



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 3, 2020

Ms. Elise Malek
Licensing Manager
Westinghouse Columbia Fuel Fabrication
5801 Bluff Road
Hopkins, SC 29061-9121 USA

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION REGARDING THE ENVIRONMENTAL REVIEW FOR THE PROPOSED RENEWAL OF THE WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY LICENSE (ENTERPRISE PROJECT IDENTIFIER L-2017-RNW-0016)

Dear Ms. Malek:

The U.S. Nuclear Regulatory Commission (NRC) staff is preparing an environmental impact statement (EIS) for Westinghouse Electric Company, LLC's (Westinghouse's) request to renew Special Nuclear Materials SNM-1107 license for the Columbia Fuel Fabrication Facility for an additional 40 years (Agencywide Documents Access and Management System (ADAMS) [Accession No. ML20150A289](#)). The NRC staff has determined that additional information is needed to proceed with the license renewal review and developed the enclosed request for additional information (RAI).

Westinghouse's responses to the RAIs regarding the National Environmental Policy Act review, and the environmental protection sections of the license application, should be provided to the NRC within 30 days from the date of this letter. As discussed in the schedule letter dated August 10, 2020 (ADAMS [Accession No. ML20217L372](#)), Westinghouse's schedule for responding to RAIs can impact the EIS target completion date. If the 30-day timeframe is not sufficient, Westinghouse should notify the NRC in writing with an estimate of when the responses will be available. The NRC staff will, accordingly, adjust the schedule for completing the EIS.

If you have any questions regarding this letter, please contact me at 301-415-8740 or via email at David.Tiktinsky@nrc.gov.

In accordance with 10 CFR Section 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Agency Rules of Practice and Procedure," a copy of this communication will be available electronically for public inspection in the NRC Public Document Room, or from the NRC's ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/readingrm/adams.html>.

Sincerely,

David Tiktinsky, Senior Project Manager
Fuel Facility Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-1151
License No.: SNM-1107

Enclosure:
Requests for Additional Information
Regarding the Environmental Review
For the Proposed Renewal of the
Westinghouse Columbia Fuel Fabrication
Facility License

cc: N. Parr, Westinghouse
K. Taylor, SCDHEC
westinghouse_ff@listmgr.nrc.gov

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION REGARDING THE ENVIRONMENTAL REVIEW FOR THE PROPOSED RENEWAL OF THE WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY LICENSE (ENTERPRISE PROJECT IDENTIFIER L-2017-RNW-0016)

DATED: November 3, 2020

DISTRIBUTION:

DFM r/f TVukovinsky, RII JTrefethen, NMSS JSaxton, NMSS
JGwo, NMSS

ADAMS Accession Number: ML20275A251

***via email**

OFFICE	NMSS/REFS/E RMB/PM*	NMSS/DFM/ FFLB/LA*	NMSS/REFS/ ERMB/BC*	NMSS/DFM/ FFLB/PM	NMSS/DFM/ FFLB/BC(A)*
NAME	DDiaz-Toro	ELee	JQuintero	DTiktinsky	DMarcano
DATE	10/27/2020	11/03/2020	10/28/2020	11/ 3 /2020	11/03/2020

OFFICIAL RECORD COPY

REQUESTS FOR ADDITIONAL INFORMATION

WESTINGHOUSE ELECTRIC COMPANY LLC COLUMBIA FUEL FABRICATION FACILITY LICENSE RENEWAL ENVIRONMENTAL IMPACT STATEMENT

[On June 5, 2020](#), the U.S. Nuclear Regulatory Commission (NRC) staff decided to prepare an Environmental Impact Statement (EIS) related to Westinghouse Electric Company, LLC's (Westinghouse) proposed renewal of the operating NRC license SNM-1107 for the Columbia Fuel Fabrication Facility (CFFF) in Hopkins, South Carolina for an additional 40 years (Agencywide Documents Access and Management System [ADAMS] Accession No. ML20150A289). The EIS is being prepared in accordance with National Environmental Policy Act of 1969, as amended (NEPA), and the NRC's NEPA implementing regulations in Title 10 of the *Code of Federal Regulations* Part 51 (10 CFR Part 51), "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." The notice of intent to prepare an EIS and begin the scoping process was published on July 31, 2020 (see [85 FR 46193](#)).

Additionally, in response to an NRC [request for additional information \(RAI\) dated February 12, 2020](#) (ADAMS Accession No. ML20029D259), Westinghouse submitted an [Interim Remedial Investigation Data Summary Report](#) (ADAMS Accession No. ML20063P321). In that report, Westinghouse concluded there are still data gaps that require additional investigation, and the source of technetium-99 (Tc-99) contamination is still unknown and require more investigation. In July 2020, Westinghouse submitted its [Final Interim Remedial Investigation Data Summary Report](#) to the South Carolina Department of Health and Environmental Control (SCDHEC) (ADAMS Accession No. ML20259A179). After reviewing the new data and information in Westinghouse's Interim and Final Reports, the NRC staff has determined it needs additional information from Westinghouse to complete the environmental review and EIS. Furthermore, on October 28, 2019, the NRC staff published a [draft Environmental Assessment](#) (EA) (ADAMS Accession No. ML19228A278) and draft finding of no significant impact (FONSI) for a 30-day public comment period (see [84 FR 57777](#)). The draft EA preceded the EIS. The NRC staff received comments from the public and other stakeholders on the draft EA. The comments on the draft EA and EIS scoping comments were also used to inform the RAIs presented below.

The NRC staff also continues to conduct a safety review. The information provided in response to the RAIs will also be used in support of the safety review.

The RAIs are organized below in the following categories or resource areas:

- General Information
- Cultural and Historic Resources
- Waste Management
- CFFF Infrastructure and Engineering
- General Monitoring and Mitigation
- Geology
- Hydrological Resources
- Socioeconomics
- Environmental Justice
- Occupational and Human Health
- Meteorology and Air Quality.

Enclosure

The NRC staff is requesting this information in accordance with 10 CFR 51.45(b)(1), which requires that the Environmental Report (ER) contains a description of the proposed action, a statement of its purposes, a description of the environment affected; discusses the considerations of the impact of the proposed action on the environment; and discusses impacts in proportion to their significance. In addition, regulations at 10 CFR 51.45(b)-(e) require that the ER contain environmental considerations, an analysis that considers and balances impacts of the proposed action and alternatives, a status of compliance with other environmental approvals, as well as any adverse information related to the proposed action.

Additionally, unless Westinghouse requests otherwise, in accordance with NRC regulations in 10 CFR 2.390, reports, computer files, and other files and documentation that have been or will be provided to the NRC by Westinghouse and that are cited by the NRC staff as references in the EIS will be added to the NRC's ADAMS and made publicly available. In instances where Westinghouse determines that the requested information must remain proprietary, the NRC staff requests that, as practicable, a version of such documents be provided that contains the information NRC needs to complete the analysis and that can be made publicly available.

General Information

RAI 1. New Information

Provide a summary of facility and operational changes that have occurred at CFFF since the publication of the 2019 draft EA.

Additionally, provide any corresponding updates to the [March 2019 ER](#) (ADAMS Accession No. ML19088A100) and any changes, if applicable, to the [updated License Renewal Application](#) (LRA) Chapter 10 – *Environmental Protection* and Chapter 11 – *Decommissioning* (ADAMS Accession No. ML19234A077) in response to the RAI.

RAI 2. Status of Permits, Licenses, Approvals

Provide an update of the status of proposed, pending, and approved permits, licenses, authorizations, that Westinghouse must obtain to continue to operate the CFFF for the next proposed 40 years. The information provided should identify (1) the issuing agency; (2) the type of license, permit, or authorization needed; and (3) the current status of securing the license, permit, or authorization.

Cultural and Historic Resources

RAI 3. South Carolina State Historic Preservation Officer Comments on the 2019 Draft EA

On November 19, 2019, the South Carolina State Historic Preservation Officer (SHPO), South Carolina Department of Archives and History, submitted [comments](#) (ADAMS Accession No. ML19331A601) to the NRC on the draft EA. As discussed in the July 31, 2020, notice to begin the EIS scoping process, comments submitted on the draft EA will be considered in the development of the EIS (See 85 FR 46193).

A. Denley Cemetery

1. Provide a figure indicating the location of the Denley Cemetery in relation to the ground-disturbing activities related to the installation of monitoring wells.
2. Explain whether the proposed license renewal and the installation of monitoring wells can impact the Denley Cemetery and, if so, what actions (e.g., access to the Denley Cemetery) Westinghouse has taken or will take to avoid or mitigate potential impacts. If avoidance or mitigation actions are described in procedures, please provide a copy.

B. Potentially Eligible Site (Canal)

The NRC staff searched in [South Carolina ArchSite](#), as suggested by the SHPO in its November 19, 2019 letter to the NRC. The search yielded an unknown canal (Site Number 173-3577) that is listed as being potentially eligible for listing in the National Register of Historic Places. The site is located approximately one mile west of Sunset Lake and appears to be located either onsite or at the CFFF boundary. The site appears to be on Mill Creek between where Mill Creek enters the CFFF site boundary and enters Upper Sunset Lake.

1. Indicate the location of the canal on the same figure with Denley Cemetery.
2. Explain any potential effects on the Site #173-3577 and other previously identified historic and cultural resources from the proposed license renewal and describe what actions Westinghouse has taken or will take to avoid or minimize any potential impacts.

C. Results of Past Cultural Investigations

Provide documentation of past historic and cultural resource investigations completed for the CFFF site and if any known historic and cultural resources or cultural resource sensitivity zones have been identified.

1. Indicate the location of these areas in the same figure as the Denley Cemetery.
2. Provide documentation of any engagement with SHPO or other parties regarding the results of those investigations.

The information is necessary to evaluate potential impacts on historic and cultural resources as part of the NRC staff's National Historic Preservation Act (NHPA) Section 106 and NEPA reviews. All maps or reports describing the cemetery or other cultural resources can be submitted as non-public documents in accordance with NHPA Section 304 and 36 CFR 800.11(c)(1).

RAI 4. Cultural Resource Protection Plans and Procedures

During the NRC staff's May 2019 site visit (see the [site visit summary](#) at ADAMS Accession No. ML19283A811), Westinghouse provided a description of the process used prior to installing groundwater monitoring wells and a copy of the procedure, "Procedures Guiding the Discovery of Unanticipated Cultural Resources and Human Remains." The information requested below will support the NRC staff's evaluation of potential impacts to historic and cultural resources from the proposed operation of the CFFF (e.g., from potential ground-disturbing activities) during the next 40 years.

- A. Provide a description of any updates to this process and the procedure, if any have been made since the 2019 site visit.
- B. Provide a description of any additional historic and cultural resource protection procedures in place that outline cultural resource identification and protection steps, such that impacts on any known or previously unidentified historic and cultural resources are avoided, minimized, or mitigated.
- C. Provide a list of cultural resource studies and literature reviews used to develop these cultural resource protection plans and/or procedures and describe any engagement with SHPO or other parties regarding the development of cultural resource protection and management plans and procedures.

This information is necessary to evaluate potential impacts on historic and cultural resources as part of the NRC staff's NHPA Section 106 and NEPA reviews.

Waste Management

RAI 5. Waste Management – Incinerator Process

As discussed in the NRC's draft EA published in October 2019, Westinghouse stores drums of combustible waste containing uranium, waiting for uranium recovery via onsite incineration, in intermodal containers (sea-land containers) in an outdoor storage area. In addition, Westinghouse applied for renewal of its [air permit](#) in May 2019, which SCDHEC is considering. The air permit renewal application included facility-wide emissions inventory and modeling. Facility-wide emissions inventory includes emissions from the industrial incinerator. The NRC also received a comment on the draft EA from the public (ADAMS Accession No. ML19331A154) regarding by-product waste from the incinerator.

- A. Provide updated information about the use of the incinerator for the proposed 40 years of operations including information about emissions and byproducts from the incinerator.
- B. Provide a copy of "Table 2 – Emission Calculations for Industrial Incinerator," from Westinghouse's May 2019 renewal air permit application submitted to SCDHEC.

RAI 6. Storage Containers

In November 2019, Westinghouse submitted a work plan to SCDHEC to complete the risk-based investigation of intermodal storage within the Southern Storage Area Operable Unit in follow-up to a May 2019 inspection that discovered a hole in the roof of the storage container holding drums of combustible materials containing uranium. Rain water penetrated the roof of the containers and compromised the flooring and the drum lids. Westinghouse sampled the water found within the storage containers and the soil underneath those containers. In its comments on the draft EA, Westinghouse clarified that the affected soil was remediated, and reports describing the progress on the removal of the intermodal containers have been submitted to SCDHEC. Please provide the following information:

- A. Provide an update of the intermodal container removal activities, soil sampling results, and removal and disposal of contaminated soil.

- B. Discuss the facilities and methods that will be used to manage uranium-containing material currently stored in intermodal storage (i.e., storage, treatment and disposal) during the proposed 40 years of operation.

RAI 7. Soil Disposal Related to Spiking Station Leak

Section 4.4.1.3 of Westinghouse's March 2019 ER states that soil was removed as part of the remedial action for the Hydrofluoric Spiking Station #2 Leak. The NRC's draft EA acknowledged Westinghouse's start of the remediation process to remove affected soil from below the spiking station. Provide information about the soil removal (waste disposal) for the remedial action that occurred following issuance of the draft EA, including the volume of material removed, process for treatment/disposal, associated permits for the remedial action, and/or references to the remedial action including requested information.

RAI 8. Soil Disposal Related to Contaminated Wastewater (CWW) Line Breach

Section 4.4.1.4 of Westinghouse's March 2019 ER states that soil was removed as part of the remedial action for the 2008 CWW line breach. Provide updated information about the soil and concrete removal (waste disposal), including:

- A. Volume of material removed.
- B. Process for treatment/disposal.
- C. Associated permits for the remedial action.
- D. References to the remedial action including requested information.

RAI 9. Waste Management

Describe changes in the waste management processes (generation, treatment, handling, and disposal) of the dry and wet uranium-containing material and the solvents used at the CFFF. Describe wastes generated by onsite analyses as a result of the Consent Agreement with SCDHEC and confirm the disposition of materials (liquid and solid) sent offsite for analyses are not returned to CFFF (e.g., materials are disposed by the contracted offsite laboratories).

CFFF Infrastructure and Engineering

RAI 10. CFFF Site Property and Layout Figures

In Westinghouse's March 2019 ER, Westinghouse describes the CFFF site property boundary in Figure 2.1-5 and the site layout in Figure 2.1-6. Please provide these figures in a higher resolution, so that all notations are readable.

RAI 11. Sanitary Lagoon

In the July 2020 Final Interim Remedial Investigation Data Summary Report, Westinghouse indicates that there are elevated levels of uranium in the Sanitary Lagoon. Please provide the following information:

- A. Describe Westinghouse's plans to minimize and monitor for leaks and/or leaching from the Sanitary Lagoon.
- B. Discuss any planned remediation and remediation procedures (e.g., Environmental Remediation procedures) that are applicable to the Sanitary Lagoon.
- C. Describe Westinghouse's plan to establish improved lagoon leak detection and preventative maintenance practices for the Sanitary Lagoon.
- D. Confirm if effluent to the lagoons are monitored, or if the lagoons themselves are monitored, and if so, provide the monitoring data, if available.

RAI 12. New Liner in Lagoons

In Section 2.1.4 of the March 2019 ER, Westinghouse stated that the North, South, West-I and West-II wastewater treatment lagoons were relined in 2012 in response to ground monitoring data that indicated increasing trends of fluoride and nitrate in the groundwater around the lagoons. In addition, the East Lagoon was last relined in 1980 when the site's Waterglass system was installed; it is monitored for pH and liquid level and is sampled for fluoride, ammonia, and total suspended solids. Given the remedial investigation activities that have been carried out and associated results related to the source and extent of contamination, additional information is needed regarding operation of the lagoons.

- A. Discuss the methods used to verify the integrity of the liner to maintain its design basis.
- B. Discuss the methods used to monitor the release of uranium and Tc-99 from these lagoons.
- C. Describe the new wells that are used to monitor leakage from these lagoons and the basis for the locations selected for the new wells.

RAI 13. Upgrades to Hydrofluoric Acid Spiking Station and Diked Areas

In Westinghouse's [site assessment report for the Hydrofluoric Acid Spiking Station](#) (HFSS) #1 (LTR-RAC-20-65) to SCDHEC dated July 30, 2020, Westinghouse indicated that it had installed a new containment dike (HFSS#1) (ADAMS Accession No. ML20294A056), upgraded the design of HFSSs and diked areas, protected concrete with a floor coating that is impervious to acidic materials, and guards against undetected deterioration of the concrete floor. Please provide the following information:

- A. Describe the upgrades made to the HFSS design and diked areas.
- B. Describe the methods implemented to evaluate the extent of condition of the uranium that leaked through the hole in the floor, such as verification that there were no other holes or cracks in the floors through which uranium could have leaked.
- C. Discuss the preventative measures implemented to protect against future damage to the HFSS floor and dike, including any surveillance procedures.

- D. Discuss the methods used to determine the extent of the condition of the uranium concentration beneath the concrete floor and the corrective measures taken, in addition to upgrading the design of HFSS and addition of dikes.

RAI 14. New Wells

At the time of the publication of the EA and FONSI in [June 2018](#) (ADAMS Accession No. ML18120A318), Westinghouse had a groundwater monitoring network of 38 wells, 35 in the water table aquifer and 3 in the deep aquifer. Since then, Westinghouse has installed new wells (up to well W-97). Current groundwater wells are located in the upper and lower surficial aquifer, Black Mingo Aquifer, and the Congaree River floodplain. Westinghouse updated its groundwater monitoring network to include sampling of the original 38 wells for uranium and Tc-99. Westinghouse also updated the well sampling to monitor for uranium and Tc-99, versus gross alpha and gross beta.

- A. In its July 15, 2020 response to SCDHEC's May 4, 2020 comments on the February 2020 Final Interim Remedial Investigation Report, Westinghouse explains that wells W-4, W-85 and W-86 were not used for development of the potentiometric surface contour map because the water quality data were anomalous. The potentiometric data from those wells do not appear to be used in the July 2020 Report. In addition, the 1985 EA references a 1982 report by a Westinghouse consultant that identifies questionable completions for several wells and suggests that those wells should not be used for water quality determinations. The identified wells include wells W-6 through W-17, which reportedly did not contain bentonite seals or cemented casings, and wells W-1 through W-5, for which the completions are "not well known and appear to be open-hole completions below variable lengths of steel surface casings."

If the water level data from a well (i.e., well W-4) are anomalous and its well completion questionable, explain why the water quality data from that well are suitable for delineating a plume.

- B. In the NRC's May 2019 site visit summary, Westinghouse clarified that no groundwater contamination was found in W-25 because it had been damaged by a fallen tree and was recently repaired. The only data from well W-25 were taken in January 2019. Provide an update on the repairs on well W-25 and provide monitoring data if the well is currently part of the sampling program.

General Monitoring and Mitigation

RAI 15. Environmental Sampling Values

Provide clarification of the sample quantity and minimum detection level for environmental data presented in the July 2020 Final Interim Remedial Investigation Data Summary Report. Are the values presented in Westinghouse March 2019 ER in Table 6.1-2 for typical sample quantity and nominal minimum detection levels still applicable?

RAI 16. Contamination Monitoring – Westinghouse's Comments on the Draft EA

To address the [comments](#) Westinghouse submitted (ADAMS Accession No. ML19331A105) on the NRC's draft EA, additional information is required. In particular, Westinghouse noted that "The 2013 AECOM Remedial Investigation incorrectly applied the 15 pCi/L maximum

contaminant level (MCL) for gross alpha to the manufacturing operations at CFFF.” Westinghouse also clarified that the MCL for gross alpha does not apply at CFFF because the alpha contamination would be from uranium, which is excluded from the MCL. Provide the value for adjusted gross alpha (i.e., gross alpha minus radon and uranium) in support of Westinghouse’s assertion that the gross alpha exceedance was incorrectly applied. Identify past gross alpha exceedances in the groundwater and surface water data that could not be attributed to uranium.

Geology

RAI 17. Geologic Characterization of the Site

Westinghouse provided comments on the NRC’s draft EA in November 2019 that stated, “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 ongoing and refined with each assessment.” The Final Interim Remedial Investigation Data Summary Report submitted to SCDHEC in February 2020 (and revised July 2020), states on page vi that Westinghouse has “[a]n improved understanding of site geology and hydrogeology has been developed, particularly with respect to the floodplain and how shallow groundwater interacts with surface water and sediment.” The 2020 Final Interim Remedial Investigation Data Summary Report provides a summary of the data, including revised drawings. Provide a discussion of the process used to control revisions (e.g., change process) to the conceptual site model (CSM) based on the new data collected and how this process is anticipated to change over the period of the proposed license renewal term.

Based on the discussions and revised drawings in the 2020 Final Interim Remedial Investigation Data Summary Report, provide the following information related to the characterization of the site subsurface.

A. Changes in the CSM Cross Sections

In the July 2020 Final Interim Remedial Investigation Data Summary Report, Westinghouse provided enhanced cross sections (more vertical exaggeration and projected wells) compared to those provided in the February 2020 Final Interim Remedial Investigation Data Summary Report. While a CSM should evolve during the investigation as additional data are collected, it appears that the enhanced cross sections incorporated changes in the subsurface strata from the earlier version (February 2020).

1. On Section B-B’, the thickness of several clay lenses appears to substantially decrease in the revised cross section. Explain how the new data support this change.
2. On Section F-F’, a depression in the water table is depicted between the Lower Sunset Lake and well W-20 without any supporting data. Provide data to support the existence of silt and clay lenses beneath Lower Sunset Lake, Gator Pond, and particularly East Lagoon because no wells or borehole directly penetrated the bed sediment of these surface water bodies.
3. The data from only one lithographic boring (L-1) appear to be incorporated into the CSM but the information does not appear to be consistent with the data. Please, explain. On the Cross Section B-B’, the elevation of the top of the Black Mingo is depicted at an

elevation of approximately 47 ft-MSL whereas the boring log and the “Structure Contour Map - Top of the Black Mingo Confining Clay” in Appendix F of the July 2020 Report depicts the top of the Black Mingo at 31 ft-MSL.

4. On Sections F-F’ and G-G’, the top of the Black Mingo is shown at approximately 15 ft below the base of well W-11, whereas the February 2020 Report depicts the top of the Black Mingo at the base of well W-11. The elevations on the expanded vertical exaggeration Cross Section F-F’ do not appear to be consistent. Please, explain and revise, as appropriate. Also, in the response to Comment B5 from SCDHEC, Westinghouse states that the difference between the top of the Black Mingo and base of well W-11 is 9 ft, which differs from the CSM. Explain why well W-11 was installed in a 3 ft interval below the base of well W-32. Given that the highest Tc-99 concentrations are observed at well W-11 and have a potential for upward vertical flow, it follows that the plume existence and potential migration under well W-11 can be a data gap (also see Item #6 below and RAI-14A).
5. The CSM and the “Structure Contour Map - Top of the Black Mingo Confining Clay” in Appendix F of the July 2020 Report indicate other groups of borings (e.g., GP-x, TH-x, and SB-x), which do not appear to be reported. Confirm whether the lithologic data for those borings have been incorporated into the CSM. Provide logging information from these boreholes and from wells W-60 to W-68.
6. The eastern “spreading” of the various plumes north of Gator Pond may be attributed to impedance of southerly flow by a low permeable zone (i.e., clay) in the subsurface strata underlying Gator Pond. Such a clay body is evidence on the three boring logs in that area for which data are available (i.e., L-2 [94-107 ft-MSL], L-19 [94-103 ft-MSL], and W-92 [94-103 ft-MSL]). Explain how the CSM incorporates and discusses the impacts on flow by the subsurface clay consistent with the observed data.
7. Multiple plumes, including organic contaminants, when compared with the topological contour of the Black Mingo confining unit, appear to suggest that this lithological interface may control the spreading of all contaminants. Provide an evaluation in the CSM of the likelihood that the Tc-99 plume may potentially spread similarly, both southwards and eastwards, by (1) following the lithological interface and/or by (2) interacting with the tetrachloroethene (PCE)/trichloroethene (TCE)/VC organic plumes.

B. Black Mingo Aquifer

The July 2020 Final Interim Remedial Investigation Data Summary Report states that “[f]our of the monitoring wells (W-3A, W-49, W-50, and W-71) are screened within the Black Mingo Aquifer.” Confirm whether Figure 5-4 of the report used the data from well W-71 for the construction of the Black Mingo Aquifer potentiometric surface. Given the limited number of wells screened in the Black Mingo Aquifer and located within the floodplains, provide the rationale to support determination that no contamination has reached the Black Mingo Aquifer.

C. Top of the Black Mingo Confining Unit

1. The “Structure Contour Map - Top of the Black Mingo Confining Clay” in Appendix F of the July 2020 Final Interim Remedial Investigation 2020 Data Summary Report depicts depressions in the western portions of the site including between borings/wells (L-14 and B-17) and at boring L-1. The radial contours surrounding boring L-1 are a result of limited data in that area and the elevation at L-1 being an “outlier” with the top of the confining unit being approximately 50 feet lower than at the surrounding boring locations L-17 and L-18. The top of the Black Mingo confining unit is likely an erosional surface

and may affect plume migration in the overlying surficial aquifer. The descriptions on the boring log for the basal sands at L-1 include a notation that “chemical odors” were detected. Describe any further investigations to explain the presence of these chemical odors and provide the rationale for not installing a well at the deepest portion of the aquifer at the location of L-1.

2. A 50 ft incision into the top of the Black Mingo confining unit at L-1 is significant, considering that the thickness of this unit reportedly was between 39 and 85 ft. The elevation of 31 ft-MSL is approximately 15 ft below the base of the confining unit at the closest well installed in the Black Mingo Aquifer (i.e., well W-49). Given the available lithologic borehole information, provide an estimate of the thickness of the Black Mingo confining unit at L-1 and the current estimate of the range of thickness for the Black Mingo confining unit on the CFFF property.
3. An alternative interpretation could be that the bottom of boring L-1 is within the Black Mingo Aquifer. This interpretation would suggest that the strata for the Black Mingo confining unit, if equivalent to elevations for the top of the Black Mingo confining unit at L-17 (87 ft-MSL) or at L-18 (81 ft-MSL), have changed to a coarser grained (silt/sand) unit that may enhance communication between the Black Mingo Aquifer and the shallow aquifer. Furthermore, wood is reported at a depth of 49 ft-MSL at L-1, which is similar to the depth (35 ft-MSL) at which petrified wood was noted in the cuttings on the boring log for well W-49. This horizon is screened by well W-49 (Black Mingo Aquifer). Given this alternative interpretation, explain whether Westinghouse detected wood fragments or petrified wood in the surficial aquifer and explain whether Westinghouse considered this alternative interpretation.

D. Western Groundwater Area of Concern, Source and Monitored Natural Attenuation

The previous NRC EAs determined that a mitigated FONSI could be reached in part, for the PCE and/or TCE impacts, based on Westinghouse’s prior active remediation, the current monitoring well network being sufficient for the monitored natural attenuation (MNA) groundwater strategy, and the proposed remedial investigations and CSM approach being sufficient to address data gaps and to mitigate or define any new impacts. A summary of the available data is as follows:

In the December 2013 Remedial Investigation Report, the source of the PCE plume was attributed to the Former Oil House. In that source area, Westinghouse had performed active remediation including air sparging and soil vapor extraction between 1997 and 2011. The current groundwater remediation strategy is MNA. A source for the observed PCE plume in what is referred to as the Western Groundwater Area of Concern appears to not have been addressed in the report nor was any active remediation reportedly conducted in that area.

The CSM breaks the PCE impacts into three distinct plumes: Plume 1 is the PCE plume in the uppermost surficial aquifer downgradient of the Former Oil House; Plume 2 is the PCE plume in the lowermost surficial aquifer extending from the Former Oil House; and Plume 3 is the PCE plume in the lowermost surficial aquifer extending from the area of well W-19B (Western Groundwater Area of Concern).

On pdf page 135 of the July 2020 Final Interim Remedial Investigation Data Summary Report, the descriptions of the two deeper plumes are as follows:

Plume 2 – “Preferential basal flow occurs within the lower surficial aquifer but is confined by the dense silt and clay of the Black Mingo.”

Plume 3 – “Western Groundwater Area of Concern source flows toward the floodplain above the Black Mingo Confining Unit.”

And finally, Figure A “Structural Contour Map – Top of the Black Mingo Confining Clay” in Appendix F of the July 2020 Final Interim Remedial Investigation Data Summary Report provides more detail of the top of the Black Mingo, including the existence of depressions in the area of well W-19B and L-1 and a structural high in the area of the Former Oil House.

According to the December 2013 Remedial Investigation Report, the reduction in levels (currently a maximum PCE concentration of 300 ppb versus total volatile organic compounds [tVOCs] concentration of 2360 ppb) in the shallow aquifer in 1993 suggests that the source area was sufficiently remediated (note: it is assumed that PCE comprises a significant proportion of the tVOCs). However, the source for the PCE plume in the area of well W-19B remains and continues to migrate southwards.

Based on the current monitoring well network, it appears that the in situ biodegradation of PCE/TCE may be effective in controlling the offsite migration.

The interpretation of the results in the July 2020 Final Interim Remedial Investigation Data Summary Report and responses to SCDHEC comments on that report, as noted above, suggest that the CSM method, as well as other prior assumptions, may not have characterized the source for the Western Groundwater Area of Concern. One possible source is a potential separate phase liquid migrating on the top of the Black Mingo Confining Unit to the location of well W-19B. If sufficient volumes were released, then a separate phase could have formed and sunk to the impervious Black Mingo Confining Unit. The topology of the upper surface of that unit would control its migration. The structure contour map for the upper surface of the Black Mingo Confining Unit indicates a separate phase liquid could have migrated to the location of well W-19B. Furthermore, the upper surface contains a depression in that area in which any migrated separate phase liquid would pool. If one was formed, such a pool would be a continuing source of dissolved PCE constituents in groundwater.

Therefore, please provide the following:

1. Explain whether Westinghouse considered the continuing presence of a separate phase liquid source of volatile organic compounds (VOCs). If not, provide a discussion of alternative sources for the observed PCE concentrations in the Western Groundwater Area of Concern.
2. Provide an estimate on the life expectancy of a PCE plume within the property.
3. Because a trace of PCE has been detected south of Upper Sunset Lake, provide an evaluation of the likelihood that the PCE plume may move south of well W-20 or W-25 within the next renewal period.

Hydrological Resources

RAI 18. General Water Resources

A number of water resources are present in the vicinity of the CFFF site. The following descriptions are needed to better understand the affected environment with regard to the overall watershed and subsequent potential for environmental impacts from the proposed action. Please revise the ER to accomplish the following:

- A. Identify water uses for the private wells, located in the Congaree River floodplain (west, southwest, and south) of the CFFF property, that were determined to be present in the survey that became available after the NRC's October 2019 draft EA was published.
- B. Provide currently available information (e.g., from state databases or the private well survey) about the depth at which the private wells are screened and from which aquifer they withdraw water.
- C. Provide the Groundwater Plume Analytics study (or studies) and Ricker Method Well Sufficiency Analysis (or analyses) performed by Earthcon Consultants, Inc. in 2018, referenced in the March 2019 ER. If the results from these studies/analyses are no longer used to evaluate constituents of potential concern (COPC) plume area, mass, or average concentration, confirm this and revise the ER to be consistent. Describe any tools or analysis methods Westinghouse is currently using to evaluate COPC plume area, mass, or average concentrations, including evaluating changes over time.
- D. Based on new information available since the NRC's October 2019 draft EA related to a connection between ditches and groundwater, provide ditch bottom elevations for all site drainage ditches along with a comparison to groundwater elevations. Identify the locations at which the bottom of each ditch tends to intersect the groundwater table.
- E. Provide the Soil and Materials Engineer (1982) reference cited in the March 2019 ER. Is this report the "previous hydraulic characterization" referred to in the March 2019 ER (pages 3-23)? If not, identify and provide the previous hydraulic characterization.
- F. Provide the SCDHEC (2019) study of water quality on the Congaree River, cited in the March 2019 ER, or provide the correct reference if it is an error.
- G. The March 2019 ER states that Westinghouse submits an annual groundwater monitoring report to SCDHEC. The ER describes an annual monitoring report that gives a detailed discussion of groundwater results for the past 5 years (2013-2018) (pages 4-9). Provide this report.

RAI 19. Fate and Transport Assessment

In its comments on the NRC's 2019 draft EA, Westinghouse proposed revisions that stated, "Recent COPC [constituents of potential concern] fate and transport assessment indicate that this natural, low permeability cap limits or eliminates groundwater discharge or recharge from Mill Creek and Sunset Lakes." Provide the referenced fate and transport assessment, and any supporting information to support the conclusion reached in that assessment.

- A. Westinghouse also commented that “approximately 8 feet of silt or clay” is observed in the shallow strata in most areas of “the developed portion of the site” but that thick clay (16 to 26 ft) was observed at wells W-83 and W-86. A substantial thickness of clay was observed in numerous borings and may affect the migration of constituents in groundwater (see RAI-17A). Provide discussion of the impact the clay bodies may have on the flow paths and their potential to adsorb the various constituents. Include in this discussion the role of silt/clay bodies beneath Gator Pond in affecting groundwater/surface water flows to/from the pond.
- B. The March 2019 ER states that groundwater flow in the lower surficial aquifer diverges from upper flow in areas near and west of West-II lagoon where it flows in a western and slightly northwestern direction. Is this observation consistent with the current CSM? Revise the ER as appropriate.

RAI 20. Surface Water Ditch Sediments

Uranium is a mildly to strongly sorbing element depending on the chemistry of the substrate. Its appearance in stream sediment could indicate previous or ongoing migration of the radionuclide through either surface water flow or seepage of contaminated groundwater. Sediment sample SED-16, taken from a surface water ditch, showed uranium above residential screening levels. In the July 2020 Final Interim Remedial Investigation Data Summary Report, Westinghouse states that the result appears to be “isolated since the downstream samples were below the screening level.”

- A. Provide the technical basis for the statement in the July 2020 Final Interim Remedial Investigation Data Summary Report that the SED-16 sample is “isolated.”
- B. The sample location (SED-16) is due west of the Sanitary Lagoon, which is unlined. Did Westinghouse evaluate whether uranium contamination from the unlined Sanitary Lagoon is leaching into the subsurface and, if so, explain how likely it is migrating into the surface water ditch? If Westinghouse plans to install additional wells west of the Sanitary Lagoon and around the location of SED-16 to determine the source of uranium, provide the installation plans.

RAI 21. Sunset Lake Sediments

In the July 2020 Final Interim Remedial Investigation Data Summary Report, results from sampling within Sunset Lake indicate there is uranium in the sediments. Describe any future plans Westinghouse has to determine if the radiological contamination in the Sunset Lake sediments are from the 1971 lagoon rupture event and/or if it is a result of groundwater discharge into the lake.

In the CSM, the bottom of Upper Sunset Lake is lined with silt and clay lenses (Cross Section B-B’), suggesting a bathtub conceptual model. The Lower Sunset Lake was conceptualized as being underlain by a thin silt and sand lenses in a portion of the lakebed (Cross Section G-G’). There are no boreholes or wells penetrating the lake beds or direct information to verify the conceptualization. It appears, thus, that the magnitude and spatial extent of surface water and groundwater interaction between the lakes and the surficial aquifer are not clear. Provide any evidence or analyses to establish the hydrologic connection between the surface water bodies and groundwater and the potential for transport of radiological contaminants.

Provide estimates of the amount of uranium isotopes sorbed on the lakebed sediment and Mill Creek riverbed sediment, in both totals and spatial distributions within the surface water bodies inside the site boundary.

RAI 22. Mill Creek Sediments and Pathway Assessment

Sunset Lake empties into Mill Creek, which then leaves the site and eventually enters Congaree River. Mill Creek, between the site boundary and Congaree River, is accessible to the public (private property owners).

Based on the data in the July 2020 Final Interim Remedial Investigation Data Summary Report, there is uranium contamination in the Sunset Lake sediments. The report notes that contaminated sediments were found above the Lower Sunset Lake dike and that the dikes were effective “impounding barriers.” However, the area is prone to flooding, such as the October 2015 rain event. Flooding and rain events could potentially suspend those sediments by saltation, and flood water could mobilize them outside of the dikes.

- A. With the discovery of radiological contamination in Sunset Lake, explain why surface water and sediment sampling data from Mill Creek should or should not be included in the effluent monitoring reports submitted to the NRC. Explain the rationale for why it is not necessary to sample surface water, sediment, fish, or other biota within Sunset Lake and Mill Creek and incorporate those data into the dose calculations to demonstrate that there is no contribution to public dose from these pathways as part of the effluent reports submitted to the NRC per 10 CFR 70.59.
- B. The July 2020 Final Interim Remedial Investigation Data Summary Report also notes that “Should elevated sample results be identified in the future, or isolated incidents such as environmental releases raise the potential for the migration of contamination, additional monitoring and potentially remedial action may be necessary.” In the report, traces of uranium and Tc-99 were also shown to be detected in multiple sediment samples in Mill Creek. Discuss any preventative, defense-in-depth measures, besides monitoring, taken or to be taken by Westinghouse to preclude future release of the contaminants into onsite waterways.
- C. Discuss what Westinghouse programs or procedures require sediment sampling in the future and what the protocol is for determining what should be done in the case of an environmental release.
- D. Explain Westinghouse’s plans to estimate the risk, dose or environmental, if elevated samples are discovered in the future, in particular in Sunset Lakes and Mill Creek.
- E. Explain why the surface water at the mouth of Mill Creek where it meets the Congaree River is not being monitored downstream of the CFFF site for potential releases of effluent into the Congaree River.
- F. The sediment sample data presented in Table A3 of the July 2020 Final Interim Remedial Investigation Data Summary Report show that uranium activity/concentration for the “background samples” (SED-54, SED-55, and SED-56) was 2 to 10 times higher than in most of the ditch samples. Given this, provide the technical basis for describing the SED-54, -55, and -56 samples as “background samples.” What sediment uranium activity/concentration (or range of activity/concentration) does Westinghouse consider to be

representative of background (i.e., unaffected by site activities)? What has Westinghouse concluded from the sediment data regarding the movement of uranium off-site?

G. Describe the remediation plans if the actions taken to control leaks are not successful.

RAI 23. Source and Extent of Tc-99 in Groundwater

The June 2019 Final Remedial Investigation Work Plan indicated that the source of the Tc-99 contamination in the groundwater was not known. In the July 2020 Final Interim Remedial Investigation Data Summary Report, Westinghouse states that there are two data gaps remaining, one of which is the source of the Tc-99 contamination. In February 2020, SCDHEC approved a [Technetium Source Investigation Work Plan](#), which outlined Westinghouse's plans for determining the source and extent of Tc-99 contamination onsite. In July 2020, Westinghouse summarized its investigation of potential sources of Tc-99 in the [Columbia Fuel Fabrication Facility Tc-99 Source Investigation Report](#) (ADAMS Accession No ML20259A221). Westinghouse concluded that "Tc-99 groundwater impact is historical and not the result of current operations at the facility."

Westinghouse stated that "[a]dditional assessment of the soils beneath the East Lagoon liner will be completed once the lagoon is emptied and the liner is removed as part of closure activities." The apparent purpose of this assessment is to detect potential leaks from the East Lagoon that may result in leaching of uranium and Tc-99 into the vadose zone beneath the lagoon. Furthermore, the July 2020 Final Interim Remedial Investigation Data Summary Report indicated that wells W-92 and W-93 did not contain Tc-99 above the minimum detectable concentration. However, in the same report, Tc-99 in W-77 was at 101 pCi/L, above the 50 pCi/L detection limit, as is visible in the Tc-99 concentration contour map (Figure 12 in the July 2020 Final Interim Remedial Investigation Data Summary Report).

- A. Explain whether Westinghouse plans to sample the vadose zone and groundwater beneath the East Lagoon to determine if there is a connection between the Tc-99 detected in W-77 and the Tc-99 plume south of East Lagoon.
- B. Explain what could be the onsite hydrogeological and geochemical conditions such that Tc-99 is still present at concentrations above residential screening levels in Gator Pond sediment, given that Tc-99 behaves like a tracer in oxic surface water (e.g., Gator Pond) and near surface groundwater.
- C. Explain how the mechanism of Tc-99 retention in lagoon sediment or sludge and the relatively high concentration in Gator Pond sediment and trace of Tc-99 in Sunset Lakes sediment may relate to (1) the surface water and groundwater connection near the Gator Pond and Sunset Lakes transition area from the Terrace to the Flood Plain of the Congaree River, (2) the extent of Tc-99 plume during the 40 years relicensing period, and (3) the likelihood of off-site movement through surface and subsurface waters.
- D. Explain the source of the Tc-99 discovered in Gator Pond sediment and its implication for Westinghouse's assertion that "a silty clay overbank deposit caps much of the developed area of the site, the bluff and the floodplain" and can minimize surface and groundwater interaction.
- E. Finally, explain the observations at wells W-11/W-32 and their relevance to determining the vertical extent of the Tc-99 plume and its direction of spreading. The shallow well W-32 is

screened at elevations between 116 and 121 ft-MSL, with a potentiometric head of 121.02 ft-MSL (on October 14, 2019) and a Tc-99 concentration of 321 pCi/L. The slightly deeper well W-11 is screened at elevations between 110 and 113 ft-MSL, a potentiometric head of 121.74 ft-MSL and a Tc-99 concentration of 3420 pCi/L. The potentiometric head gradient suggests upward groundwater flow near the well pair. However, the surficial aquifer underlying well W-11 and before reaching the top of the Black Mingo confining unit is estimated to be between 9 and 15 ft and the strata may be sand (current CSM Version 1A) or clay as suggested by the downgradient borings. Describe any plans to further characterize the Tc-99 plume, particularly near the W-11/W-32 well pair.

RAI 24. New Uranium Groundwater Plume

Data submitted to SCDHEC in the July 2020 Final Interim Remedial Investigation Data Summary Report include groundwater sampling results collected in late 2019 from newly installed groundwater monitoring wells (e.g., W-77). Uranium concentrations found in W-77 indicate there is potentially another uranium groundwater plume. Provide an assessment of what historical or unidentified accidental release(s) the high uranium concentration may have been derived from. Include any information about potential future investigations or remediation plans. Based on the latest LRA, discuss the three wells Westinghouse proposes to monitor for this uranium plume.

- A. The July 2020 Final Interim Remedial Investigation Data Summary Report indicated high concentrations of fluoride in groundwater monitoring wells W-77 and W-78, which are downgradient along the groundwater flow direction from the hydrofluoric acid (HF) spiking stations. Explain whether Westinghouse plans to further investigate the connection between the coincidental high uranium and fluoride concentrations at well W-77 and the previously discovered leaks at the HFSS and discuss the rationale. In addition, if Westinghouse will not further investigate, explain the potential extent of subsurface spreading of uranium during the proposed 40-year license renewal period.
- B. Currently no existing sampling wells are located between W-77 and the chemical section of the plant buildings to determine the source and the extent of this uranium plume north of W-77. Regulations at 10 CFR 20.1501 require that the licensee survey the area, including subsurface, upon discovery of elevated uranium concentrations or quantities. What surveys (sampling, etc.) does Westinghouse plan to undertake to determine the source and delineate the extent of the contamination with respect to the high uranium concentration at well W-77?

RAI 25. Co-contaminant Transport of PCE and Uranium

In the July 2020 Final Interim Remedial Investigation Data Summary Report, Westinghouse's CSM suggests the co-location of elevated (i.e., above background) uranium levels with elevated PCE, nitrate, and fluoride plumes underneath the chemical plant areas. The comingling of plumes may result in the formation of complexes or aquifer speciation that changes the fate and transport of uranium. Uranium can also be sorbed into the non-liquid aqueous phase of VOC plumes and later become mobile after the non-aqueous phase degrades into water soluble daughter products. Near the area where the on-site ditch exits the fenced area and the stream deeply incised the soil horizons, the July 2020 Final Interim Remedial Investigation Data Summary Report also indicates PCE and TCE were detected in surface water samples and that uranium was present in sediment samples. Furthermore, the PCE plume has spread beyond the Sunset Lakes. Explain whether Westinghouse considered the effect of co-contaminant

transport in its modeling, pathway analysis, and risk assessment. Additionally, did Westinghouse consider the potential for the uranium plume in the shallow aquifer at W-56 and moving toward wells W-74 and W-75 to co-evolve with the PCE plume with an enhanced spreading via the organic partitioning and aqueous phase complexation mechanisms? If Westinghouse has considered the effect of co-contaminant transport what is the likelihood the effect may accelerate the movement of uranium and to what extent? If co-contaminant transport has not been considered, does Westinghouse plan to integrate the co-contaminant transport phenomenon into its environmental monitoring and CSM development efforts, and how?

RAI 26. PAHs, Acetone, 2-Butanone

Low levels of various polycyclic aromatic hydrocarbons (PAHs) were detected at several sediment locations (e.g., SED-13, SED-14 and SED-28), but the July 2020 Final Interim Remedial Investigation Data Summary Report did not discuss these compounds. Acetone and 2-butanone were detected in a majority of sediment samples. The report stated that the “CFFF personnel are not aware of historic or current manufacturing activities using acetone or 2-butanone that could have impacted sediment at the site facility.”

- A. Provide additional discussion of the potential source of these compounds to include the possibilities of effluent from the incinerator and/or byproducts of bioremediation related to the previous CVOC remediation efforts. A common source for PAHs is the incomplete combustion of fuel (i.e., vehicle exhaust or fires). If Westinghouse determined the compounds occur naturally (as stated in the July 2020 Report), provide the basis for this statement.
- B. In addition, comment on the suitability of the data considering laboratory QA/QC for acetone and 2-butanone in which the spike recovery was out of criteria and the concentrations for several samples exceeded the calibration range.

RAI 27. Groundwater Off-site Impacts

The July 2020 Final Interim Remedial Investigation Data Summary Report concludes that the groundwater contamination remains onsite. Sampling from the floodplain wells indicates that, while at low levels, chemical contaminants have migrated south of Sunset Lake. Previously, Sunset Lake was considered to act as a “sink” for groundwater contamination. Data provided in the Summary Report also indicate a migration pathway to the Western Groundwater Area of Concern and the detection of contaminants in Sunset Lake sediments.

- A. Based on the newest data, has Westinghouse revised their analysis to determine if groundwater contamination could reach offsite in the next 40 years? If yes, discuss the evaluation, including explicit discussion of health and environmental impacts that could affect minority or low-income populations residing in the vicinity. If not, explain why it is not necessary.
- B. With the new information in the July 2020 Final Interim Remedial Investigation Data Summary Report, discuss the monitoring well network and surface water sampling’s ability to detect offsite migration of contaminants. Describe the margins, including between the contaminant plumes and the site boundary and the associated uncertainties, and the rationale thereby, that would trigger Westinghouse’s remediation actions to ensure the contaminants remain onsite if such margin is reached.

- C. Based on the CSM in the July 2020 Final Interim Remedial Investigation Data Summary Report, provide a high-level, narrative description of the current understanding of past and current COPC releases to the environment, predicted transport pathways for all COPC, and predicted fate and transport of existing contamination. References to the CSM figures and data should be made, as appropriate, to support the narrative description.

Socioeconomics

RAI 28. Cost Benefit Analysis

The NRC is preparing an EIS and per 10 CFR 51.71(d), the EIS “will include a consideration of the economic, technical, and other benefits and costs of the proposed action and alternatives.” Provide the following economic values for the proposed license renewal period:

- A. Any construction, refurbishment, or other expected capital costs by year.
- B. Annual operations and maintenance costs including fuel feedstock costs.
- C. Any expected mitigation costs or other compliance fees.
- D. Annual payments in lieu of taxes, property tax payments, or other tax-like payments to local jurisdictions or the state.
- E. Expected aggregate annual value of the fabricated fuel.
- F. Other known economic costs or benefits not listed.
- G. This information is requested for each alternative considered.
- H. Provide the distribution of the current CFFF workforce summarized by county of residence.

Environmental Justice

RAI 29. Environmental Justice

Provide a discussion of any CFFF-specific environmental justice community outreach activities undertaken to engage the local minority and low-income populations in the vicinity and to communicate about current environmental sampling, remediation activities, or this licensing action.

Occupational and Human Health

RAI 30. Exposure Pathways

Westinghouse commented on the NRC’s draft EA that “Migration pathways have been assessed in an updated risk assessment.” Provide the updated risk assessment, including the exposure pathways. Provide any supporting information from the CSM and updated risk assessment. Describe the plan to complete a human health and ecological risk assessment upon completion of the remedial investigation activities.

Meteorology and Air Quality

RAI 31. Air Permit

Westinghouse's air permit renewal application, submitted to SCDHEC in May 2019, contains emissions and dispersion modeling results. On September 26, 2019, SCDHEC conducted a public meeting to discuss the proposed renewal of the air quality was discussed and gathered public comments through October 2019. Provide updated information relevant to this renewal permit application:

- A. The emission calculations were provided in the permit attachment "Air Quality Construction Permit Application" performed by AECOM. The NOX emissions are much higher in this permit (45 tons/year) compared to the reported value of 28.47 tons/year in the March 2019 ER. Please provide the updated emissions data and calculations including the emission factors used.
- B. Table 4 with emission calculations for scrubbers is missing in this permit application. Please provide these emissions calculations including those related to the S-958 Scrubber.
- C. It is unclear from the tables in Sheets 1 through 4 of the AECOM attachment to the Westinghouse [air permit renewal application](#) how the activity data (8,760 hr/yr) were distributed between natural gas and fuel oil combustion in the two boilers (4.5 MMBTU/hr capacity). Please provide the activity data or frequency of use for natural gas and fuel oil for these two boilers that were used to estimate the composite emissions.

RAI 32. Meteorology

Please provide the hourly meteorological data that were used to create the joint frequency distribution meteorological data set referenced in Westinghouse's March 2019 ER, which will support NRC staff's analyses in the EIS related to air emissions and dispersion modeling results and public and occupational health (see RAI 31).