



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
ENVIRONMENTAL  
MANAGEMENT

# Liquid Waste Program Regulatory Update

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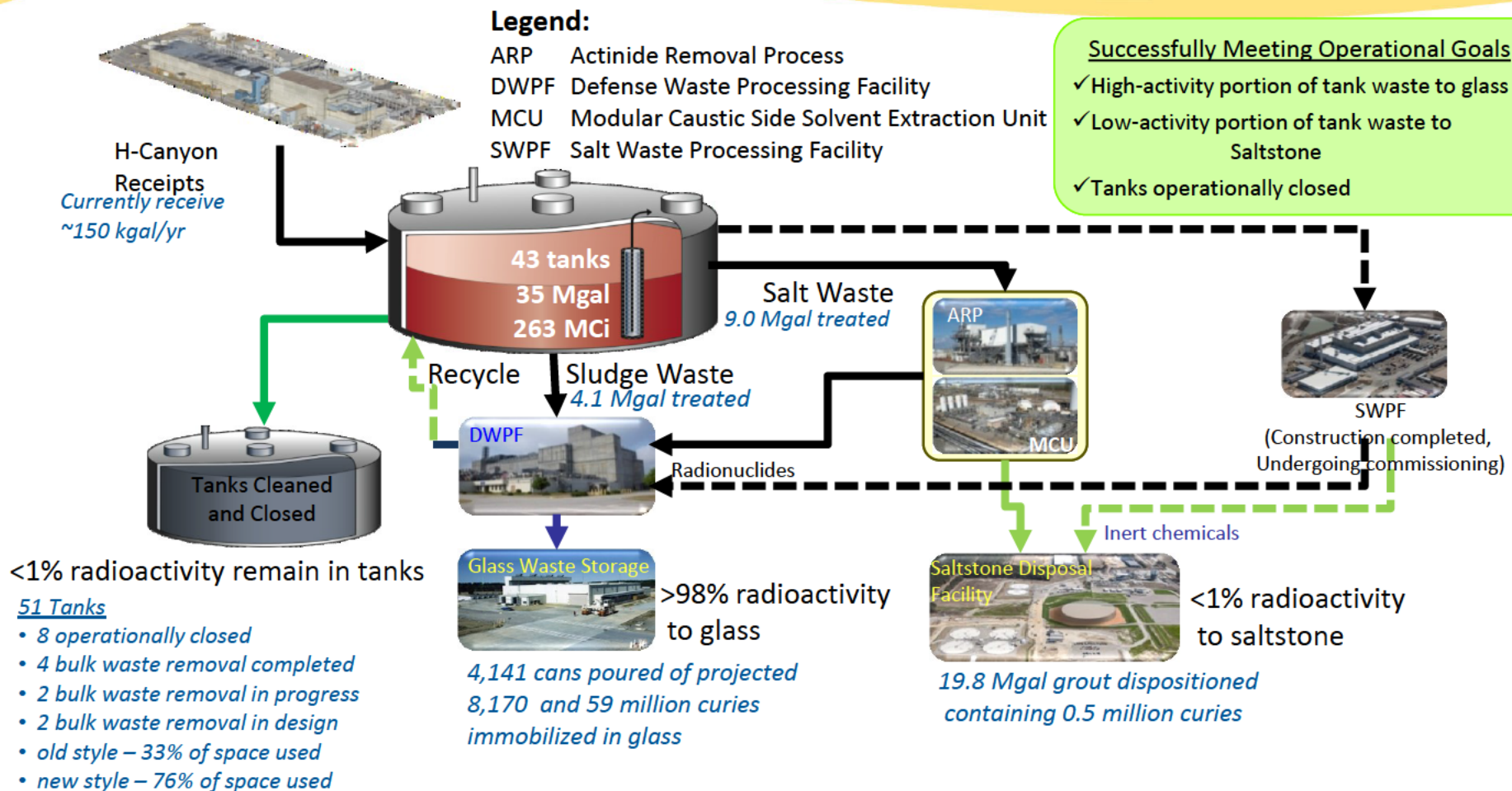
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DOE Savannah River Operations Office  
Waste Disposition Programs Division

**March 2017**

# Purpose

- Provide update regarding recent Liquid Waste Program regulatory decisions
  - Salt Processing Dispute Resolution Agreement
  - 2016 Federal Facility Agreement Milestone
    - Status of Tank 15 and Tank 10
  - Planning 2017 and Beyond
  - Consolidated General Closure Plan

# SRS Liquid Waste Program (as of December 31, 2016)



# Salt Processing Dispute Scope

- Saltstone Solid Waste Landfill Permit
  - Begin operations of Salt Waste Processing Facility by September 30, 2011
  - An exchange of letters extended start date until October 31, 2015 but fines retroactive if not achieved
  - Current target start-up is December 2018
- Main issues to resolve:
  - Salt processing rates and schedule recovery of Liquid Waste Program
  - South Carolina Department of Health and Environmental Control (SCDHEC) calculated ~\$200 Million potential fines and penalties (September 2011 – October 2016) for alleged violation



# Salt Processing Dispute Resolution Agreement - October 31, 2016

- Commence operation of Salt Waste Processing Facility by December 31, 2018
- Perform Supplemental Tank Closure Activities:
  - Tank Closure Cesium Removal Unit 1
    - Technology demonstration report prior to September 30, 2019
  - Tank Closure Cesium Removal Unit 2
  - Deploy next generation solvent in Salt Waste Processing Facility 2 years earlier than planned
  - Sonar mapping technology demonstration
- Process 36.75 Million gallons of liquid waste between FY16 – FY22
  - Reduced processing rates allowed **if** SCDHEC approves DOE's justification
  - Agreement will continue until 36.75 Million gallons achieved
  - After agreement, DOE to process at least 8 Million gallons/year

## Complete Bulk Waste Removal Efforts for 2 tanks by September 30, 2016

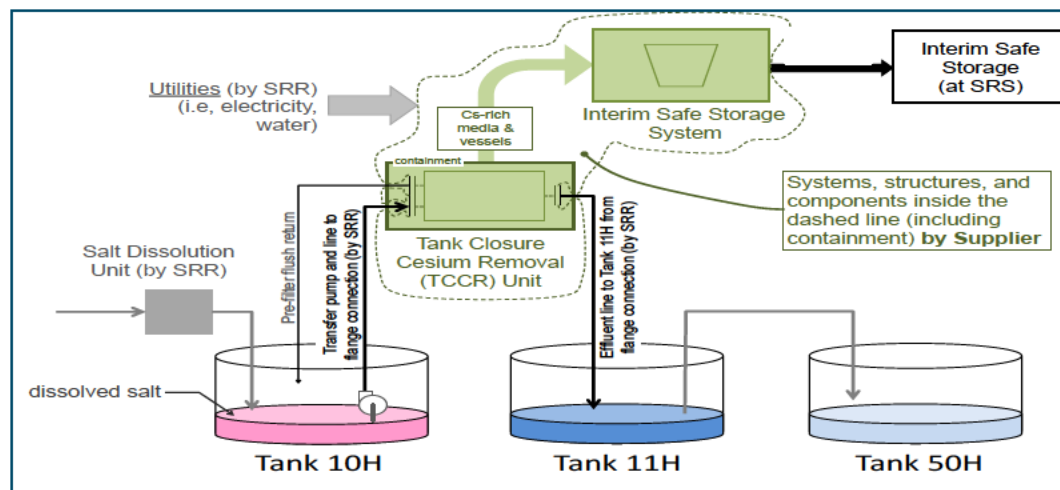
- In June 2016 DOE requested an extension which Environmental Protection Agency (EPA) and SCDHEC denied
- The three parties used the informal dispute resolution process to resolve:
  - Complete Bulk Waste Removal Efforts:
    - Tank 15H – October 31, 2017
    - Tank 10H – August 31, 2018
  - DOE provide monthly technical report on status of Tank 15
  - Two meetings between April 1 and August 31 for three agencies to discuss plans for 2017 milestones

# Status of Tank 15H Waste Removal

- 1<sup>st</sup> use of four Submersible Mixing Pumps
- Waste removed (sludge slurry) and sent to Tank 13H
- Tank 13H supernate (liquid) recycled back to Tank 15H
- Operating Plan assumes six waste removal campaigns needed
  - 1<sup>st</sup> campaign completed – February 26, 2017
  - Revised Federal Facility Agreement Milestone (October 31, 2017) has no schedule contingency
  - Risk tracking – have experienced significant schedule delays to date
  - Final campaign forecasted completion is December 2017

# Status of Tank 10 Waste Removal – Tank Closure Cesium Removal Unit 1 Demonstration

- Subcontract awarded July 2016
- Equipment arrives onsite October 2017
- Equipment installation, procedures, training and start-up testing May 2018
- Complete Tank 10 treatment  
~ September 2018
- Technology demonstration  
report of technical feasibility  
and economic efficiency  
~ January 2019



- Two meetings between April 1 and August 31 for DOE, EPA and SCDHEC to discuss plans for 2017 Federal Facility Agreement milestones
  - First Meeting scheduled May 16, 2017
  - Second Meeting to be determined
- Subsequent Federal Facility Agreement Milestones to be determined considering:
  - New Liquid Waste contract
  - New performance baseline, updated system planning, system health, results of Tank Closure Cesium Removal demonstration, etc...



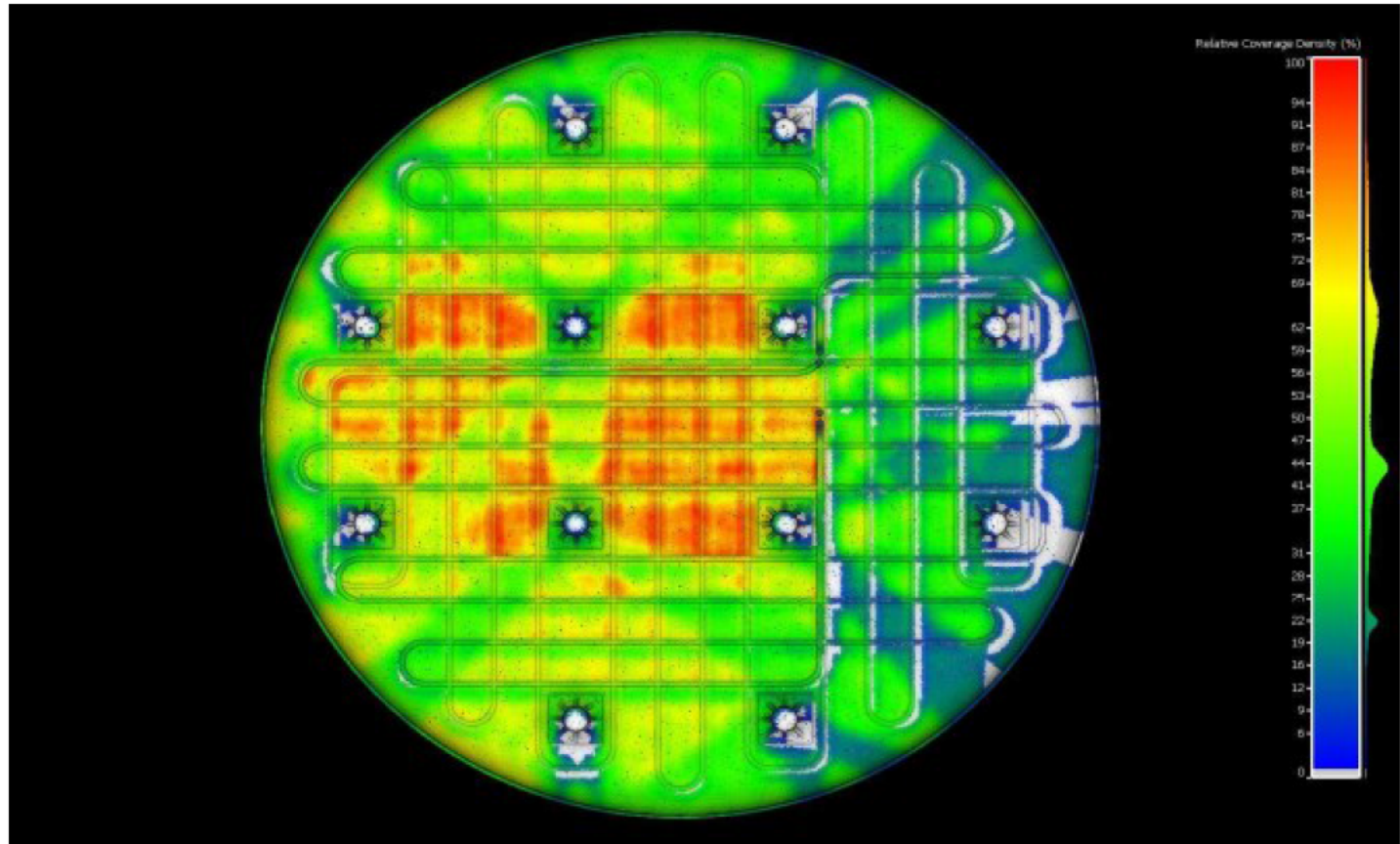
# Consolidated General Closure Plan for F-Area and H-Area Tank Farms

- SCDHEC approved F Tank Farm General Closure Plan used to close Tanks 18, 19, 5 and 6
- SCDHEC approved H Tank Farm General Closure Plan used to close Tanks 16 and 12
- Consolidated General Closure Plan
  - Incorporates lessons learned
  - Streamlines process and Closure Module development/approval
  - Provides flexibility for isolation and grouting sequence
- Public Review and Comment Period: March 1 – 31, 2017
  - Written Comments Only
  - Julie Song SCDHEC/Water, 2600 Bull St. Columbia, SC 29201-1708
  - [songjj@dhec.sc.gov](mailto:songjj@dhec.sc.gov)



**Questions  
And  
Comments?**

## Back-up Slides





# Status of Tank 15H Waste Removal





**Initial Supernate Transfer**

**Campaign 1**  
125 days (10/24/16 - 2/26/17)

**Campaign 2**  
~60 days

**Campaign 3**  
~60 days

**Campaign 4**  
~60 days

**Campaign 5**  
~60 days

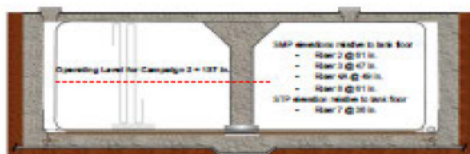
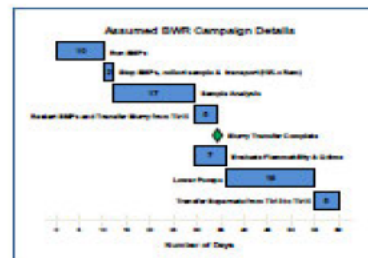
**Campaign 6**  
~60 days

**Campaign 8**  
~35 days

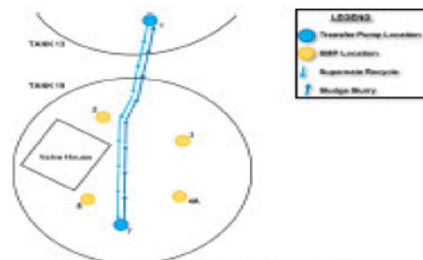
**Data Date**  
March 01, 2017

**Note for Campaigns 2 - 6:** 60-day durations assume adequate settling of solids in T413 during T416 pump lowering period. 90-day durations assume receipt tank is available for transfers out of T413. T416 flow sheet currently under review; will be updated to account for slow settling solids. Impacts TBD.

**Note for Campaigns 2 & 4:** ~20 additional days believed to be required for transfer out of T413, and transfer of additional supernate back to T413.



### Tank 15H Profile View



### Tank 15H Plan View

Campaign Number	Initial Liquid Level (in.)	Water/Chemical Additions to Tk. 15 (gal)	Supernatant Transferred to Tk. 15 (gal)	SMP Operation Time (hrs)	Volume Transferred Out (gal)	Estimated Sludge Solids Removed (gal)	Estimated Sludge Solids Remaining (gal)	TANK 15H REFERENCE NUMBERS
Initial Xfer	83	N/A	186,775	N/A	N/A	N/A	167,000	Nominal Tank Capacity = 1,570,000 gal Initial Estimated Sludge Volume (Dry - Settled) = 187,000 gal Known Leak Sites = 24
1	137	15,940	331,100	335	342,900	42,000	145,000	ACRONYMS AND ABBREVIATIONS
2	137	700						DWR – Bulk Waste Removal
3								SMP – Submersible Mixing Pump
4								STP – Submersible Transfer Pump
5								CTS – Conduity Transfer System
6								Tk – Tank
Total	N/A	16,640	517,875	335	342,900	42,000	145,000	gal – gallons hrs – hours in. – inches

## FEBRUARY PROGRESS NOTES

- No safety events
- Turbidity measurement in Tk 13 indicated suspended sludge solids are settling much slower than originally anticipated
  - Turbidity results indicate the transfer from Tk13 to Tk51 will be required sooner than originally planned in order to maintain acceptable slurried sludge volume in Tk13 for Q-time management
- Tk15 SMPs in Risers 2 and 3 were lowered successfully
  - New elevations from tank floor: 61" and 47" respectively
- An attempt was made to lower the SMP in Tk15 Riser 8 but was unsuccessful due to proximity of sludge beneath pump suction
  - SMP was restored to previous configuration and will operate at 61" during campaign 2
- Tk 15 SMP in Riser 4A was not lowered (already at desired elevation per flowsheet)
- Completed recycle transfer from Tk13 to Tk15 on 2/26 (331,100 gal)
- Tk13 SMPs were operated to reset Q-time on 2/27 (next run required by 3/31)
- Tk15 annulus level steady - ventilation fully operational

## RISK TRACKING

- Weather Delays –
  - Hurricane Matthew delays restart of transfer (5 days)
- Equipment Issues –
  - Tk13 Riser B Transfer Hoses in-tank Union (17 days)
  - VFD parameter acceptance requires reprogramming (6 days)
  - Tk13 SMP operability issues require troubleshooting (45 days)
- Annulus In-leakage –
  - Installation of CTS and Instrumentation adjustment (7 days)
- Sludge Solids Settling Rate –
  - Tank 13 Q-time shortened; earlier mixing required (2 days)
  - Flowsheet rework required (potential impact TBD)
- Sludge Rheology Issues – none to date
- Radiological Issues – none to date
- Resource Limitations – Transfer delayed due to resource limitations over holiday weekend (7 days)
- Sample Analysis Delays – none to date

# Status of Older Style Tanks at F-Tank Farm

Type I	1	Saltcake Tank
	2	Saltcake Tank
	3	Saltcake Tank – BWRE Design
	4	BWRE Complete - Limited Reuse Approved
	5	Operationally Closed (December 2013)
	6	Operationally Closed (December 2013)
	7	BWRE Complete - Limited Reuse Approved
	8	BWRE Complete - Limited Reuse Approved
Type IV	17	Operationally Closed (December 1997)
	18	Operationally Closed (September 2012)
	19	Operationally Closed (August 2012)
	20	Operationally Closed (July 1997)

# Status of Older Style Tanks at H-Tank Farm

Type I	9	Saltcake Tank - BWRE Design
	10	Saltcake Tank - BWRE Initiated
	11	BWRE Complete - Limited Reuse Approved
	12	Operationally Closed (April 2016)
Type II	13	Sludge Hub Tank
	14	Saltcake Tank
	15	BWRE Initiated (October 2016)
	16	Operationally Closed (September 2015)
Type IV	21	Salt Batch Prep
	22	DWPF Recycle Storage
	23	Salt Batch Prep
	24	High Caustic Supernate