Plan (WEC 2019g).” | “...to characterize the lagoon sediments as noted in the RI Work Plan <u>for closure of the lagoon</u> (WEC 2019g).” | Clarification. |
| 3-19 | 3 | “...in the shallow and intermediate water tables.” | “...in the shallow <u>upper surficial</u> and intermediate water tables <u>lower surficial aquifers</u> .” | This request is for consistency of terminology. AECOM documents refer to the “upper” and “lower” surficial aquifers. |
| 3-20 | 6 | “...State of South Carolina, is installing sentinel wells along an east-west line to ...” | “...State of South Carolina, is installing <u>installed</u> sentinel wells along an east-west line to ...” | The sentinel wells have been installed. |
| 3-20 | 30 | “In the early 1980s, five lagoons (West, West II, Sanitary, North and South) were relined with 36-mil Hypalon liners, and underdrain systems were installed to detect leaks from the lagoons (NRC 1985).” | “In the early 1980s, five <u>four</u> lagoons (West <u>I</u> , West II, Sanitary , North and South) were relined with 36-mil Hypalon liners, and underdrain systems were installed to detect leaks from the lagoons <u>(WEC 2019b)(NRC 1985)</u> .” | The sanitary lagoon does not have a liner on the inside of the lagoon. There is a liner along the edges/banks that serves as a vegetation retardant. There is no active underdrain system to detect leaks from the lagoons. |
| 3-21 | 14-16 | “The uranium contamination outside the HF spiking station footprint may impact the shallow groundwater - aquifer when it travels through the vadose zone and reaches the groundwater table.” | “The uranium contamination outside the HF spiking station footprint may <u>could</u> impact the shallow groundwater aquifer when <u>if</u> it travels through the vadose zone and reaches the groundwater table.” | There is currently no motive force to move the contamination from its current location, as the contamination is either covered by the plant building or a paved surface such as the UN bulk storage dike or roadway. Sentinel wells have been installed to monitor the potential migration of COPCs. |
| 3-21 | 18 | “...which stores waste drums awaiting uranium reclamation.” | “...which stores waste <u>materials</u> drums of awaiting uranium reclamation.” | The drums contain valuable material for recycle/reclamation, not waste. |
| 3-21 | 19 | “...waste drums were degraded, and contaminants....” | “... waste drums were degraded, and contaminants....” | The drums contain valuable material for recycle/reclamation, not waste. |

| | | | | |
|------|--------------------------------|---|--|---|
| 3-21 | 20 | “...transferred the waste drums to the plant main building...” | “...transferred the waste drums to the plant main building...” | The drums contain valuable material for recycle/reclamation, not waste. |
| 3-21 | 23-24 | “The WEC subsequently added Addendum 1 to the RI Work Plan to address this area.” | “The WEC subsequently added Addendum 1 to the RI Work Plan to address this area <u>and remediated the soil to residential screening levels.</u> ” | See LTR-RAC-19-65, Southern Storage Area Operable Unit Remedial Investigation Work Plan Addendum 1 Assessment Report. |
| 3-21 | 27 | “...indicate that gross alpha still exceeds the 15 pCi/L MCL (AECOM 2013; NRC 2017a;...)” | “...indicate that gross alpha still exceeds the 15 pCi/L MCL <u>investigation level thus prompting isotopic uranium analysis</u> (AECOM 2013; NRC 2017a;...)” | https://www.epa.gov/dwreginfo/radionuclides-rule The MCL for gross alpha does not apply, as the source of potential alpha contamination would be from uranium, which has a different MCL. |
| 3-22 | 10 | “...from beneath the Uranium Recycling and Recovery Services area had a total...” | “...from <u>a subsurface process pipe</u> beneath the Uranium Recycling and Recovery Services area had a total...” | The sample was collected from a breached process pipe. |
| 3-22 | 26-31 | Repetitive text. | Repetitive text. | Suggest removing or combining this information with lines 17-24 on page 3-21 that discuss the same event. |
| 3-29 | Section 3.6.3 After line 13 | N/A | <u>In 2019 WEC was approached by South Carolina Wildlife Federation and asked to participate in a special project to provide additional habitats for <i>Protonotaria citrea</i> (prothonotary warbler). WEC agreed and subsequently fabricated and installed 25 nesting boxes on its property that the Wildlife and Industry Together (WAIT) team checks biweekly during nesting months.</u> | WEC volunteers and actively participates in biodiversity projects. |

| | | | | |
|------|-------|---|--|--|
| 3-32 | 36-38 | “The WEC monitors radiological gaseous emissions from 47 stacks for compliance with the National Emission Standards for Hazardous Air Pollutants under 40 CFR Part 61. In accordance with 40 CFR Parts 50 and 61 and 10 CFR Part 20, stacks are outfitted...” | “The WEC monitors radiological gaseous emissions from 47 stacks for compliance with the National Emission Standards for Hazardous Air Pollutants under 40 CFR Part 61. In accordance with 40 CFR Parts 50 and 61 and 10 CFR Part 20, stacks are outfitted...” | <p>This revision corrects the regulatory references. Previous versions of the CFFF ER incorrectly stated that the NESHAPs regulations were applicable.</p> <p>NESHAPS (Part 61): The 1990 amendments allowed EPA to eliminate “regulatory duplication” with the NRC where the EPA “can determine that the NRC program provides protection of the public health equivalent to that required by the CAA.” Regarding this type of facility, “other than commercial nuclear reactors,” EPA rescinded the Part 61 NESHAP requirements for radionuclides in a final rule published in the 12/30/96 Federal Register. For a full explanation and history, see 61 FR 68972.</p> |
| 3-39 | 27-28 | “According to WEC, the potential contaminants include uranium, ammonia, calcium fluoride...” | “According to WEC, the potential contaminants include uranium, <u>Tc-99</u> , ammonia, calcium fluoride...” | Tc-99 is also a potential contaminant of concern for WEC being assessed in the on-going Remedial Investigation. |
| 3-39 | 32-33 | “Doses at the CFFF site have been under 2 mrem/yr (e.g., WEC 2019d).” | “Doses <u>to members of the public due to operations</u> at the CFFF site have been under 2 mrem/yr (e.g., WEC 2019d).” | Clarification. |
| 4-1 | 21-27 | “The concentration of uranium in the surface soil has slightly increase from less than 1 pCi/g in the late 1970s to 2-4 pCi/g in 2015. Uranium in the surface soil, most likely from deposition of gaseous effluents, would continue through the license renewal period and has the potential to increase the | “The concentration of uranium in the surface soil has slightly increase from less than 1 pCi/g in the late 1970s to 2-4 pCi/g in 2015. Uranium in the surface soil, most likely from deposition of gaseous effluents, would continue through the license renewal period and has the potential to increase the | The isotopic composition of uranium in these soil samples does not support this statement. The perceived “increase” over the last 35 years is likely a difference in analysis method or advancements in instrumentation. |

| | | | | |
|------|--------------------|--|---|---|
| | | concentration of uranium in the surface soil and potentially groundwater through infiltration of rainwater.” | concentration of uranium in the surface soil and potentially groundwater through infiltration of rainwater.” | |
| 4-1 | 25-27 | “The WEC has initiated an effort to collect surface soil samples from the entire CFFF site to gather additional data on radionuclide concentrations in the surface soil (NRC 2019b).” | “ <u>From 2017-2019, the WEC has conducted a study of soil conditions outside the facility’s property boundary initiated an effort to collect surface soil samples from the entire CFFF site</u> to gather additional data on radionuclide concentrations in the surface soil (NRC 2019b).” | Baseline soil sample results indicated naturally occurring uranium in offsite surface soils (thus background uranium levels). |
| 4-9 | 30-32 | “...would continue to comply with permit limits for criteria pollutants, nitric acid and opacity set by SCDHEC and the stationary source standards set by the National Emission Standards for Hazardous Air Pollutants.” | “...would continue to comply with permit limits for criteria pollutants, nitric acid and opacity set by SCDHEC and the stationary source standards set by the National Emission Standards for Hazardous Air Pollutants. ” | Revision to correct the regulatory reference as stated in the comment on page 3-32, lines 36-38. |
| 4-14 | 18-20 | “...total effective dose to the occupational worker from the combined effluent releases ranged between 197 mrem...” | “...total effective dose to the occupational <u>a radiation</u> worker from the combined effluent releases ranged between 197 mrem...” | These are occupational exposures to radiation workers and not due to effluents. |
| 4-14 | 24 | “...dose for a worker from 2014 through 2018 was...” | “...dose for a <u>radiation</u> worker from 2014 through 2018 was...” | To clarify that this exposure was for a radiation worker. |
| 4-14 | 27-36 and text box | “... person-rem, the highest CEDE of the fuel fabrication facilities (NRC 2019d).” | “...person-rem, the highest CEDE of the fuel fabrication facilities (NRC 2019d).” | This paragraph is misleading. CFFF radiation worker doses are 2-3 % of the regulatory limit. CFFF is also the largest fuel facility, uses a different manufacturing process, has the highest throughput and has the greatest number of radiation workers. In the text box, it is also |

| | | | | |
|-----|-----|--|---|---|
| | | | | unclear why the focus is on CEDE when the largest component of TEDE is external dose. |
| 7-1 | 5-6 | “The WEC does plan to install additional groundwater wells and collect lithographic borings but those activities would cause...” | “The WEC does plan to install <u>ed</u> additional groundwater wells and collected ed litho graphi <u>e</u> logic borings but those activities would caused <u>d</u> ...” | The additional groundwater wells have been installed. The lithologic borings were performed. |

SUNSI Review
Complete
Template = ADM-013
E-RIDS=ADM-03
ADD: Jessie Muir
Quintero

As of: 11/26/19 7:44 AM
Received: November 25, 2019
Status: Pending_Post
Tracking No. 1k3-9dim-uu36
Comments Due: November 27, 2019
Submission Type: Web

PUBLIC SUBMISSION

COMMENT (14)
PUBLICATION
DATE: 10/22/2019
CITATION 84 FR
57777

Docket: NRC-2015-0039

Westinghouse Electric Company, LLC; Columbia Fuel Fabrication Facility

Comment On: NRC-2015-0039-0006

Westinghouse Electric Company, LLC; Columbia Fuel Fabrication Facility

Document: NRC-2015-0039-DRAFT-0016

Comment on FR Doc # 2019-23419

Submitter Information

Name: Amanda Spalding

Organization: Westinghouse Electric Company

General Comment

See attached.

Attachments

LTR-RAC-19-94