



# Liquid Waste Overview



April 26, 2011

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Technical Planning and Risk Management  
Savannah River Remediation

- Liquid Waste Objectives
- Overview of Liquid Waste Facilities and Processes
  - Tanks
  - Waste Removal
  - Sludge Processing
  - Salt Processing



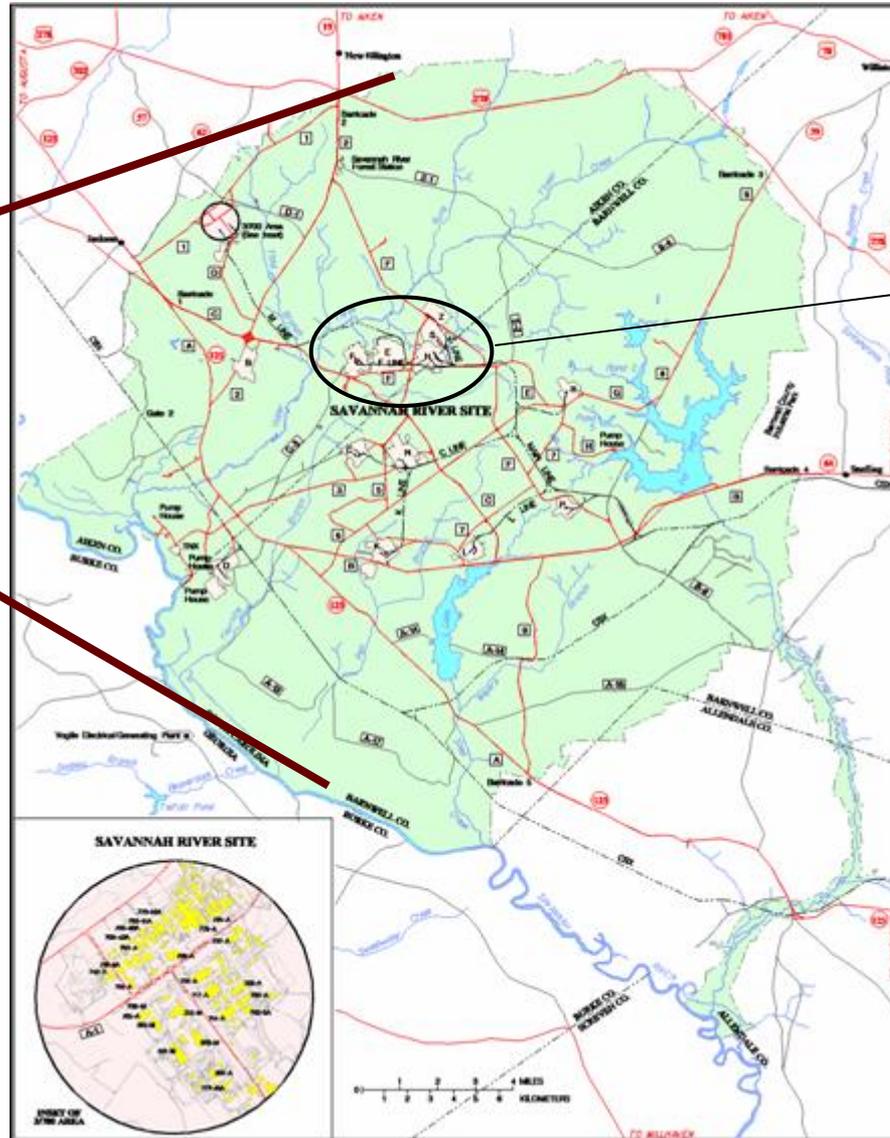
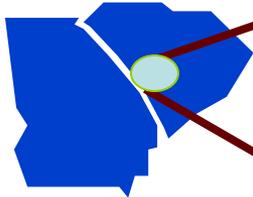
## Safe disposal of the Savannah River Site waste

- Eliminate risks versus managing risks
- Protect the public, the workers and the environment
- Reduce the life cycle costs

- Process salt waste and reclaim tank space
- Reduce lifecycle cost and schedule for salt processing
- Reduce lifecycle cost and schedule for sludge processing
- Close tanks
- Support H-Canyon nuclear materials stabilization operations



We do the right thing.

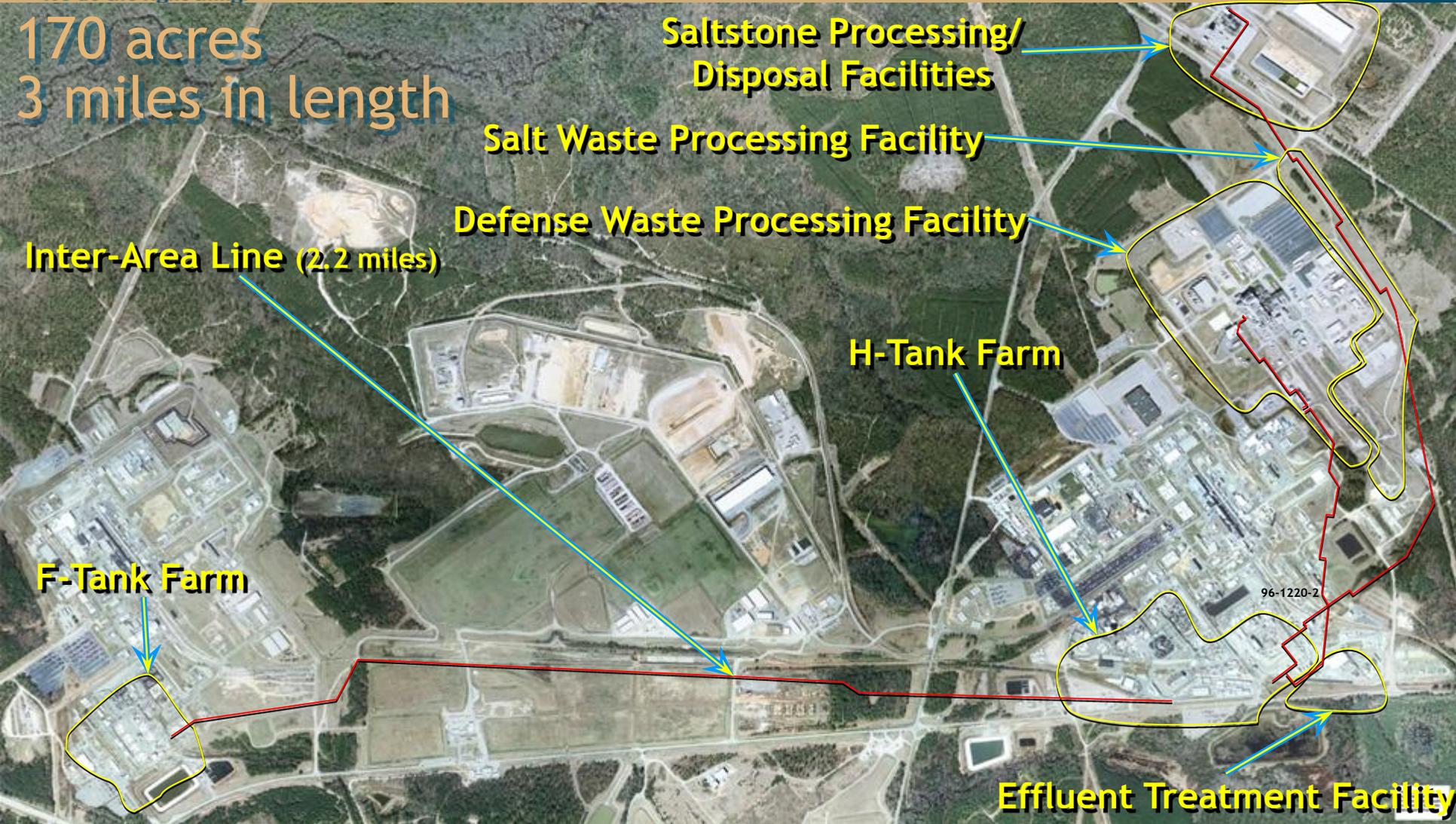


Liquid Waste  
Facilities



*We do the right thing.*

170 acres  
3 miles in length



Inter-Area Line (2.2 miles)

Saltstone Processing/  
Disposal Facilities

Salt Waste Processing Facility

Defense Waste Processing Facility

H-Tank Farm

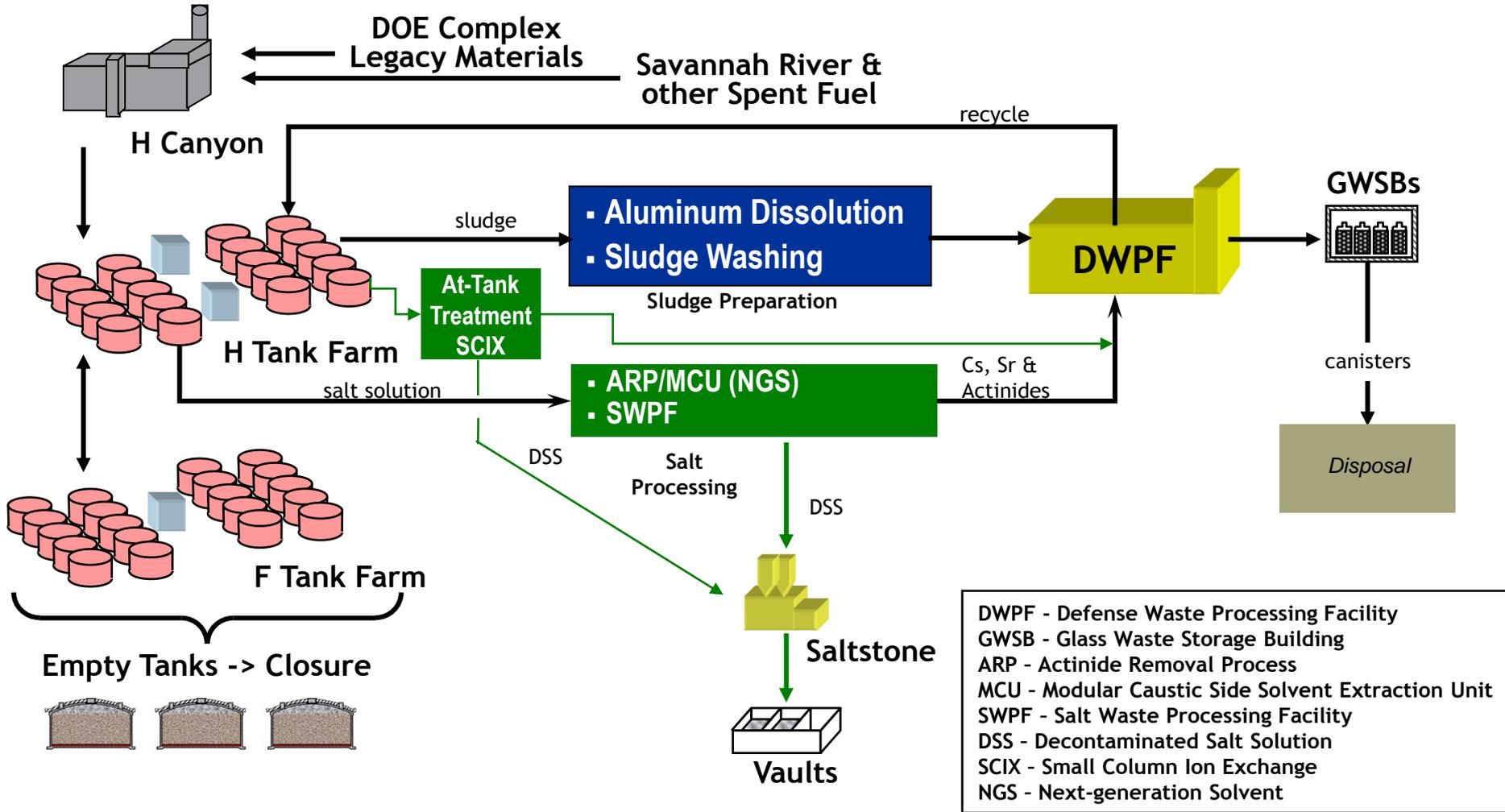
F-Tank Farm

Effluent Treatment Facility

96-1220-2



# Liquid Waste System



DWPF - Defense Waste Processing Facility  
 GWSB - Glass Waste Storage Building  
 ARP - Actinide Removal Process  
 MCU - Modular Caustic Side Solvent Extraction Unit  
 SWPF - Salt Waste Processing Facility  
 DSS - Decontaminated Salt Solution  
 SCIX - Small Column Ion Exchange  
 NGS - Next-generation Solvent





Tank Top - High Level  
Waste Tank 16

## ➤ Tank Farm Operations

- Continue storing liquid radioactive wastes in a safe and environmentally sound manner
- Remove waste and prepare for salt and sludge treatment

## ➤ Waste Treatment

- Operate DWPF to process high-activity components of sludge and salt streams into a vitrified waste form for future permanent disposal
- Operate the Saltstone Processing Facility to process low-activity waste for disposal at the Saltstone Disposal Facility



Workers Lowering  
Equipment into Waste Tank

## ➤ Tank Closure

- Clean and Close non-compliant tanks meeting the requirements of the Waste Determination (WD) Basis documents and Federal Facility Agreement (FFA) schedules

## ➤ Salt Disposition Integration

- Install infrastructure to support future operation of Salt Waste Processing Facility (SWPF)

## ➤ Small Column Ion Exchange (SCIX)



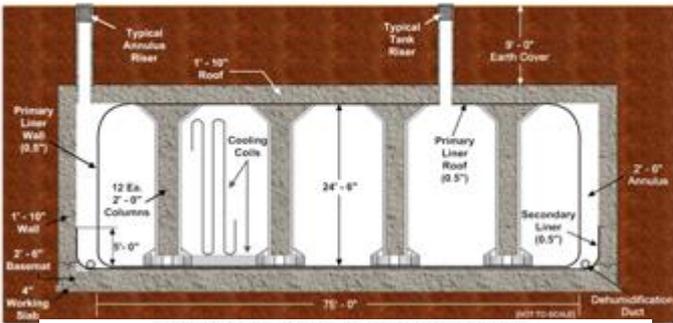
DWPF Canister Pouring  
Operations



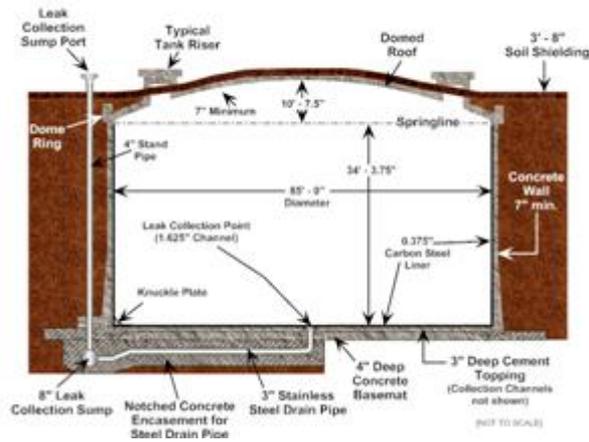
Effluent Treatment Plant  
Control Room

We do the right thing.

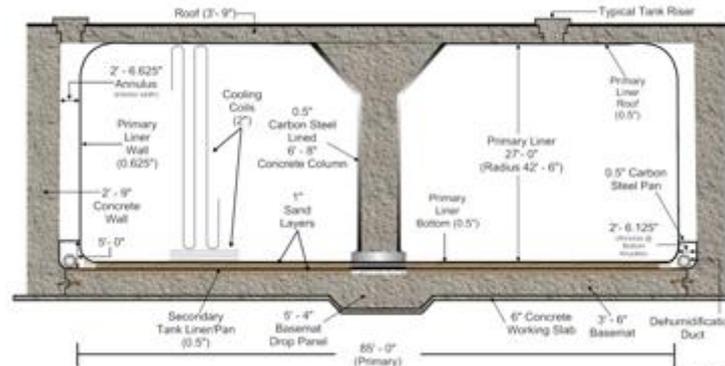
**TYPICAL TYPE I WASTE TANK**



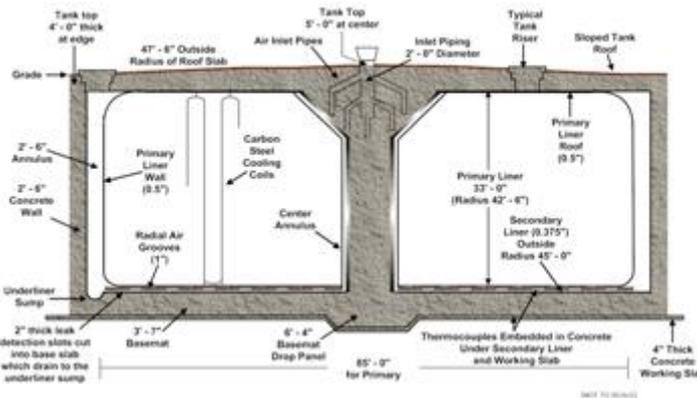
**TYPICAL TYPE IV WASTE TANK**



**TYPICAL TYPE II WASTE TANK**



**TYPICAL TYPE IIIA WASTE TANK**



51 Tanks

24 “Old-Style”

- Types I, II & IV

- 2 closed

- 6 emptied

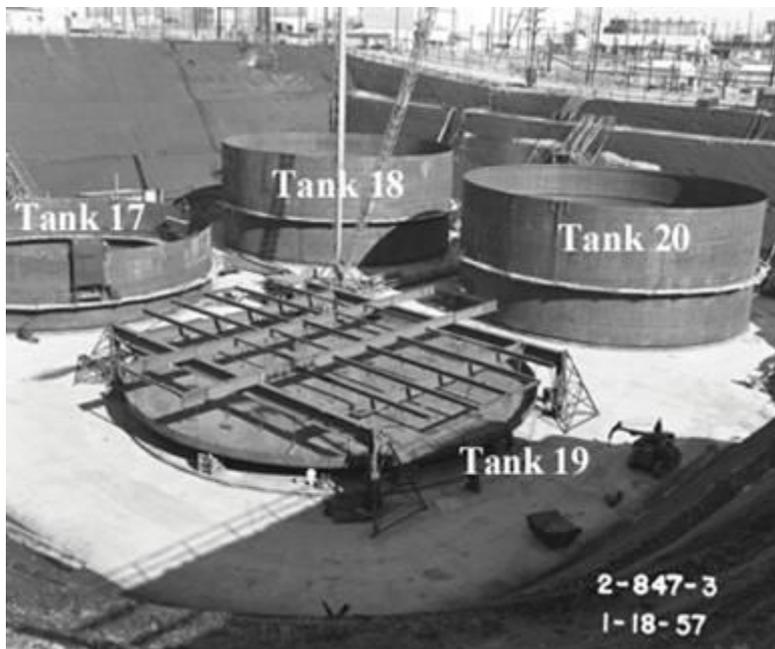
- 18 contain waste

27 “New-Style”

- Type III/IIIA



# Type IV Tank Construction

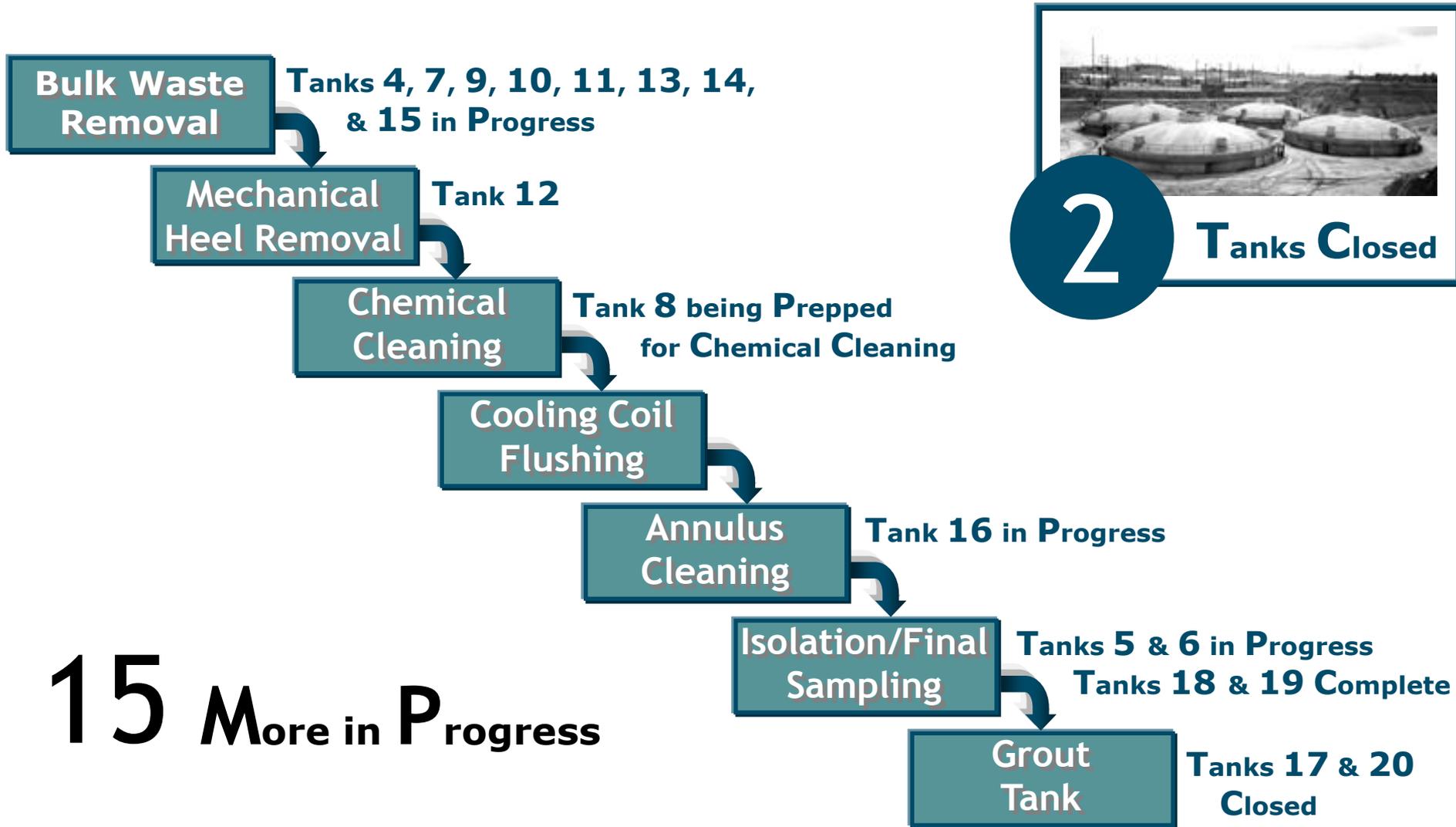


**Inner Carbon Steel Liner**

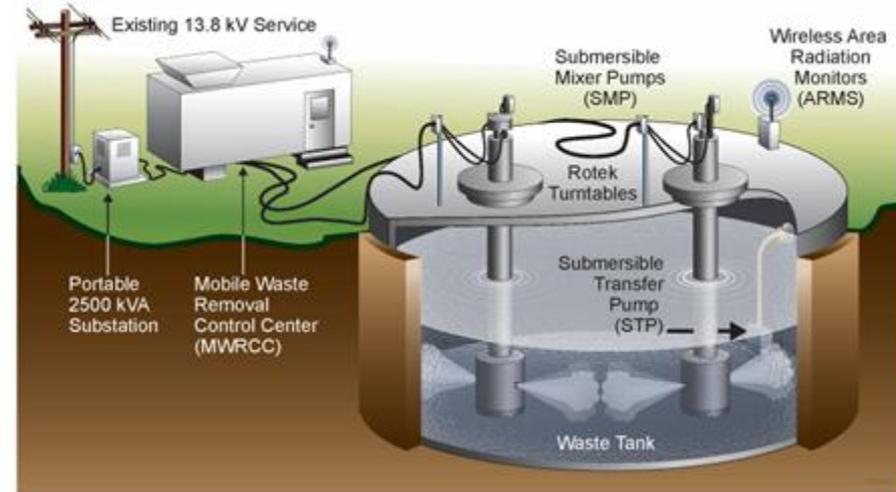


**Outer Concrete Tank**

# Tank Closure Status



- Submersible Mixer Pumps (SMPs)
  - 7,600 gpm, 300 hp, floor mounted, reliable, easy to decon, reusable
  - Local, portable control station & power supply
- Hydrolances
  - High pressure spot cleaning in dormant areas of the tank
  - Used in concert with SMPs
- Robotic vacuum system for SRS tanks with no cooling coils



**BEFORE CLEANING**



**SAND MANTIS**

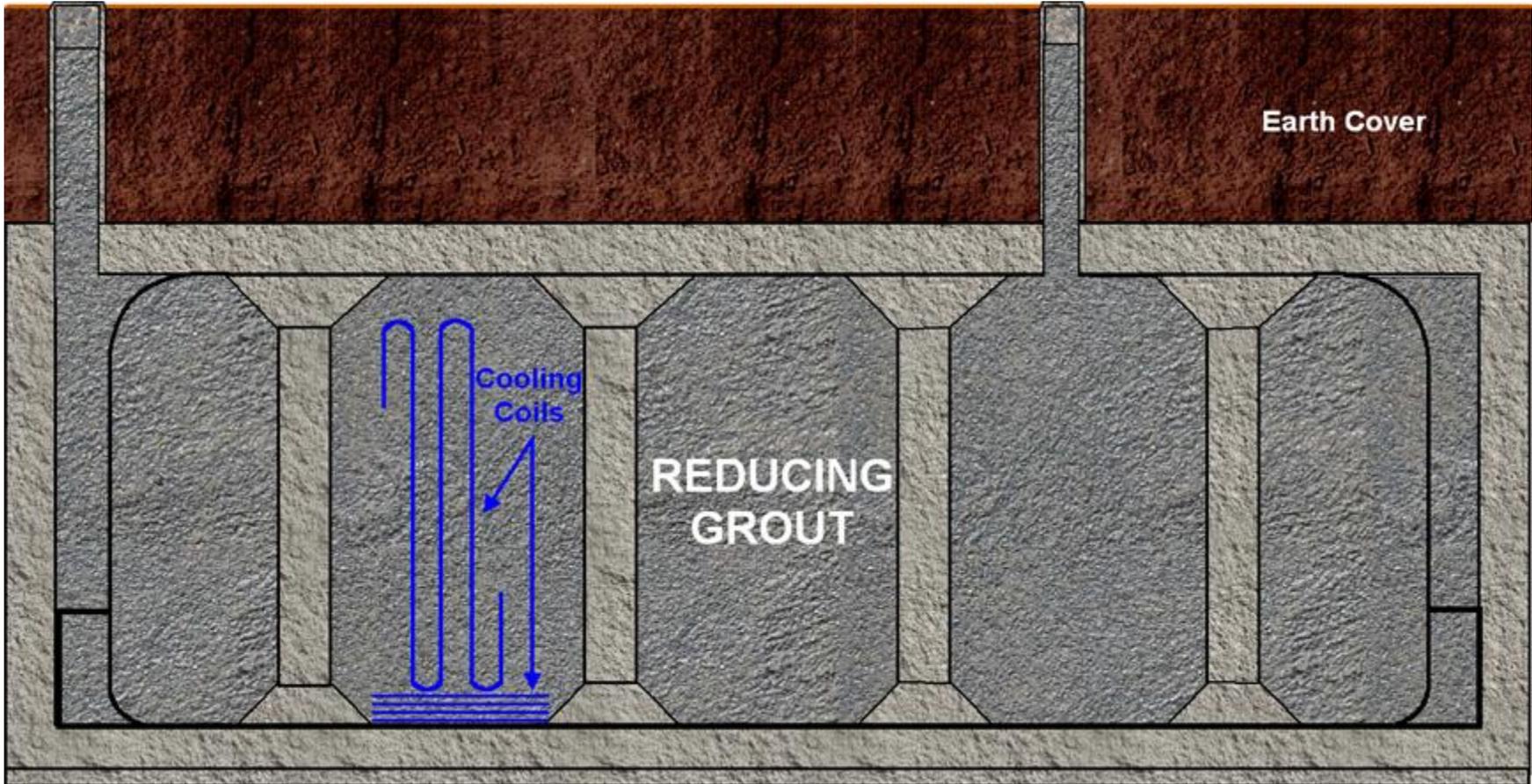


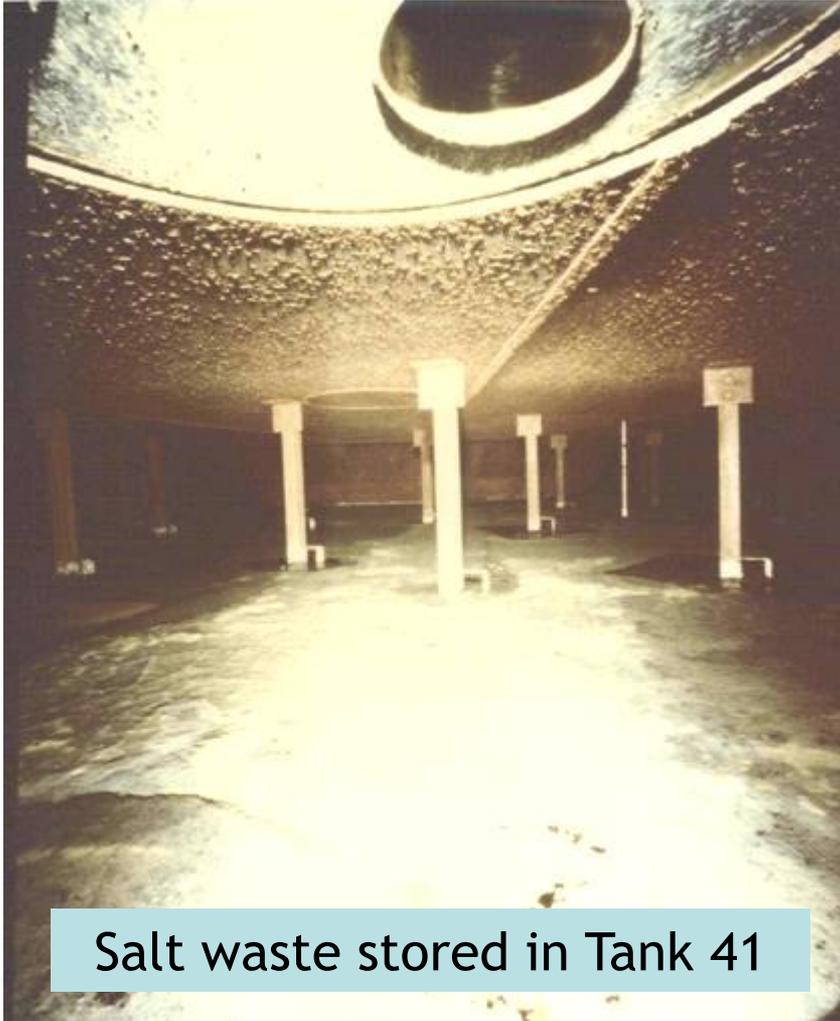
**AFTER CLEANING**

*We do the right thing.*

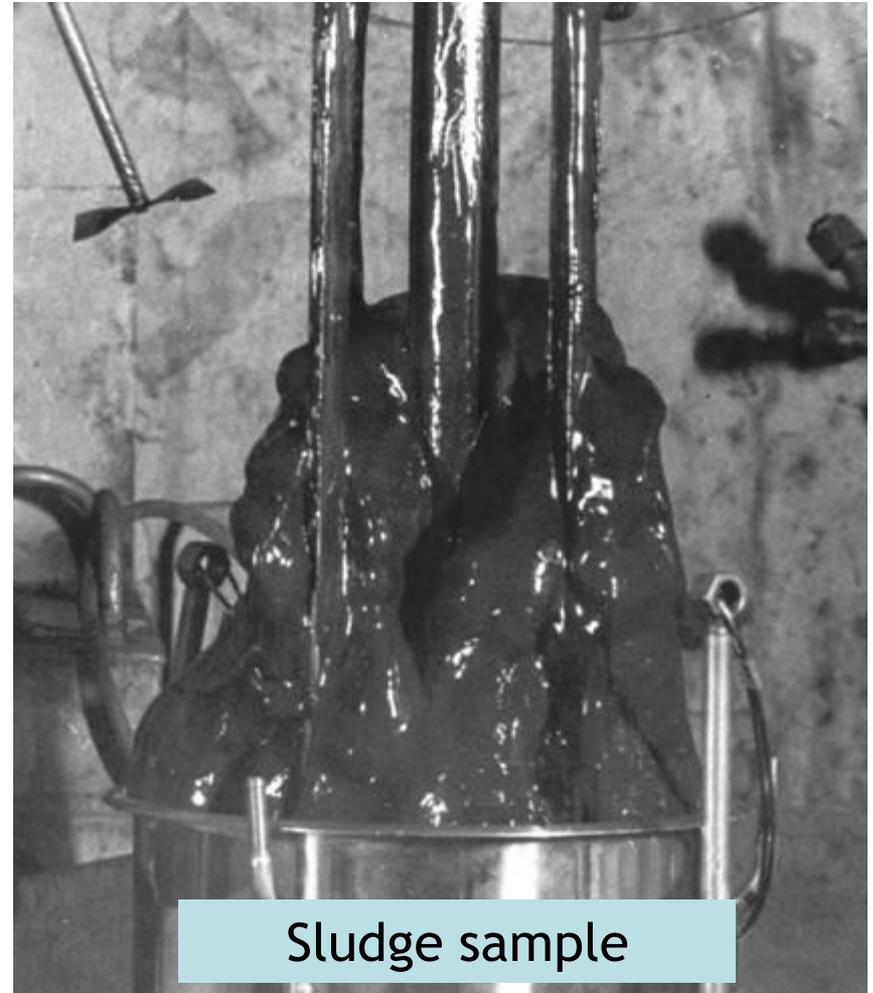




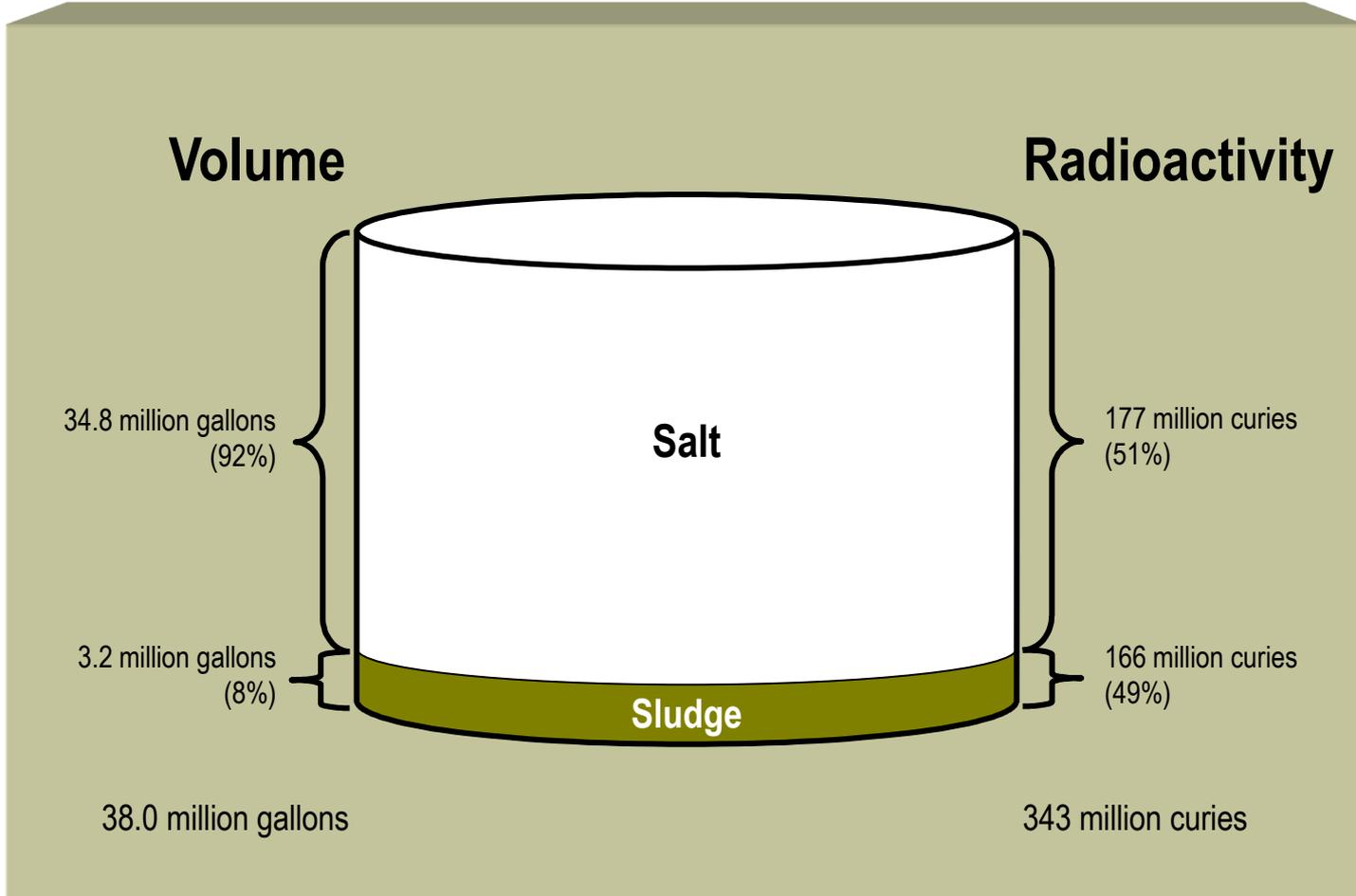




Salt waste stored in Tank 41

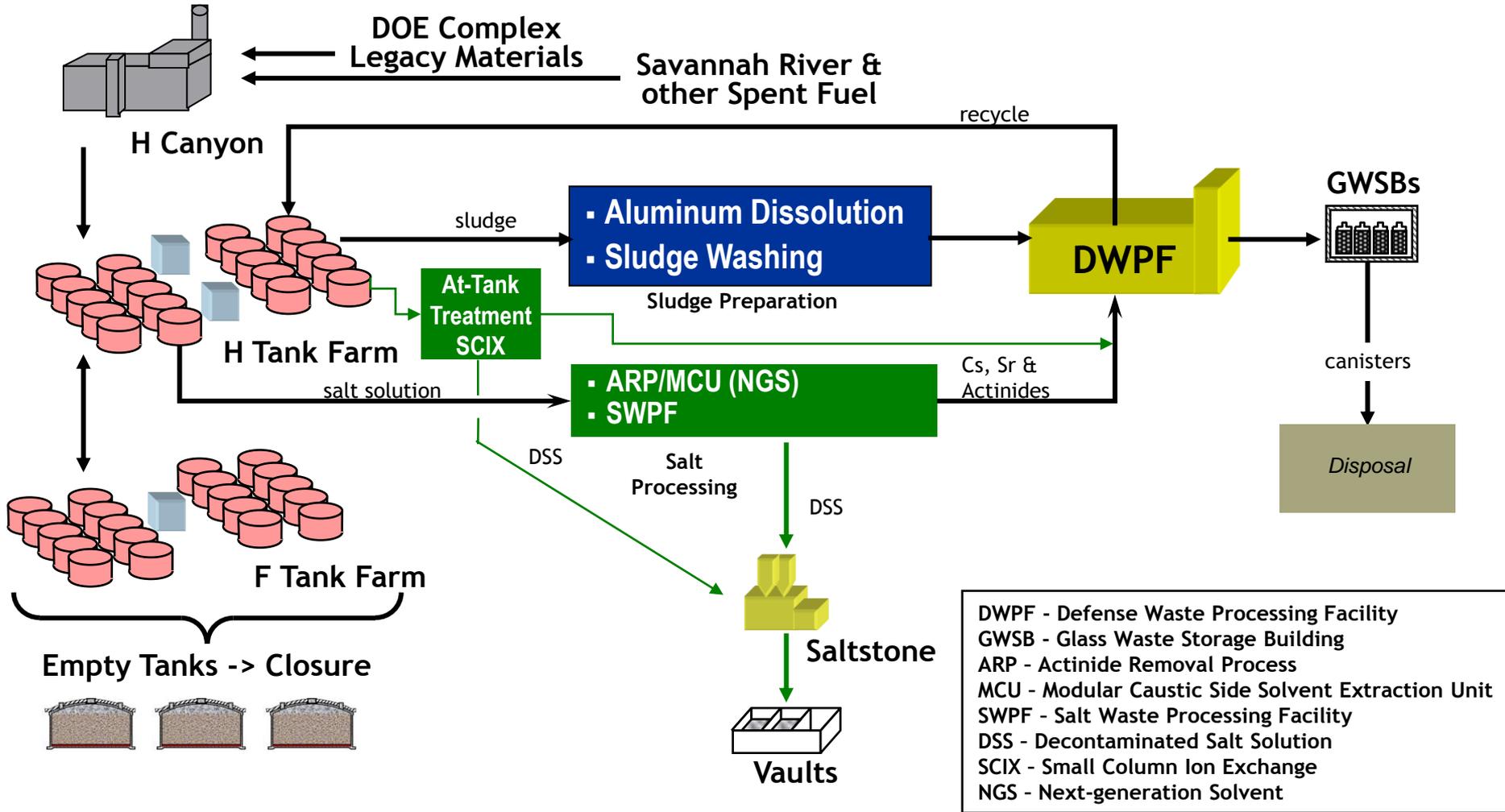


Sludge sample



Inventory values as of 2010-12-31

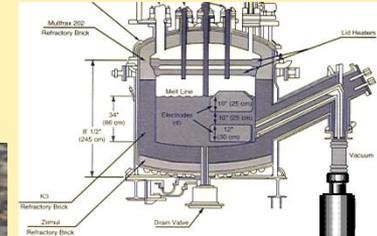
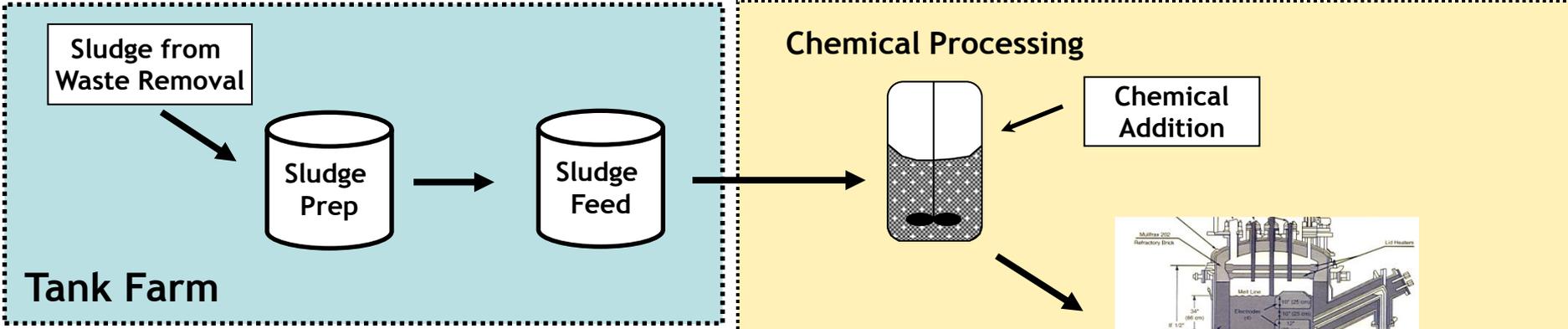
# Liquid Waste System



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# Sludge Processing



Glass Melting

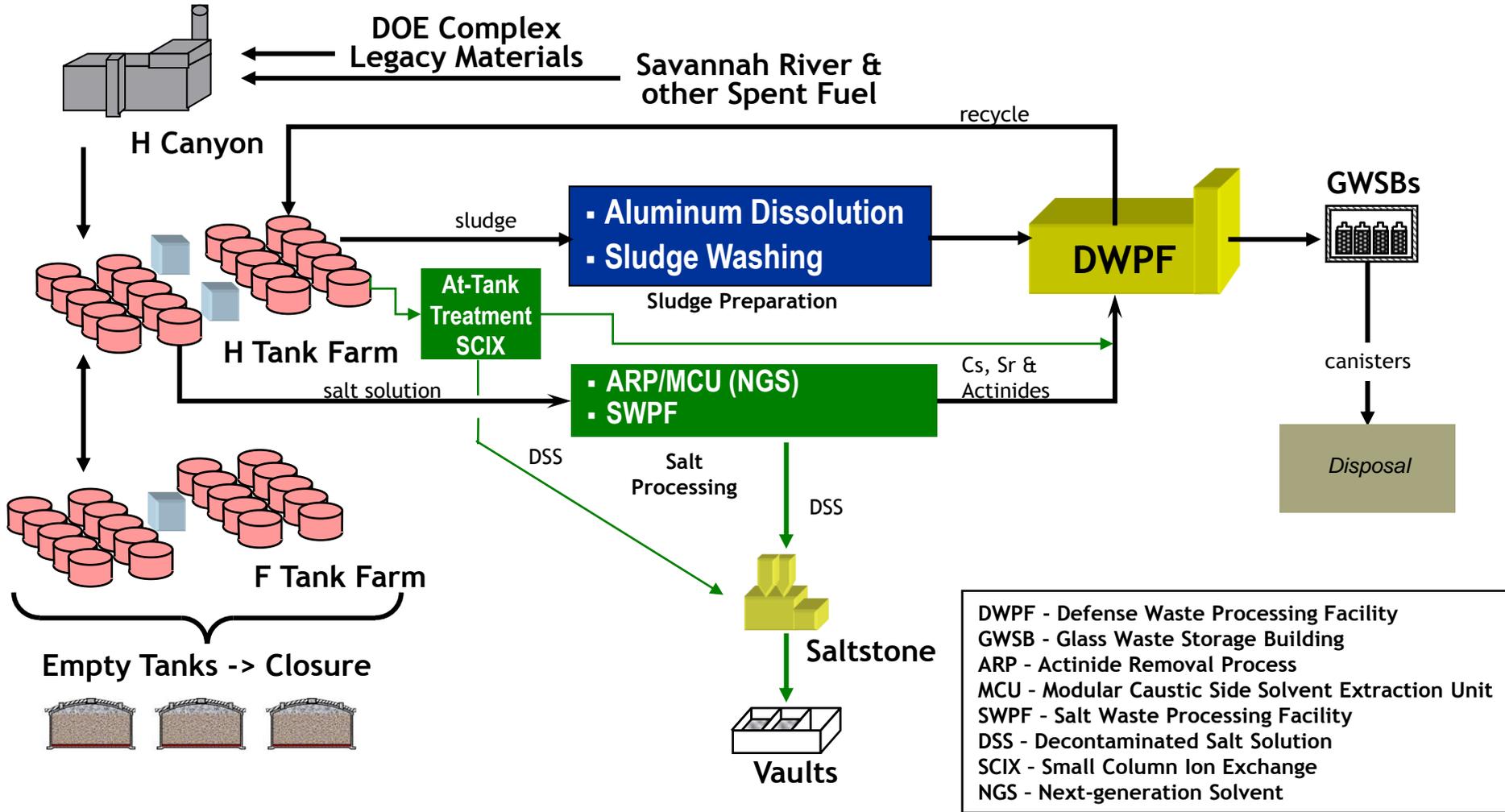
Glass Waste Storage Building



Defense Waste Processing Facility



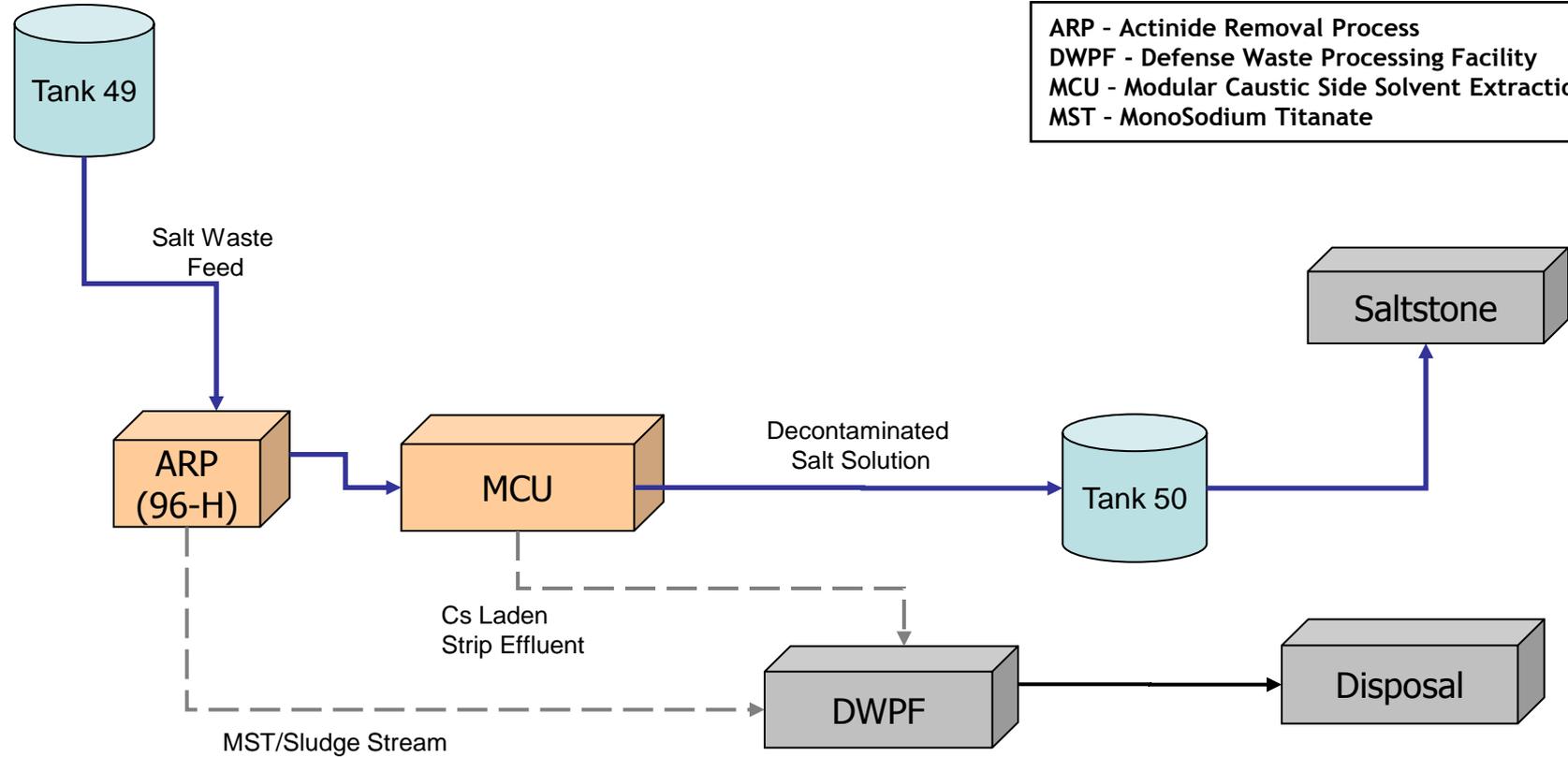
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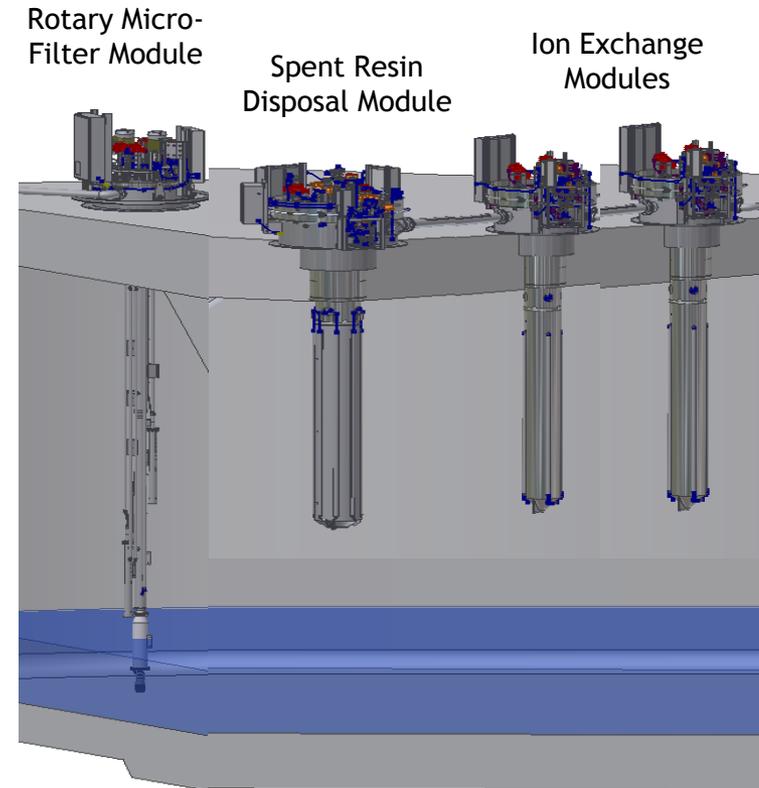
# Salt Treatment Facilities



ARP - Actinide Removal Process  
 DWPF - Defense Waste Processing Facility  
 MCU - Modular Caustic Side Solvent Extraction Unit  
 MST - MonoSodium Titanate



- Deploy At-tank treatment process
  - Rotary Microfilter
  - Small Column Ion Exchange
  - Spent Resin Disposal
- Provide additional salt processing capability
- Operational Expectations
  - Throughput: 2.5 Mgal/yr



*We do the right thing.*



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## Safe disposal of the Savannah River Site waste

- Eliminate risks versus managing risks
- Protect the public, the workers and the environment
- Reduce the life cycle costs



ARP	Actinide Removal Process
Cs	Cesium
DWPF	Defense Waste Processing Facility
ECC	Enhanced Chemical Cleaning
FBSR	Fluidized Bed Steam Reformer
FFA	Federal Facility Agreement
FTF	F Tank Farm
HLW	High Level Waste
HTF	H Tank Farm
ISDP	Interim Salt Disposition Project
MCU	Modular Caustic-Side Solvent Extraction Unit
MST	Monosodium Titanate
SCIX	Small Column Ion Exchange
SDF	Saltstone Disposal Facility
SPF	Saltstone Processing Facility
SWPF	Salt Waste Processing Facility