Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

MAY 17 2018

Ms. Susan B. Fulmer, P. G., Manager
Federal Remediation Section
Division of Site Assessment, Remediation and Revitalization
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

Mr. Jon Richards
Acting Savannah River Site Remedial Project Manager
Superfund Division
U. S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Dear Ms. Fulmer and Mr. Richards:

SUBJECT: Continued Usage of High-Level Waste Tank 8F, SEMS Number: 23

In accordance with the Federal Facility Agreement, this letter is to request your approval for continued usage of Type I Tank 8F for which the Bulk Waste Removal Efforts milestone was previously completed. Enclosed is a technical justification that provides a summary of Tank 8F operational and waste removal history, current status, and planned usage to support Low Temperature Aluminum Dissolution (LTAD) of the sludge material in Tank 51H which is necessary to initiate preparation of Sludge Batch 10. Our immediate proposed usage is for transfer into Tank 8F the aluminum rich leachate resulting from the LTAD process performed in Tank 51H. Since 2009, aluminum rich leachate has been store in Tank 8F.

The U.S. Department of Energy (DOE) requests your approval, within thirty days of receipt of this letter, only for continued usage of Tank 8F to store aluminum rich leachate and support Tank 51H preparation of Sludge Batch 10.

The effort and time that the South Carolina Department of Health and Environmental Control and the U.S. Environmental Protection Agency have given on the subject are greatly appreciated. DOE will keep you informed of the transfers and use of Tank 8F during our quarterly Liquid Waste regulatory meetings. Questions from you or your staff may be directed to me at (803) 952-8365 or Ms. Jolene Seitz at (803) 208-6234.

Sincerely,

Brian T. Hennessey
SRS Remedial Project Manager
Infrastructure and Area Completion Project

WDPD-18-29

Enclosure:
Technical Justification for
Continued Use of Tank 8F

cc w/encl:
H. H. Cathcart, SCDHEC – Columbia
B. S. Mullinax, SCDHEC-Columbia
J. Dawson, TechLaw, Inc

cc w/o encl:
G. N. O'Quinn, SCDHEC – Aiken Environmental Affairs Office
M. D. Wilson, SCDHEC-Columbia
J. P. deBessonet, SCDHEC-Columbia
G. K. Taylor, SCDHEC-Columbia
D. Scaturo, SCDHEC-Columbia
S. French, SCDHEC-Columbia
R. H. Pope, EPA-Atlanta

Enclosure
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Facts:

- Type I tank – nominal capacity 750,000 gallons
- Tank groups designed for infrastructure efficiency and avoidance of redundancy
- Waste transfers out of tanks restricted by infrastructure, transfer route limitations
- Tank 8F
  - no known leak sites
  - construction completed in 1953
  - Bulk Waste Removal Efforts (BWRE) initiated in May 2000 – January 2001; resumed in 2004
  - From 2006 to present utilized to store supernate used to slurry and remove waste from Tanks 4F, 5F, 6F, and 18F as well as to store aluminum-rich leachate resulting from Low Temperature Aluminum Dissolution (LTAD) for Sludge Batch 5 and Sludge Batch 6 preparation.
  - BWRE declared in August 2010 with approximately 17,000 gallons of sludge solids remaining.

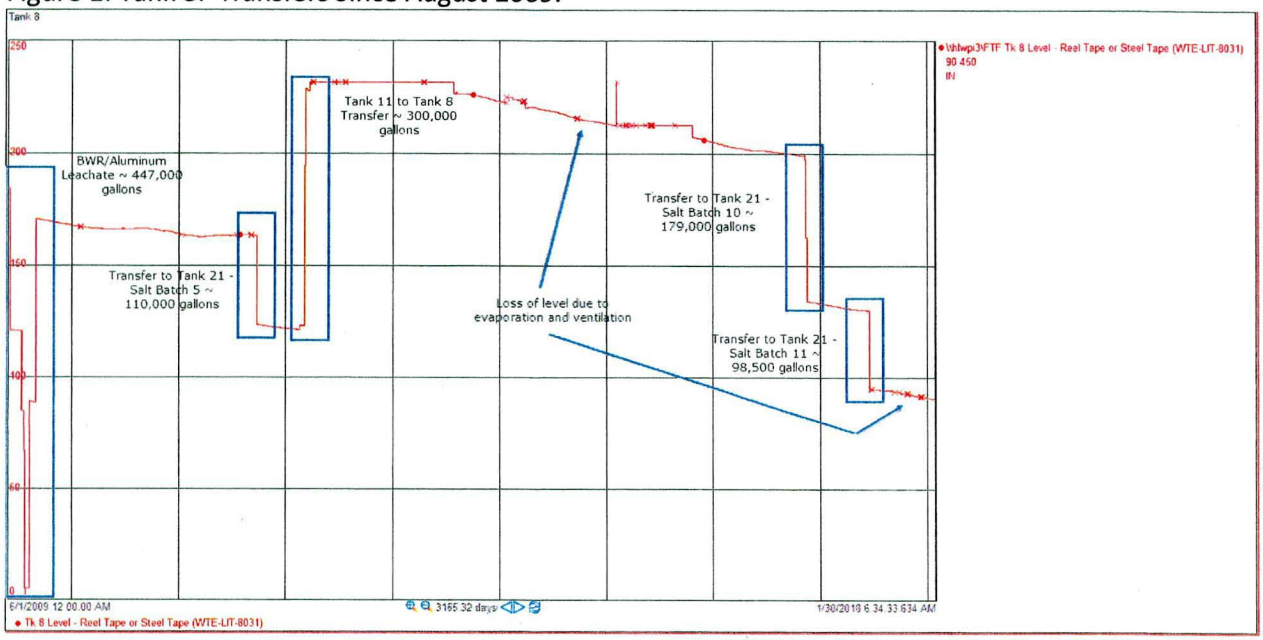
Waste Storage and Removal History:
The twelve Type I tanks in both tank farms (Tanks 1F to 8F and 9H to 12H) were the first high-level waste (HLW) storage tanks built and commissioned for use at Savannah River Site. As designed and constructed, there are eight underground Type I HLW storage tanks in the F-Area Tank Farm in two parallel rows of four tanks.

Tanks 1F to 6F and 8F began receiving high heat waste resulting from Plutonium Recovery and Extraction (PUREX) processing at F Canyon in the mid 1950's and early 1960's. After BWRE were declared completed in Tank 8F in August 2010, the tank contained approximately 17,000 gallons of sludge solids and 450,000 gallons of LTAD aluminum-rich leachate. In November 2011, approximately 110,000 gallons of aluminum-rich leachate was transferred from Tank 8F to Tank 21H to support preparation of Salt Batch 5. During February and March 2012, approximately 300,000 gallons of aluminum-rich leachate (resulting from Sludge Batch 5 preparation) stored in Tank 11H was transferred into Tank 8F to consolidate aluminum-rich leachate storage into a single tank. The U.S. Department of Energy (DOE) requested and received approval of this consolidation from South Carolina Department of Health and Environmental Control (SCDHEC) and U.S. Environmental Protection Agency (EPA). From 2012 through 2016, the tank was quiescent and the liquid volume decreased by 123,000 gallons due to evaporation and operation of the tank's ventilation system.

In November 2016, approximately 179,000 gallons of aluminum-rich leachate was transferred from Tank 8F into Tank 21H to support preparation of Salt Batch 10. In June 2017, approximately 98,500 gallons of leachate was transferred from Tank 8F to Tank 21H to support preparation of Salt Batch 11. As of March 31, 2018, approximately 242,000 gallons of primarily aluminum-rich leachate is stored in Tank 8F. Between June 2017 and January 2018, the liquid volume in Tank 8F has decreased by 16,000 gallons to due evaporation and operation of the tank's ventilation system. Figure 1 illustrates the transfers into and out of Tank 8F since August 2009.

Enclosure
Technical Justification for Continued Use of Tank 8F

Figure 1: Tank 8F Transfers Since August 2009.



Sludge Batch 10 Preparation:

Tank 51H currently is storing H-Area Modified (HM) sludge, which has a high concentration of aluminum, that was received from Tank 13H and Tank 15H. LTAD will be performed in Tank 51H prior to addition of the remaining Sludge Batch 10 ingredients. LTAD consists of adding 50 weight% sodium hydroxide solution (caustic) to Tank 51H and raising the temperature in the waste tank above nominal conditions to dissolve the aluminum solids. Following LTAD, the aluminum rich solution (leachate) will be decanted from Tank 51H. The purpose of performing LTAD on HM sludge is to dissolve some fraction (approximately 40%) of the aluminum to improve sludge settling which results in better efficiency of sludge washing and reduces sludge batch preparation time. The maximum volume of aluminum-rich leachate resulting from LTAD is estimated to be approximately 330,000 gallons. Given Tank 8F will have nearly 378,000 gallons of available space the entire volume of aluminum-rich leachate generated can be stored in Tank 8F. Similar to the past, this newly generated aluminum-rich leachate resulting from Sludge Batch 10 preparation will be utilized to support preparation of future salt batches.

Request for Reuse:

Preparation and treatment of sludge and salt waste leading to disposition serves to reduce the environmental risk of the liquid radioactive waste by immobilizing the waste into solid waste forms of glass and Saltstone.

DOE is requesting to continue use of Tank 8F for the leachate storage because

- Tank 8F has previously been given regulatory approval for the storage of aluminum-rich leachate
- Tank 8F has enough space available to store the leachate generated from Sludge Batch 10 LTAD
- Salt Batches have been successfully qualified, and processed using the aluminum-rich leachate generated from previous HM sludge batches that underwent LTAD.

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DOE is submitting this request for reuse of Tank 8F to comply with the bulk waste removal definition included in Appendix L of the Federal Facility Agreement (FFA), and seeks written concurrence from the SCDHEC and EPA FFA Managers based on the technical justification provided herein. DOE will continue to provide the status as well as any additional information regarding reuse of Tank 8F and Sludge Batch 10 preparation during our Liquid Waste Program quarterly regulatory meetings.