SRMC-CWDA-2025-00007

# Waste Tank Closure Process – Sampling and Analysis Phase

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January 28, 2025







# Acronyms



- ALT Alternate
- CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
- CGCP Consolidated General Closure Plan
- CM Closure Module
- CTS Concentrate Transfer System
- DOE U.S. Department of Energy
- DWPF Defense Waste Processing Facility
- EPA U.S. Environmental Protection Agency
- ESD Explanation of significant Difference
- FCR Final Configuration Report
- FDB F-Area Diversion Box
- FFA Federal Facilities Agreement
- FTF F-Area Tank Farm
- GWSB Glass Waste Storage Building
- HDB H-Area Diversion Box
- HTF H-Area Tank Farm
- LWTRSAPP Liquid Waste Tank Residuals Sampling and Analysis Plan
- LWTRSAPP Liquid Waste Tank Residuals Sampling-Quality Assurance Plan

<sup>1</sup>South Carolina Department of Environmental Services (SCDES) was known as South Carolina Department of Health and Environmental Control (SCDHEC) prior to July 1, 2024. Throughout this presentation figures and text reproduced from existing documents may still reflect SCDHEC nomenclature.

- MCi millions of curies
- Mgal millions of gallons
- NEPA National Environmental Policy Act
- NRC U.S. Nuclear Regulatory Commission
- OU Operable Unit
- pCi/L pico curies per liter
- PCWR Preliminary Cease Waste Removal
- PO Performance Objective
- RCRA Resource Conservation and Recovery Act
- RVW Review
- S&A Sampling and Analysis
- SCDHEC South Carolina Department of Health and Environmental Control<sup>1</sup>
- SCDES South Carolina Department of Environmental Services<sup>1</sup>
- SDUs Saltstone Disposal Units
- SPF Saltstone Production Facility
- SRMC Savannah River Mission Completion (current Liquid Waste Contractor)
- SRS Savannah River Site
- STD Standard
- SWPF Salt Waste Processing Facility
- WD/I Walkdown/Inspection



#### Provide status and an overview of the Savannah River Site (SRS) Liquid Waste tank closure process with a focus on the Sampling and Analysis Phase

# **SRS Liquid Waste Program**



- Store, retrieve, process, treat, and dispose of legacy tank waste
- 43 active waste tanks, ~33 million gallons of radioactive waste
- Four End States
  - Operational Tank Closure (Removal from Service)
  - Vitrified high-level waste canisters in Glass Waste Storage Buildings (GWSBs) 1 & 2
  - Low-level waste in Saltstone Disposal Units (SDUs)
  - Deactivate and flush operating facilities to enable safe setup for decommissioning activities

#### Key processing and treatment facilities

- Defense Waste Processing Facility (DWPF)
- Salt Waste Processing Facility (SWPF)
- Saltstone Production Facility (SPF)

#### Saltstone Disposal Units







### **SRS Composite Inventory**





Inventory values as of 2024-12-31

### Liquid Waste Program



#### **SRS Liquid Waste Facilities**



### SRS Liquid Waste Mission Progress to Date\*



#### Sludge batches processed: 9 of 19 projected



#### Salt batches processed: 11 of 90 projected



#### Preliminary Cease Waste Removal Complete: 11 of 51 tanks



#### Canisters: 4,452 total of 8,113 projected



#### **Saltstone Disposal Units**



#### Tanks closed: 8 of 51



Last Updated: January 13, 2025

#### **2022 High Level Waste Tank Milestones Agreement**

- In December 2022, the U.S. Department of **Energy (DOE), South Carolina Department** of Environmental Services (SCDES), and **U.S. Environmental Protection Agency** (EPA) signed the 2022 High Level Waste Tank Milestones Agreement, which has since been incorporated into the Federal Facility Agreement (FFA)
  - Updated "Common Values and Goals"
  - Among other things, provides milestone dates for Preliminary Cease Waste Removal (PCWR) (i.e., risk reduction) and new Operational Closure dates for the remaining Type I, II, and IV waste tanks.

2022 High Le	vel Wa	ste Tank Mileston	es Agreement				
On December 20, 2022, the Office (SR), the South Carol United States Environment Savannah River Site (SRS) P	Attachment A						
entered into in November 2 with the exceptions of Para Appendix L (incorporated b Tank Milestones Agreemen be incorporated into the Ff	SRS Liquid Waste Program Common Values and Goals (2022 – 2037)						
actions are consistent with Goals, included as Attachm waste and closing tanks with Inclusion of ITA Milestones	VALUE	3		Attachmont P			
A. The Parties agree to ind FFA Appendix L, except for Appendix L, incorporated in	1.	Maintain transparency w on program progress, an Ensure DOE's strategy ar	Attachment B Schedule for Remaining Non-Compliant Tanks				
Paragraphs 9.b and 18 from Paragraph 9.b states, "The I tank, DOE shall involve SCD processes to explain the act	3.	SCDHEC permitting proc Maximize the amount of ultimate disposal out of	Milestone Date	Preliminary Cease Waste Removal (# of Tanks)	Operational Closure (# of Tanks)		
steps. DOE shall consider a next stage. These interactil as agreed to by the particip waste removal to be compl		Limit disposal of curies o achievable. i (in priority order)	12/31/2023 12/31/2024	0	0		
documentation to SCDHEC removal activities may cess Paragraph 18 states, " in co		Reduce risk to the enviro of the liquid waste progr	12/31/2025 12/31/2026 12/31/2027	2	0		
service due by March 9 <sup>th</sup> of the status of bulk waste an Farm Performance Assessm closure of groups of tanks i	2.	Reduce operational and tanks.	12/31/2028 12/31/2029	2	3		
Reagan National Defense A tanks."	3.	Reduce operational and program total life cycle.	12/31/2030 12/31/2031 12/31/2032	0	2 3		
	4.	Complete waste remova with a risk-based priority followed by remainder o	12/31/2033	0	2		
		for future emergent con	12/31/2035 12/31/2036	1	0		
			12/31/2037 Total	2	4		







Legend:

- ALT Alternate CM Closure Module
- CM Closure Module
- DHEC South Carolina Department of Health and Environmental Control
- DOE U.S. Department of Energy
- EPA U.S. Environmental Protection Agency
- S&A Sampling and Analysis
- STD Standard

The three agencies agree that, based upon the described qualitative assessment, there is reasonable assurance that performance objectives will be met, and it is appropriate to suspend waste removal activities and enter the Sampling and Analysis phase of the tank closure process.

### **Tank Closure Process**





### **FFA Commitment Status**

the PLACE



Tanks 4F, 9H and 10H have entered the		Schedul	Schedule for Remaining Non-Compliant Tanks		
Sampling and Analysis Phase of the Tank Closure Process			Milestone Date	Preliminary Cease Waste Removal	Operational Closure
				(№ of Tanks)	(№ of Tanks)
			12/31/2023	-	_
FFA Milestone Complete – Tank 10H PCWR Complete 5/2024>			12/31/2024	1	_
FFA Milestone Status – Two of Three Tanks PCWR Complete			12/31/2025	3	_
	– Tar	nk 9H PCWR Complete 10/2024	12/31/2026	2	_
	– Tar	nk 4F PCWR Complete 12/2024	12/31/2027	2	_
		······································	12/31/2028	-	3
			12/31/2029	2	_
Proposal to Cease Waste Review 0 Activities in Tank 10			12/31/2030	1	2
nd Enter Sampling and Analysis		12/31/2031	-	3	
	Proposal to Cease Waste		12/31/2032	-	1
2024 Removal A Enter Sam	Removal Activities in Tai Enter Sampling and Anal		12/31/2033	-	2
SINING MISSION COMPLETION	Phase L. B. Romanowski	Proposal to Cease Waste	12/31/2034	1	_
	Waste Dispessi Automity activities 12, 2024	Removal Activities in Tank 4 and Enter Sampling and Analysis	12/31/2035	1	_
		Phase	12/31/2036	1	1
	BWXT	Wester Disproved Authority December 26, 3034	12/31/2037	2	4

2022 High Level Waste Tank Milestones Agreement Goal #2: Reduce operational and environmental risk by <u>aggressively</u> <u>removing curies</u> from the waste tanks.

### **Tank Farms**





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### **Pathway to Closure**







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### **Pathway to Closure**





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### **Pathway to Closure**





#### **Final Inventory Determination & Modeling**





### **Closure Module Process**



Standard Closure Module (SRD CM) Alternate Closure Module (ALT CM)

Closure Module + Closure Module Addendum (CMA)







Federal Facility Agreement (FFA) Appendix L, Requirement 9.b.

...When DOE considers waste removal to be complete, DOE shall notify EPA and SCDHEC and provide any supporting documentation to SCDHEC and EPA for review. DOE, SCDHEC and EPA shall mutually agree that waste removal activities may cease.

Next Step is Isolation and Stabilization (i.e., grouting)

### **Closure of Tank Farms**



Cleaning/Grouting of Waste Tanks and Ancillary Structures

**F-Area Tank Farm Today** 



#### Tank Closures

- Tanks 17F & 20F operationally closed in 1997
- Tanks 18F & 19F operationally closed in 2012
- Tanks 5F & 6F operationally closed in 2013
- Tank 16H operationally closed in 2015
- Tank 12H operationally closed in 2016



#### **Closure Cap Concept**



## **FFA Commitments/Tank Status**





#### **Status of non-compliant tanks**

- Eight (8) closed
  - Tanks 5F, 6F, 17F-20F, 12H and 16H
- Three (3) PCWR Complete
  - Tanks 4F, 9H and 10H
- Three (3) w/ongoing waste removal
  - Tanks 3F, 11H and 15H
- Three (3) w/ongoing field modifications
  - Tanks 1F, 2F and 14H
- Seven (7) supporting waste removal and processing (e.g., hub tank, recycle receipt)
   *Tanks 7F, 8F, 13H and 21H-24H*



Schedule for Remaining Non-Compliant Tanks							
Milestone Date	Preliminary Cease Waste Removal	Operational Closure					
	(№ of Tanks)	(№ of Tanks)					
12/31/2023	-	_					
12/31/2024	1	_					
12/31/2025	3	_					
12/31/2026	2	_					
12/31/2027	2	_					
12/31/2028	_	3					
12/31/2029	2	_					
12/31/2030	1	2					
12/31/2031	-	3					
12/31/2032	-	1					
12/31/2033	-	2					
12/31/2034	1	_					
12/31/2035	1	_					
12/31/2036	1	1					
12/31/2037	2	4					







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### **Questions ?**

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