

## NRR-PMDAPEm Resource

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**From:** Grange, Briana  
**Sent:** Monday, October 02, 2017 3:45 PM  
**To:** Sarah Furtak - NOAA Federal  
**Subject:** Responses to additional questions for Consultation Tracking No. SER-2017-18839  
**Attachments:** Westinghouse CFFF Responses to 9-22-17 NMFS Questions.pdf

Sarah,

I've attached responses to your September 22 questions related to the Columbia Fuel Fabrication Facility license renewal (NMFS Tracking no. SER-2017-18839). Please let me know if you have any additional questions or if I can assist you further in any way. Thanks,

Briana

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**Briana A. Grange**

Aquatic Biologist

Division of License Renewal  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
301-415-1042  
briana.grange@nrc.gov

**From:** Sarah Furtak - NOAA Federal [mailto:sarah.furtak@noaa.gov]  
**Sent:** Friday, September 22, 2017 3:50 PM  
**To:** Grange, Briana <Briana.Grange@nrc.gov>  
**Subject:** [External\_Sender] Update and request: Columbia Fuel Fabrication Facility

Dear Briana:

I am writing to let you know that the Columbia Fuel Fabrication Facility Project (with National Marine Fisheries Service [NMFS] tracking number SER-2017-18839) has been assigned to me, to make a request for additional information, and to give you my contact information in case you have any questions.

I have the following questions and request:

- Please provide a map of the action area.
- According to the biological evaluation, "given the small volume of discharged effluent in relation to the overall river flow, the small area of the effluent plume, and the effluent concentration limits imposed by the CFFF NPDES permit, any effects on prey species would be insignificant and unlikely to affect prey availability, quality, or otherwise result in measurable effects on shortnose sturgeon fitness or behavior."
- What is the threshold concentration of uranium, ammonia, and fluorides that NRC considers to adversely affect the shortnose sturgeon within the action area?

- What is the volume of the discharged effluent relative to overall river flow?
- May I have a copy of the Tetra Tech Environmental Report referenced within the biological evaluation (note: I found something at <https://www.nrc.gov/docs/ML1435/ML14353A227.pdf>, but it appears incomplete)? The biological evaluation states that the report provides the nonradiological water quality of the discharge.
- Is the effluent heated (i.e., similar to cooling water)?
- What are the numeric limits (e.g., mg/L) imposed by the National Pollutant Discharge Elimination System (NPDES) permit (SC0001848) for uranium, ammonia, and fluorides?

You can check the status of your consultations through the Public Consultation Tracking System (PCTS) at <https://pcts.nmfs.noaa.gov/>. Please follow the attached directions to access your project and get information on the status of the project. Please scroll all the way to the bottom of the record to read status updates. If there is no new information in that section, then there is no new information on the status of the project.

We would greatly appreciate it if you let your applicant know this and that it is preferable for them to use PCTS link rather than contact the biologists directly for project information as that only slows the process.

Please note the NMFS tracking number above on future emails.

If no response to this request for additional information is received within 60 days, we will assume the consultation is no longer active. We will then close out the consultation request and change the status of the request to “withdrawn”.

Thank you,

Sarah  
**Sarah Furtak**

National Oceanic and Atmospheric Administration (NOAA) Fisheries  
Southeast Regional Office - Protected Resources Division - Coral Conservation Branch  
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**Hearing Identifier:** NRR\_PMDA  
**Email Number:** 3747

**Mail Envelope Properties** (Briana.Grange@nrc.gov20171002154500)

**Subject:** Responses to additional questions for Consultation Tracking No.  
SER-2017-18839  
**Sent Date:** 10/2/2017 3:45:23 PM  
**Received Date:** 10/2/2017 3:45:00 PM  
**From:** Grange, Briana  
**Created By:** Briana.Grange@nrc.gov

**Recipients:**  
"Sarah Furtak - NOAA Federal" <sarah.furtak@noaa.gov>  
Tracking Status: None

**Post Office:**

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>	
MESSAGE	3711	10/2/2017 3:45:00 PM	
Westinghouse CFFF Responses to 9-22-17 NMFS Questions.pdf			124733

**Options**  
**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

Westinghouse Columbia Fuel Fabrication Facility (CFFF)  
Proposed 40-Year License Renewal

Responses to National Marine Fisheries Service's (NMFS) September 22, 2017, Questions

**1. Please provide a map of the action area.**

Maps of the action area<sup>1</sup> and the surrounding vicinity are available in [Section 2.0 of Westinghouse's Environmental Report.](#)<sup>2</sup>

Figure 2.1-1, CFFF and Surrounding Area (p. 2-2)

Figure 2.1-2, Area Surrounding the CFFF Site within 5 Miles (p. 2-3)

Figure 2.1-3, Topographic Detail of the CFFF Site and Surroundings (p. 2-4)

Figure 2.1-5, CFFF Boundary (p. 2-7)

Figure 2.1-6, CFFF Site Plan (p. 2-13)

**According to the biological evaluation, "given the small volume of discharged effluent in relation to the overall river flow, the small area of the effluent plume, and the effluent concentration limits imposed by the CFFF NPDES permit, any effects on prey species would be insignificant and unlikely to affect prey availability, quality, or otherwise result in measurable effects on shortnose sturgeon fitness or behavior."**

**2. What is the threshold concentration of uranium, ammonia, and fluorides that NRC considers to adversely affect the shortnose sturgeon within the action area?**

With respect to radiological contaminants (e.g., uranium), the NRC uses the guideline of 1 radiation-absorbed dose per day (rad/d) (1 gray per day (Gy/d)) to assess effects to aquatic biota. This guideline is based on screening methodology developed and published by the U.S. Department of Energy<sup>3</sup> to evaluate radiological dose rates from environmental sources. The DOE's screening methodology provides limiting radionuclide concentration values (called BCGs) for aquatic and terrestrial biota. The DOE's BCGs were developed on the basis of experimental evidence that negative effects would not occur at or below the guideline doses. Of the aquatic test subjects considered, the early life stages of some fish species appear to be the most sensitive to the effects of ionizing radiation. Significant histological effects on the gonads of small tropical fish were detected at a dose rate of 1 rad/d, although the majority of tests for chronic effects of ionizing radiation on aquatic organisms did not find significant effects unless the dose was much greater. Accordingly, the DOE's guideline for radiation dose rates from environmental sources recommends limiting the radiation dose to aquatic biota to no more than 1 rad/d, at which level the DOE expects no negative population-level effects. Because fish at early life stages were the most sensitive subjects reviewed, this dose rate is considered to be protective of aquatic biota in general.

With respect to non-radiological contaminants (e.g., ammonia and fluorides), the NRC relies on the U.S. Environmental Protection Agency or the delegated State agency to determine chemical concentrations that are protective of the aquatic environment. In the case of the CFFF, Part V(A)(3)(e) of the site's National Pollutant Discharge Elimination System (NPDES) permit (No. SC0001848) states that "[d]ischarges of maintenance chemicals added to waste streams must

be limited to concentrations which protect indigenous aquatic populations in the receiving stream." The permit limits the discharge of ammonia-nitrogen (total as N) at Outfall 001 to a monthly average of 50 pounds per day (lbs/day) and a daily maximum of 100 lbs/day. The permit does not limit the concentration of fluoride discharges.

According to the EPA's Discharge Monitoring Report Pollutant Loading Tool,<sup>4</sup> Westinghouse has reported the following concentrations of ammonia and fluoride in the past six years:

Year	Concentration (total lbs/year)	
	Ammonia as N	Flouride
2012	2,044	1,144
2013	2,732	1,113
2014	2,865	1,223
2015	3,307	1,184
2016	2,137	432
2017*	3,608	741
Average	2,782	5,837

\*to date

### **What is the volume of the discharged effluent relative to overall river flow?**

The average flow of the Congaree River in the vicinity of CFFF is 8,652 cubic feet per second (cfs) (5,592 million gallons per day (MGD)) based on water data years 1940 through 2016 at U.S. Geological Survey's gauging station at Columbia, South Carolina (station no. 02169500),<sup>5</sup> which is located approximately 12 miles upstream of CFFF. The average effluent discharge flow from CFFF is 0.161 cfs (0.104 MGD) based on the past six years of actual average facility flows reported on the EPA's Discharge Monitoring Report Pollutant Loading Tool. Accordingly, the volume of discharged effluent relative to the overall river flow is <0.001 percent.

**May I have a copy of the Tetra Tech Environmental Report referenced within the biological evaluation (note: I found something at <https://www.nrc.gov/docs/ML1435/ML1435A227.pdf>, but it appears incomplete)? The biological evaluation states that the report provides the nonradiological water quality of the discharge.**

The Environmental Report can be accessed online at: <https://www.nrc.gov/docs/ML1435/ML1435A111.pdf>. The report is broken out into sections. Table 2.1-4 of the report provides the nonradiological water quality of the discharge. The direct link to that section of the report is: <https://www.nrc.gov/docs/ML1435/ML1435A238.pdf>.

### **Is the effluent heated (i.e., similar to cooling water)?**

The CFFF effluent is not heated. Because the travel time for process water is typically a week or more through the lagoon system prior to discharge, effluent enters the Congaree River at ambient temperature.

### **What are the numeric limits (e.g., mg/L) imposed by the National Pollutant Discharge Elimination System (NPDES) permit (SC0001848) for uranium, ammonia, and fluorides?**

The NPDES permit limits discharge of ammonia-nitrogen (total as N) at Outfall 001 to a monthly average of 50 pounds per day (lbs/day) and a daily maximum of 100 lbs/day. The permit does

not limit the concentration of uranium or fluoride discharges. However, Westinghouse is required to monitor and report release of radiological effluents in accordance with 10 CFR 40.65 and 10 CFR 70.59. Liquid discharges are obtained by analysis of composite proportional samples prior to discharge to the Congaree River. Westinghouse has reported the following quantities of uranium in its liquid effluent in the past six monitoring report periods.<sup>6</sup> Table values represent the calculated average enrichment of the three radioactive uranium isotopes (U-234, U-235, and U-238).

Liquid effluent (uCi)	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017
<b>U-234</b>	1,560.7	1,361.1	2,248.0	1,675.7	1,538.4	1,821.3
<b>U-235</b>	60.3	66.7	86.9	80.4	86.7	90.9
<b>U-238</b>	210.1	200.3	302.7	271.2	259.2	323.8

<sup>1</sup> The U.S. Nuclear Regulatory Commission (NRC) considers the action area to be the 469-hectare CFFF site and the bankfull width of the Congaree River from the point at which CFFF discharges liquid effluents at National Pollutant Discharge Elimination System (NPDES)-permitted Outfall 001 and continuing downstream 3.2 km (2 mi). See Section 3.0 of the NRC's August 2017 Biological Evaluation (ADAMS Accession No. [ML17227A378](#)).

<sup>2</sup> Tetra Tech. 2014. Environmental Report for the Columbia Fuel Fabrication Facility. Prepared for Westinghouse Electric Company, LLC. December 17, 2014. Section 2.0. ADAMS Accession No. [ML14353A238](#).

<sup>3</sup> U.S. Department of Energy. 2002. A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota. DOE-STD-1153-2002. Washington, DC: DOE. July 2002. 234 p. Available at <<http://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/doe%202002a.pdf>>.

U.S. Department of Energy. 2004. RESRAD-BIOTA: A Tool for Implementing Graded Approach to Biota Dose Evaluation. User's Guide, Version 1. DOE/EH-0676. Washington, DC: DOE. January 2004. 50 p. <<http://web.ead.anl.gov/resrad/documents/RESRAD26>>.

<sup>4</sup> U.S. Environmental Protection Agency. 2017. Discharge Monitoring Report (DMR) Pollutant Loading Tool. Facility Information for Westinghouse Electric Co LLC, Hopkins, SC, 29061, NPDES ID: SC0001848. Available at <[https://cfpub.epa.gov/dmr/facility\\_detail.cfm?fac=SC0001848](https://cfpub.epa.gov/dmr/facility_detail.cfm?fac=SC0001848)>.

<sup>5</sup> U.S. Geological Survey. 2017. USGS Surface-Water Data for USGS 02169500 Congaree River at Columbia, SC. Available at <[https://waterdata.usgs.gov/sc/nwis/uv/?site\\_no=02169500&PARAmeter\\_cd=00065,00060,00062,72137,62614](https://waterdata.usgs.gov/sc/nwis/uv/?site_no=02169500&PARAmeter_cd=00065,00060,00062,72137,62614)>.

<sup>6</sup> Westinghouse Electric Company LLC. 2015. Semi-Annual Discharge Monitoring Report, July – December 2014. February 27, 2015. ADAMS Accession No. [ML15071A417](#).

Westinghouse Electric Company LLC. 2015. Semi-Annual Discharge Monitoring Report, January – June 2015. September 8, 2015. ADAMS Accession No. [ML15251A167](#).

Westinghouse Electric Company LLC. 2016. Semi-Annual Discharge Monitoring Report, July – December 2015. February 11, 2016. ADAMS Accession No. [ML16064A143](#).

Westinghouse Electric Company LLC. 2016. Semi-Annual Discharge Monitoring Report, January – June 2016. August 30, 2016. ADAMS Accession No. [ML16243A327](#).

Westinghouse Electric Company LLC. 2017. Semi-Annual Discharge Monitoring Report, July – December 2016. March 1, 2017. ADAMS Accession No. [ML17060A474](#).

Westinghouse Electric Company LLC. 2017. Semi-Annual Discharge Monitoring Report, January – June 2017. September 8, 2017. ADAMS Accession No. [ML17254A031](#).