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SITE ASSESSMENT, REMEDIATION & REVITALIZATION

Westinghouse Electric Company
Nuclear Fuel
Columbia Fuel Fabrication Facility
5801 Bluff Road
Hopkins, South Carolina 29061
USA

SCDHEC, BLWM
Kim Kuhn
2600 Bull Street
Columbia, SC 29201

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Your ref:
Our ref: LTR-RAC-19-85

October 25, 2019

Subject: RI Work Plan **Sediment Transect Sampling Plan**
Upper Sunset Lake, Lower Sunset Lake, Mill Creek

Mrs. Kuhn:

Please find attached for your consideration a proposal to conduct additional sediment sampling within Mill Creek (including Upper Sunset Lake and Lower Sunset Lake) to support the Remedial Investigation (RI) Work Plan. Based upon the September 30, 2019 meeting and discussions with the Department, the attached document proposes the locations, methods, and subsequent analysis of the sediment samples.

Respectfully,

Diana P. Joyner
Principal Environmental Engineer
Westinghouse Electric Company, CFFF
803.497.7062 (m)

cc: E. Wills, EH&S Manager
N. Parr, Environmental Manager
J. Grant, AECOM Project Manager
ENOVIA Records

Enc.: "Columbia Fuel Fabrication Facility, Sediment Sampling Plan, Consent Agreement CA-19-02-HW, AECOM, File #51377, dated October 25, 2019.

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SITE ASSESSMENT, REMEDIATION & REVITALIZATION

October 25, 2019

Ms. Kimberly M. Kuhn, Project Manager
State Voluntary Cleanup Section
Division of Site Assessment, Remediation and Revitalization
Bureau of Land and Waste Management
2600 Bull Street
Columbia, S.C. 29201

Subject: **Westinghouse Electric Company, LLC**
Columbia Fuel Fabrication Facility
Sediment Sampling Plan
Richland County, S.C.
Consent Agreement CA-19-02-HW
File # 51377

Dear Ms. Kuhn:

Based upon the September 30, 2019 meeting with the South Carolina Department of Health and Environmental Control (SCDHEC) Westinghouse Electric Company LLC (Westinghouse) Columbia Fuel Fabrication Facility (CFFF) and AECOM Technical Services, Inc. (AECOM), AECOM submits the following sediment sampling plan for SCDHEC review and approval.

Background

CFFF is currently conducting multi-media assessment of their facility for constituents of potential concern (COPCs) based upon the AECOM Final Remedial Investigation Work Plan submitted in June 2019. The Remedial Investigation (RI) Work Plan was submitted to satisfy item 1 of Consent Agreement CA-19-02-HW between Westinghouse and SCDHEC.

The ongoing assessment included the collection of 18 sediment/sludge samples from July 15, 2019 through July 18, 2019 in the on-site stormwater ditches, two of the wastewater treatment plant lagoons (sludge), the Gator Pond, Upper Sunset Lake and Lower Sunset Lake. Sample results in one location in the stormwater ditches, four locations within the two wastewater treatment lagoons, two locations in Upper Sunset Lake and one location in Lower Sunset Lake contained uranium (U) concentrations above the residential screening level (NUREG 1757, Vol. 2, Rev. 1, Appendix H).

From the meeting on September 30, 2019, it was decided that additional data is needed to better understand the extent of uranium above residential standards on Westinghouse property. Additional sediment sampling along several transects within Mill Creek upstream, adjacent, and downstream of the Westinghouse facility were proposed.

Proposed Sediment Sampling Transect Locations

Westinghouse proposes ten transects (**Figure 1**) with an additional 24 sediment sampling locations within Mill Creek to obtain additional sediment quality data. Generally, there are three sample locations per transect: two within a few feet of the edges of the Mill Creek floodplain and one in the presumed middle of

the flow channel. In cases where Mill Creek is significantly wider due to impoundment, four sediment sample locations are proposed. To reduce the potential of cross contamination by sediment that is put into suspension by the sampling activities, sediment sampling will begin downstream and work upstream.

Downstream Areas

Three of the sediment sampling transects (**Figure 1**) are downstream of the Lower Sunset Lake dike. This portion of Mill Creek is heavily forested, lowland swamp with minimal flow. The majority of the flow in Mill Creek through the Westinghouse property is by way of the diversion canal along the southern property boundary.

During site reconnaissance of the sediment sampling transect endpoints, AECOM personnel discovered that there is a fourth dike (Exit Dike) on the Westinghouse property. The Exit Dike (**Figure 2**) is located just north of the diversion canal and contains a drainage pipe that connects the water flowing from the section of Mill Creek that flows through Upper and Lower Sunset Lakes to the water flowing down the man-made diversion canal. Although not fully impounding, the depth of the surface water in Mill Creek appears to increase downstream closer to the Exit Dike.

AECOM proposes to use a multistage sediment sampler in areas of the sampling transects with standing water. A multistage sediment sampler is similar to a direct push macrocore sampler and consists of a two-foot long stainless steel tube with an acetate sleeve inside. Use of the multistage sampler will ensure that the sediment samples are from the desired depth in areas of standing water where visibility of the borehole is obstructed or unable to be seen.

The multistage sediment sampler is typically attached to a slide hammer that is used to drive it into the sediment. Sediment samples from the core will be collected at six-inch intervals (i.e. 0-6 inch, 6-12 inch) with a minimum of one foot of sediment core being collected.

During the sediment sampling transect reconnaissance, AECOM personnel conducted a test run of a multistage sampler in standing water within Mill Creek to assess the effectiveness of this tool for sample collection at Westinghouse. A sediment catcher was installed in the multistage sampler during the first test run and was removed during the second test run. AECOM personnel drove the multistage sampler approximately two feet into the sediment of Mill Creek near the fourth dike. The initial test run resulted in 6-8 inches of sediment recovery in the tube and the second test run resulted in approximately one foot of sediment recovery. Should more than one foot of sediment be recovered at a sample location, the sediment from the deeper interval(s) will also be submitted for laboratory analysis.

Should root matter or other underground obstructions limit the ability of the multistage sediment sampler to reach the desired depth after multiple attempts within areas of standing water, a stainless steel hand auger will be used to attempt to extend the sediment sample borings to the one foot total sampling depth. During the July 2019 sediment sampling event, AECOM used a stainless steel hand auger that was decontaminated between sampling locations. Attempts to use the ponar grab sampler were unsuccessful in retrieving sediment from Lower Sunset Lake.

Upper and Lower Sunset Lakes

Water levels in Upper and Lower Sunset Lakes are deeper than the non-impounded sections of Mill Creek. In the case of Lower Sunset Lake, a boat will be the primary method to reach each sampling location. In cases where water is shallow (i.e. SED-34, **Figure 1**) and not boat accessible, AECOM will use hip waders to access the sediment sampling location. Previous sediment samples (SED-19 through SED-22) from this area of the site were surficial only (top six inches of sediment).

AECOM proposes to collect surficial sediment samples (0-6 inch) with a hand auger in each of the new sediment sampling locations within Upper and Lower Sunset Lakes with the understanding that it is possible that additional vertical sediment quality profiling may be required in the future During the bathymetric survey of Upper Sunset Lake, it was observed that there are portions of this water body that,

although forested, are too deep to access with hip waders so, it is likely that a non-motorized boat (i.e. canoe) will be needed to obtain some of the sediment samples in Upper Sunset Lake.

Based upon AECOM's reconnaissance, the Mill Creek floodplain in portions of the western extent of Upper Sunset Lake and Mill Creek above the Entrance Dike is well defined with walkable, soft (appears to be comprised primarily of decomposed organic matter at the surface), semi-dry land outside the primary flow channel that extend hundreds of feet from the floodplain bank to the flow channel.

A hand auger will be used in the semi-dry areas or where surface water is shallow enough to ensure that the augering is completed in a single borehole. Boreholes created with a hand auger can collapse as the hand auger is pulled out or pushed back into the ground. To ensure that representative sediment samples are collected from the desired depths, AECOM personnel will use a tape measure before and after each advancement of the hand auger bucket to assess how much sediment within the bucket is from the desired sampling interval.

Upstream Areas

The portion of Mill Creek above the Entrance Dike is the most visibly channelized portion of the sediment study area. Sediment samples from this area are being collected to assess background sediment quality. AECOM proposes to use a stainless steel auger to collect sediment samples in the semi-dry portion of Mill Creek and the multistage sampling device in the channelized portion of Mill Creek.

Based upon AECOM's reconnaissance, the flow channel in this portion of the site is approximately 15 feet wide. Mill Creek's channel is located on the northern side of its floodplain near proposed sediment sampling location SED-51 and on the eastern side of its floodplain near proposed sediment sampling locations SED-54.

Therefore, AECOM proposes using the multistage sampling device to collect sediment samples SED-51 and SED-54 (**Figure 1**) from the center of the channel with the remaining two background samples per transect being collected with a stainless steel hand auger within the semi-dry portion of Mill Creek's floodplain. Sediment samples will be collected at six-inch intervals (i.e. 0-6 inch, 6-12 inch) with a minimum of one foot of sediment core being collected.

Equipment Decontamination

Sampling equipment will be decontaminated between sampling locations as outlined in the June 2019 AECOM RI Work Plan.

Sediment Analyses

Sediment sample analytes and quality assurance and quality control (QA/QC) samples will be collected as outlined in the June 2019 AECOM RI Work Plan. The QA/QC samples will be labeled as described in the June 2019 AECOM RI Work Plan.

Sediment Sampling Schedule

Additional sediment sampling will begin approximately one week after approval of the plan by SCDHEC. AECOM and Westinghouse hope to have the analytical data from the additional sediment sampling in time for the January 2020 meeting in the revised RI Work Plan schedule as documented in the Vertical Groundwater Profiling Plan. Should all of the data not be received in time for the January 2020 meeting, a separate meeting to discuss the results will be scheduled.

Reporting

The sediment sampling analytical results will be included in the RI Report.

Should you have any questions regarding the information provided in this plan, please do not hesitate to contact AECOM at (803) 254-4400.

Sincerely,

Charles K Suddeth

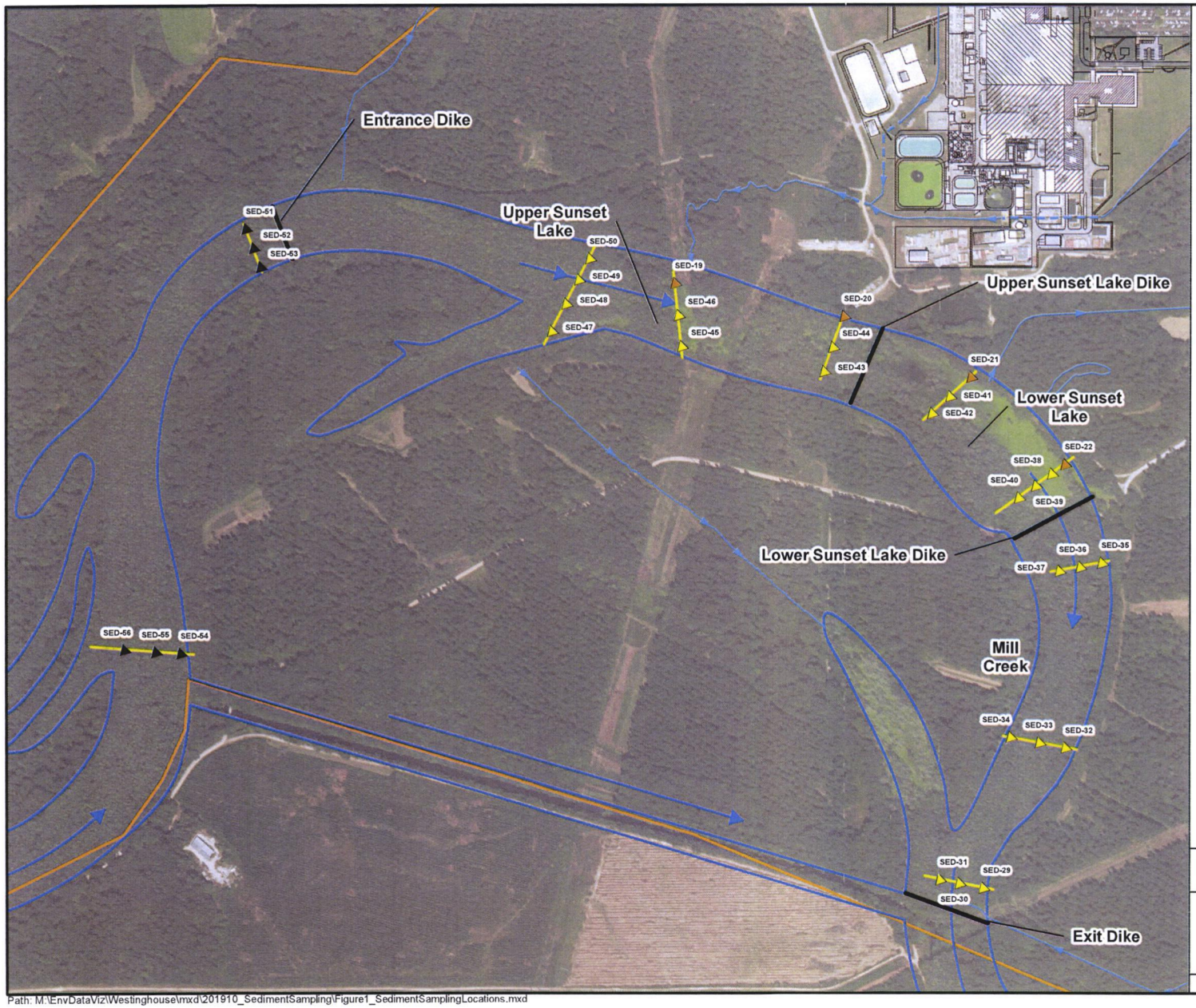
Jeremy Grant

Chuck Suddeth, P.G.
Project Geologist

Jeremy Grant, P.G.
Project Manager

Attachments: Figure 1 – Sediment Sample Locations

Cc: Nancy Parr, Westinghouse
Diana Joyner, Westinghouse
Ed Wills, Jr., Westinghouse



Legend

- Sediment Sample Collected in July 2019
- Proposed Sediment Samples
- Proposed Background Sediment Samples
- Sediment Sampling Transects
- Ditch
- Culvert
- Mill Creek Flow Direction
- Dike Location
- Mill Creek
- Property Line

0 250 500 Feet

1:6,000

Map Projection: NAD 1983, South Carolina State Plane, FIPS 3900, Feet

Datum: North American 1983

AECOM

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Sediment Sampling Locations

WESTINGHOUSE COLUMBIA FUEL FABRICATION FACILITY
HOPKINS, SOUTH CAROLINA

PROJECT NO.	PREPARED BY	DATE	
60595649	LJG	February 2019	FIGURE 1

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