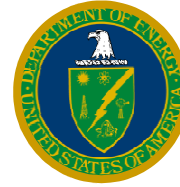




We do the right thing.

SRR-LWP-2011-00016



Liquid Waste Overview



May 24, 2011

Doug Bumgardner
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

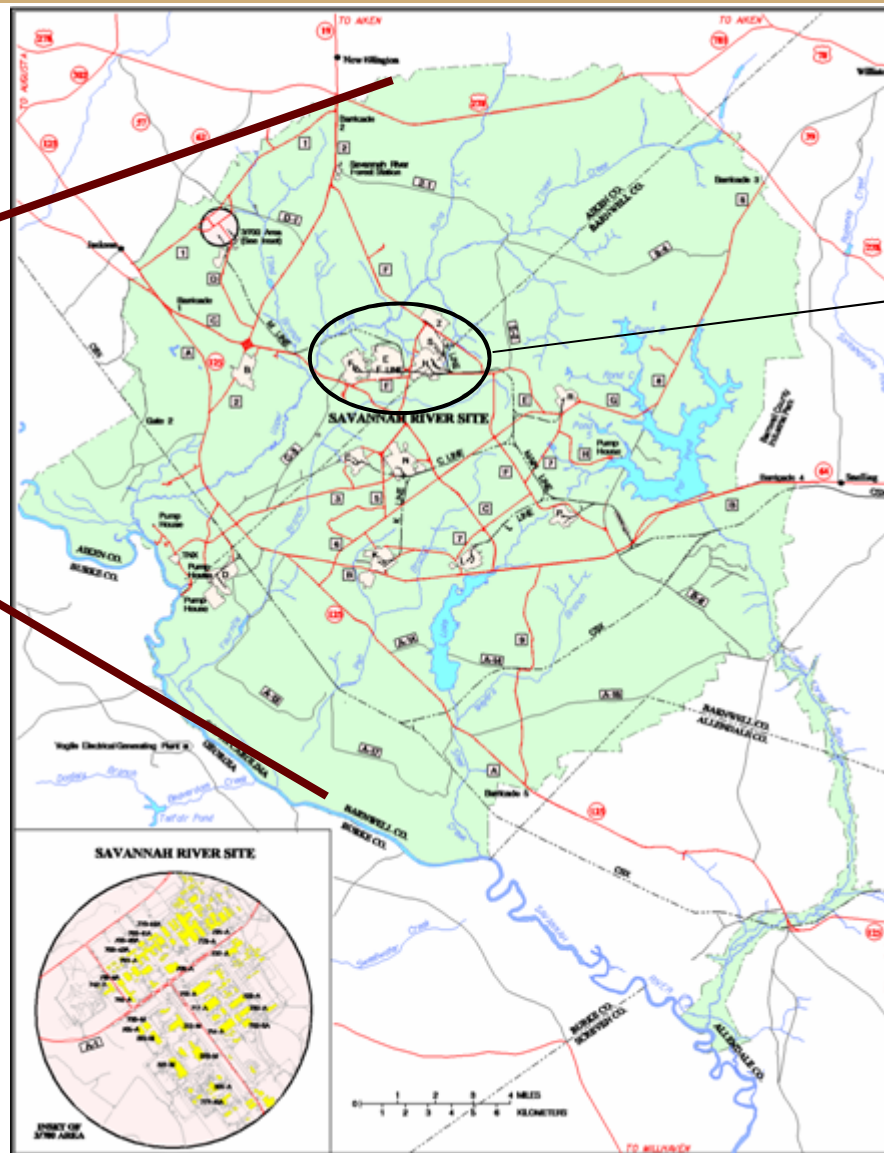
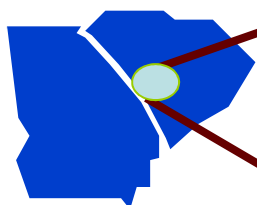


Liquid Waste Program Objectives

- 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



Savannah River Site



Liquid Waste
Facilities



Liquid Waste Facilities

170 acres

Saltstone Processing/
Disposal Facilities

Salt Waste Processing Facility

Defense Waste Processing Facility

H-Tank Farm

Inter-Area Line (2.2 miles)

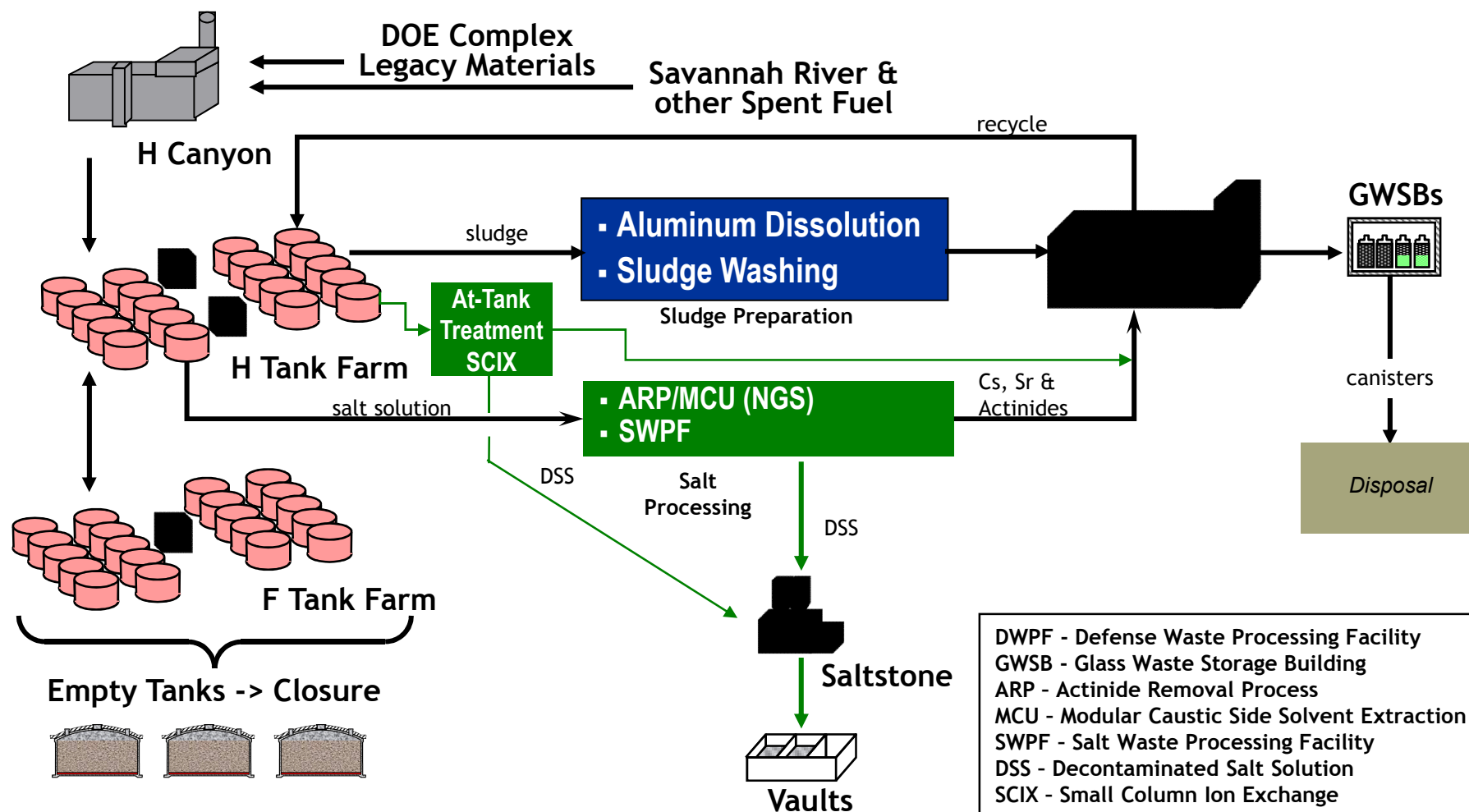
F-Tank Farm

96-1220-2

Effluent Treatment Facility



Liquid Waste System



Liquid Waste Work Scopes



Tank Top - High Level
Waste Tank 16



Workers Lowering
Equipment into Waste Tank

➤ 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

➤ 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

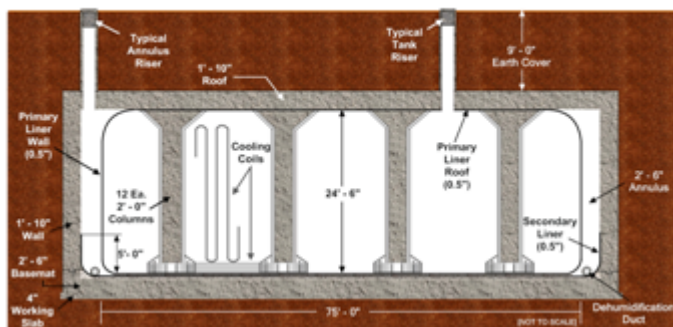


Effluent Treatment Plant
Control Room

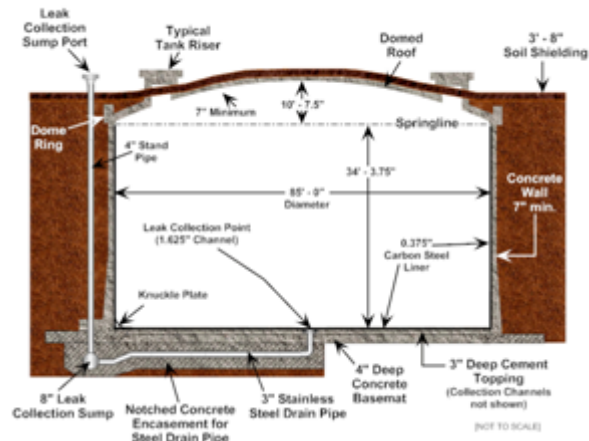


Tank Designs

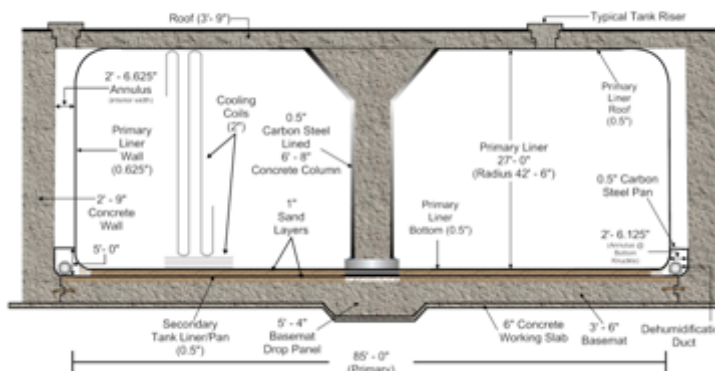
TYPICAL TYPE I WASTE TANK



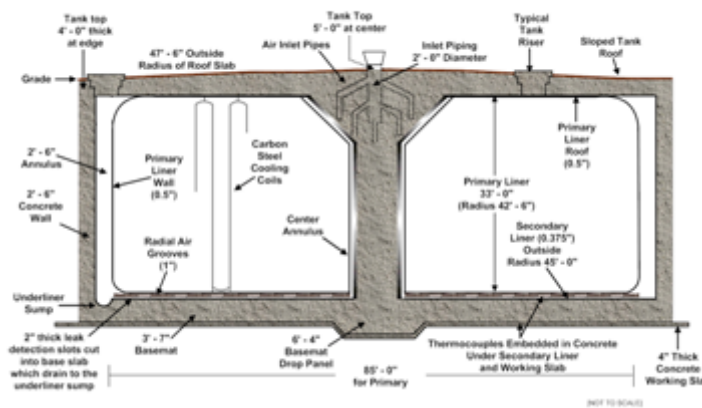
TYPICAL TYPE IV WASTE TANK



TYPICAL TYPE II WASTE TANK



TYPICAL TYPE IIIA WASTE TANK



51 Tanks

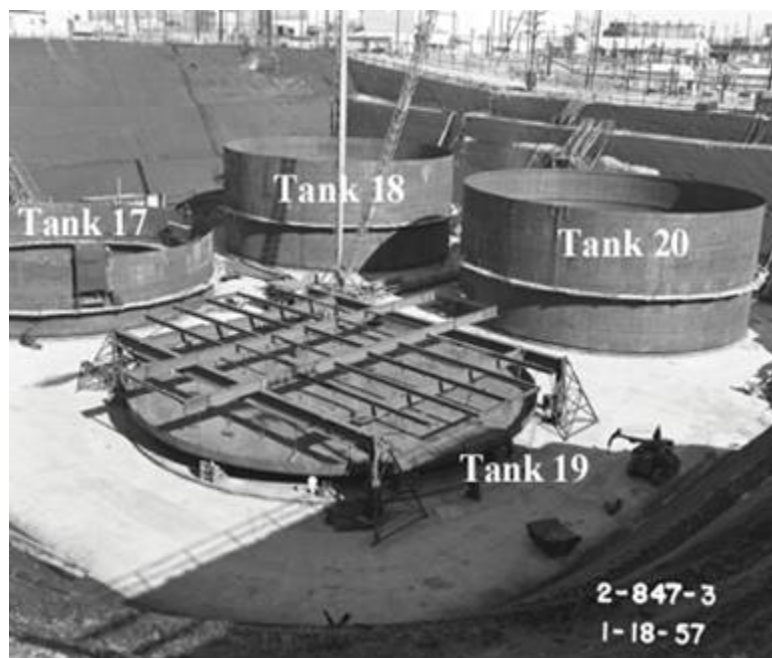
24 “Old-Style”

- 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



2

Tanks Closed

Bulk Waste Removal

Tanks 4, 7, 9, 10, 11, 13, 14, & 15 in Progress

Mechanical Heel Removal

Tank 12

Chemical Cleaning

Tank 8 being Prepped for Chemical Cleaning

Cooling Coil Flushing

Annulus Cleaning

Tank 16 in Progress

Isolation/Final Sampling

**Tanks 5 & 6 in Progress
Tanks 18 & 19 Complete**

Grout Tank

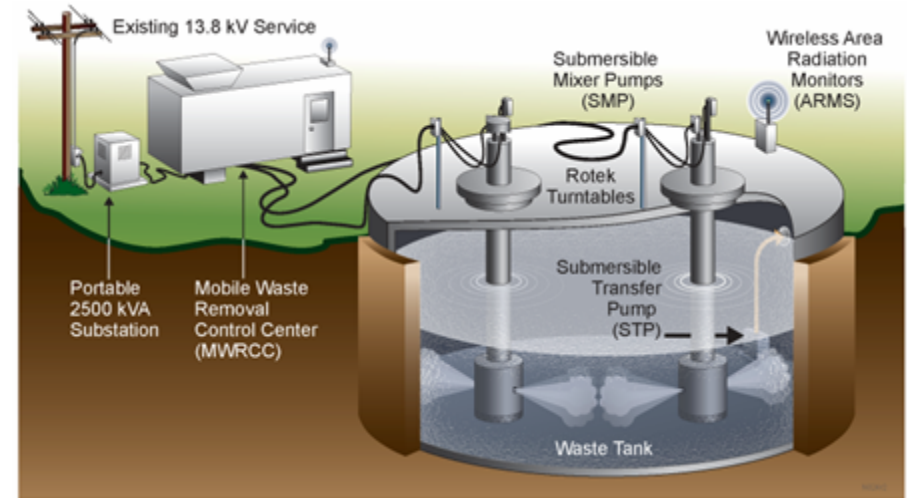
Tanks 17 & 20 Closed

15 More in Progress



Waste Retrieval

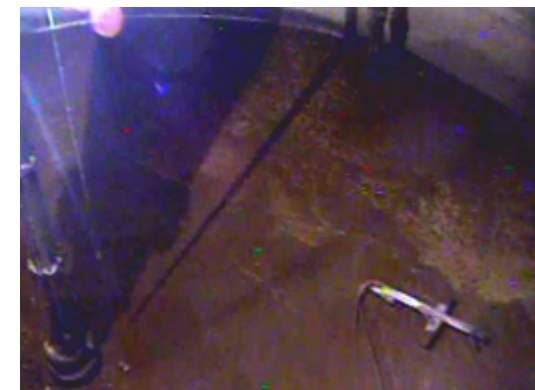
- Submersible Mixer Pumps (SMPs)
 - 7,600 gpm, 300 hp, floor mounted, reliable, easy to decon, reusable
 - Local, portable control station & power supply
- Hydrolances
 - High pressure spot cleaning in dormant areas of the tank
 - Used in concert with SMPs
- Robotic vacuum system for SRS tanks with no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



BEFORE CLEANING



SAND MANTIS



AFTER CLEANING

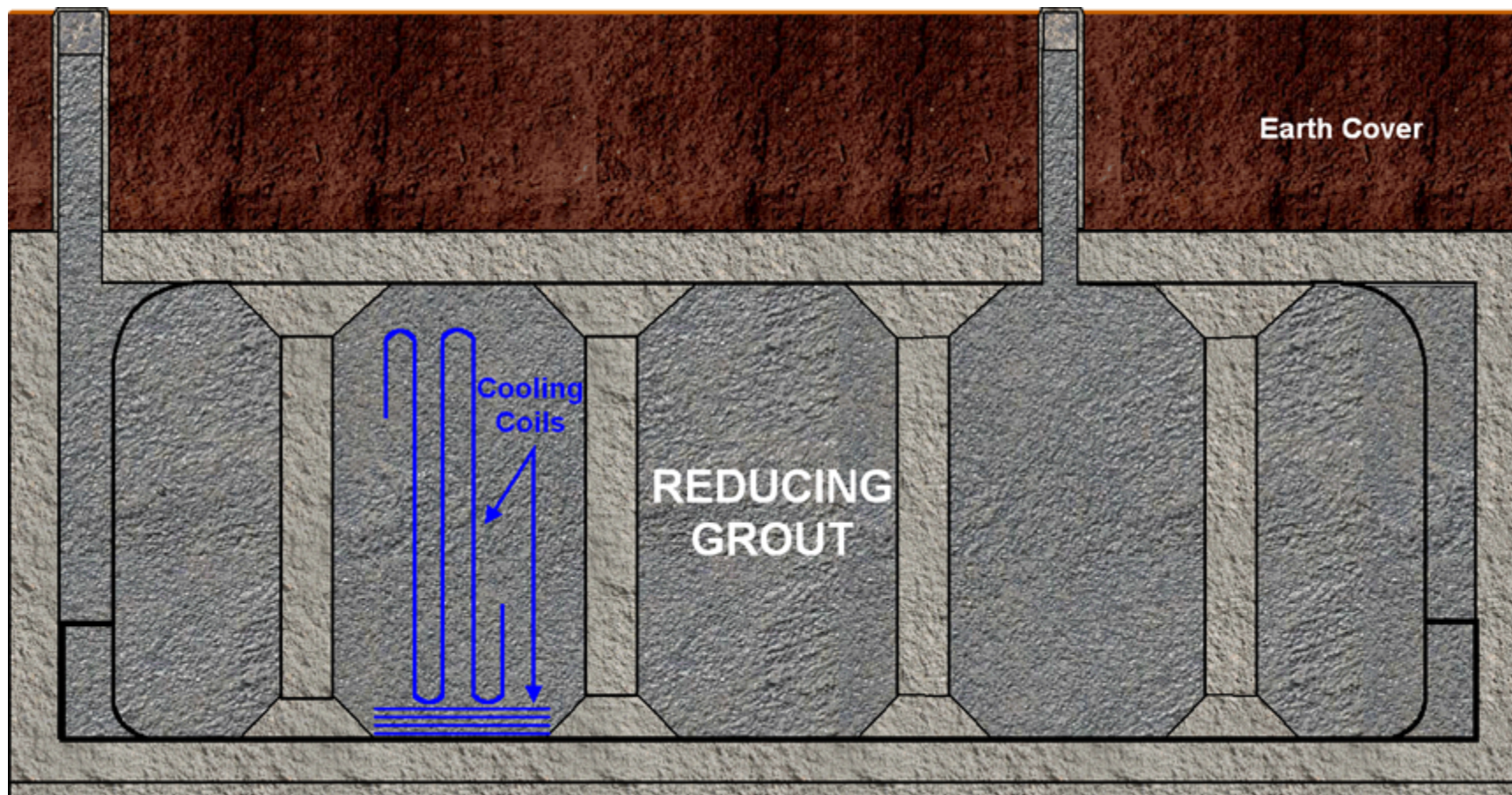
Tank 5



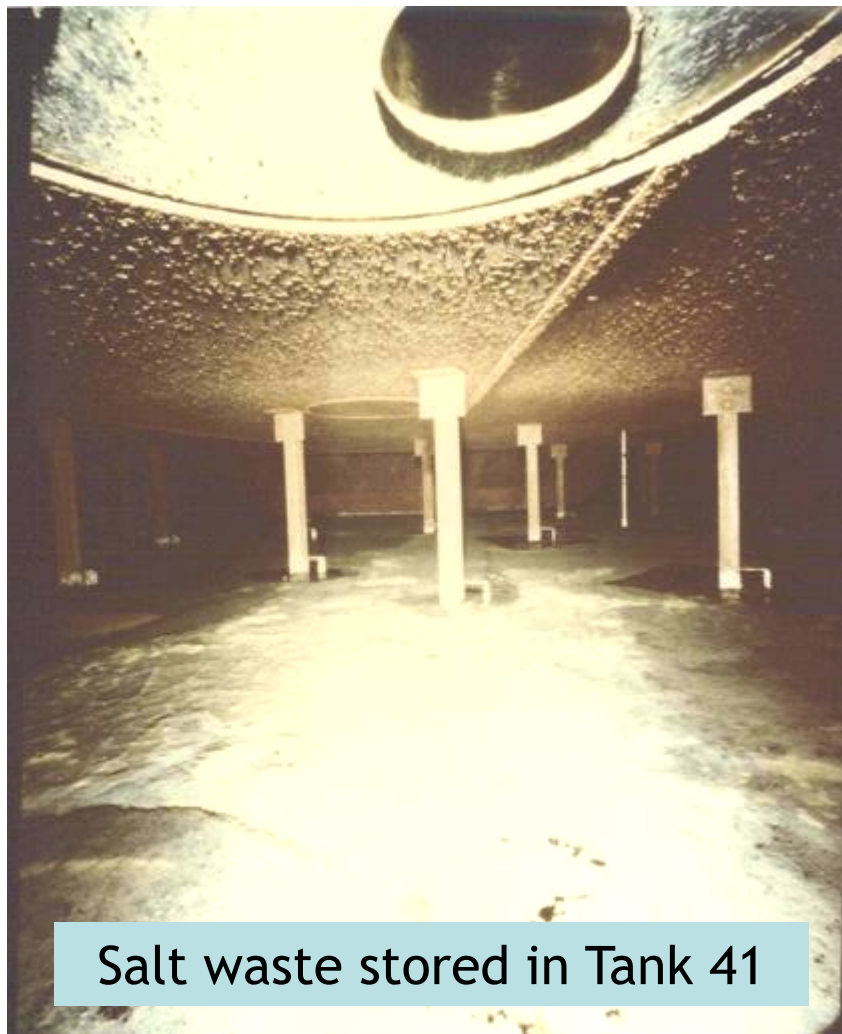
Tank 19



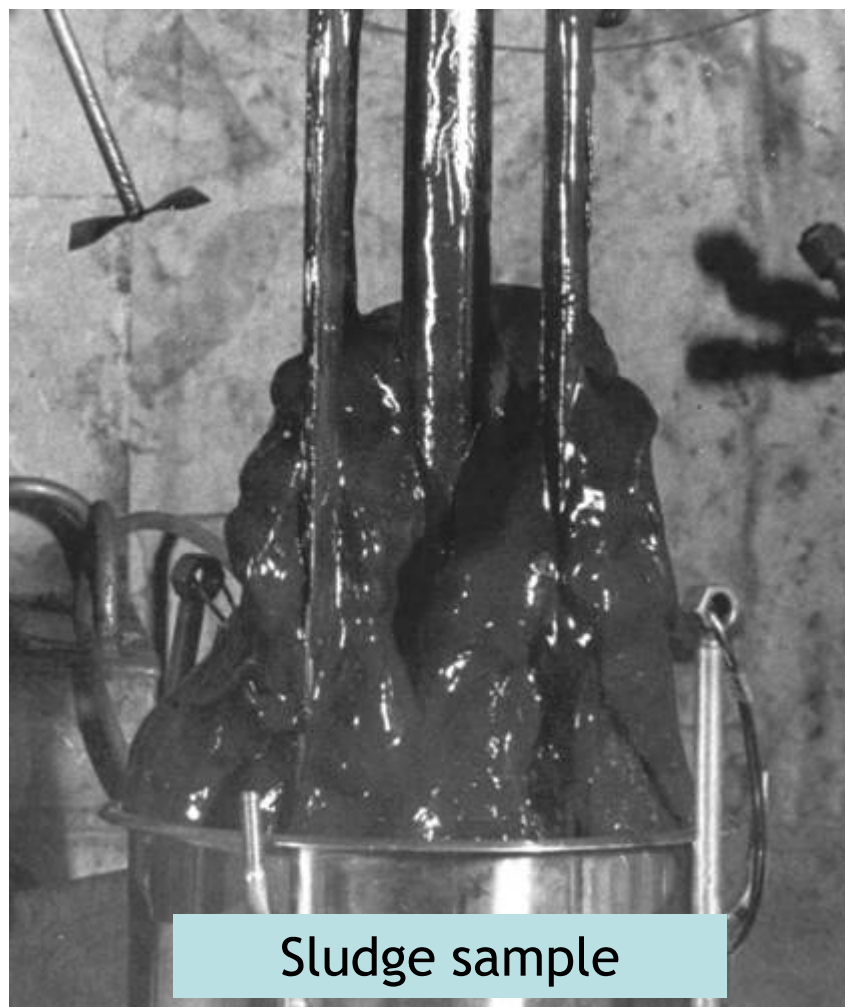
Grouting



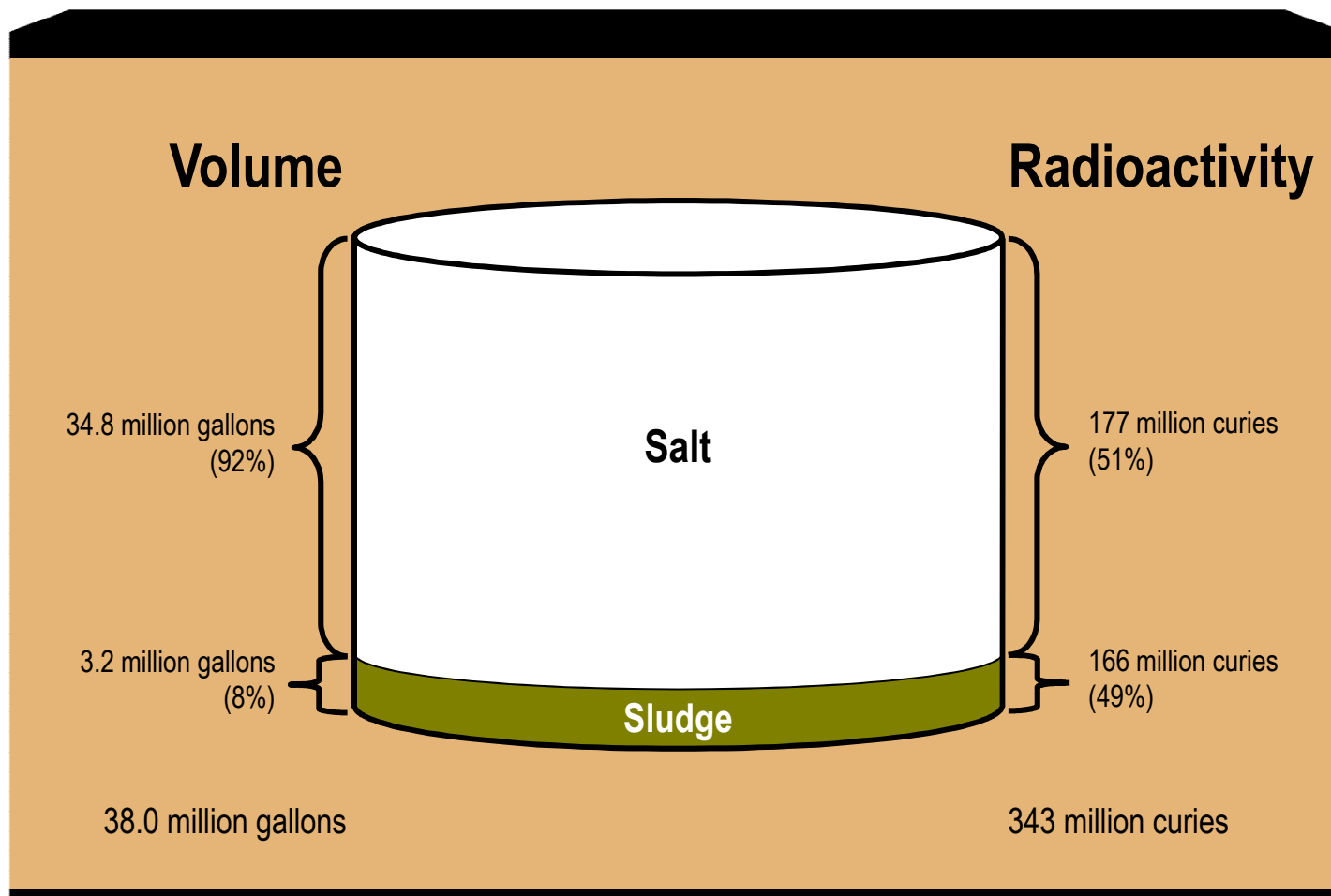
Salt and Sludge



Salt waste stored in Tank 41



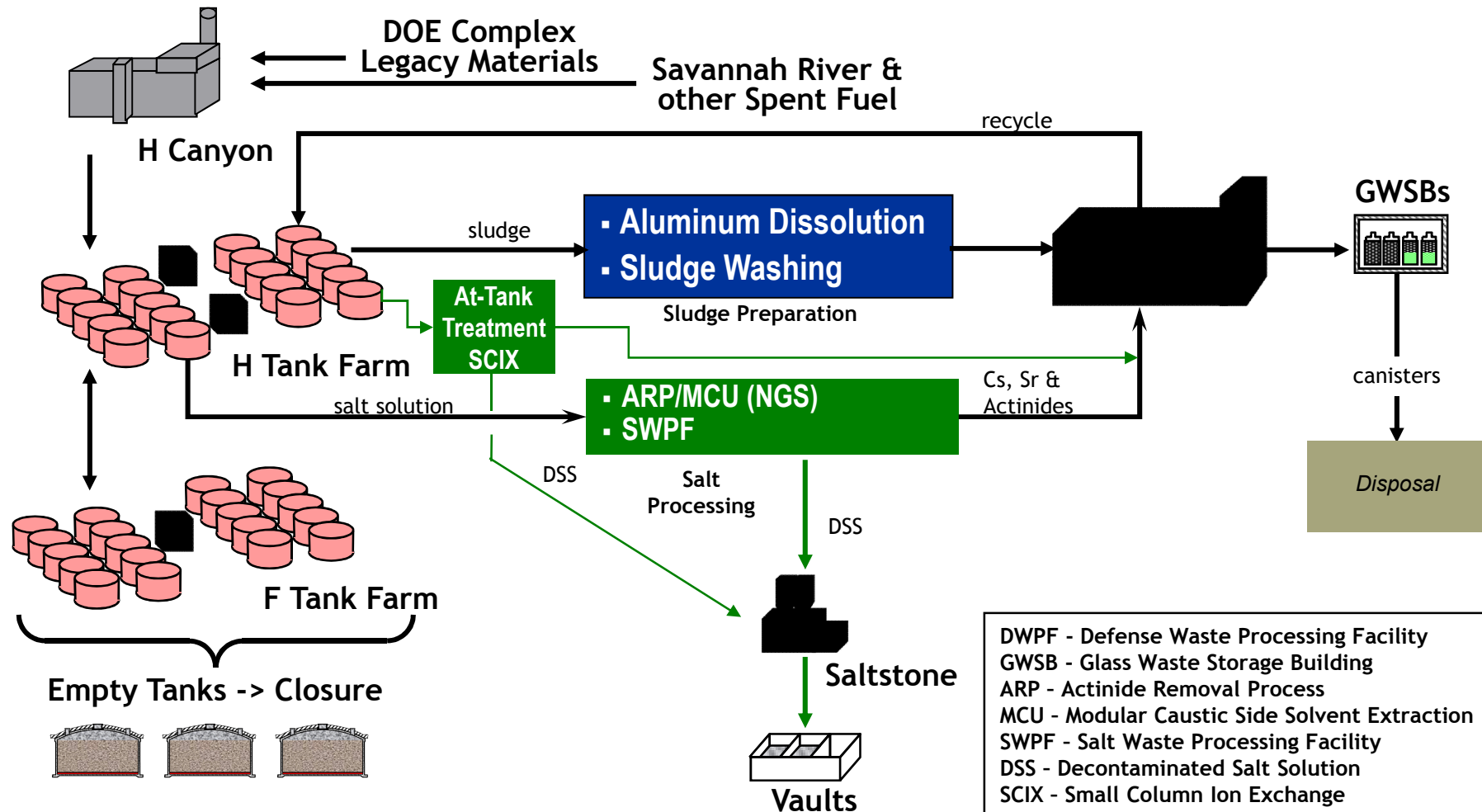
Sludge sample



Inventory values as of 2010-12-31



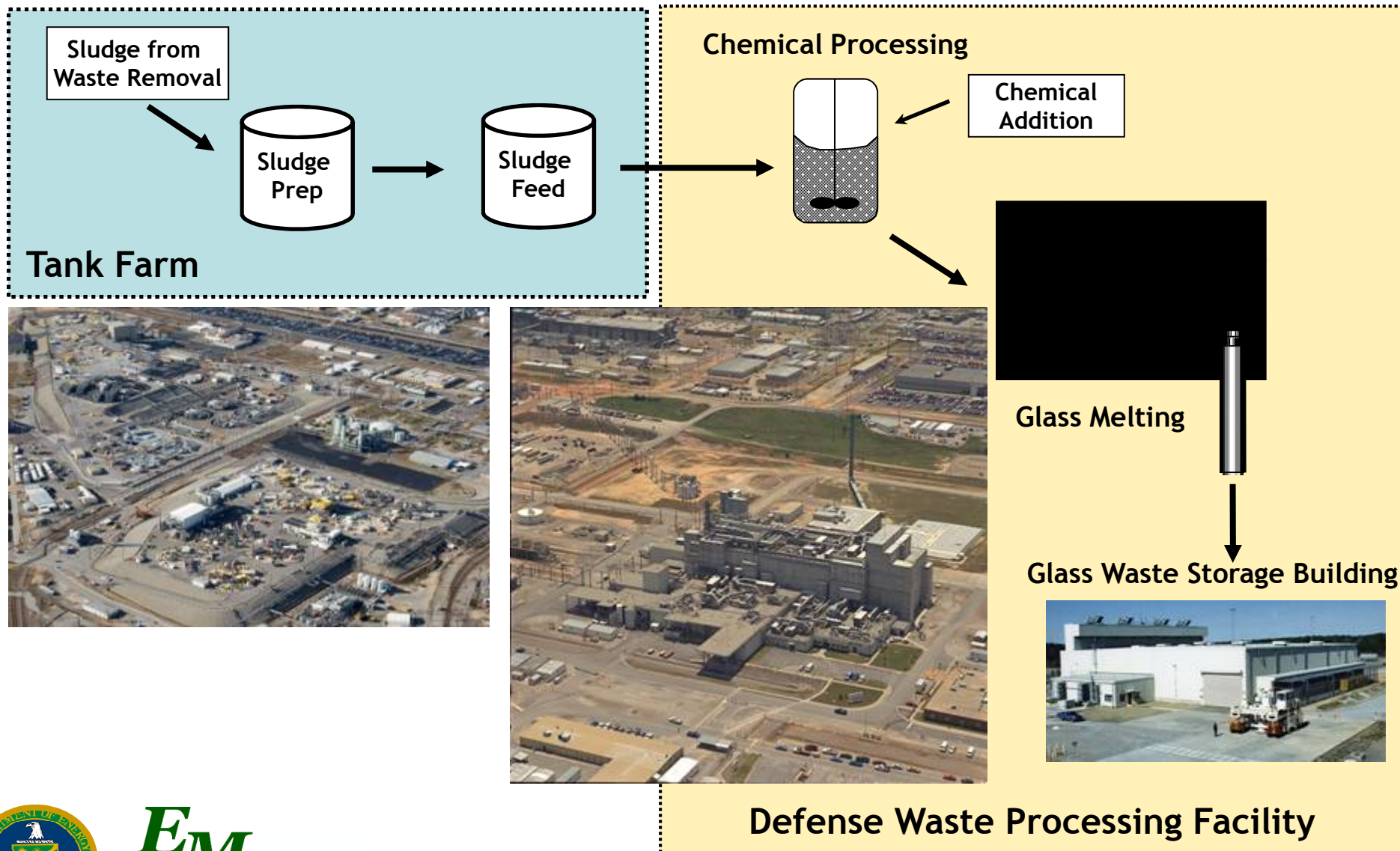
Liquid Waste System



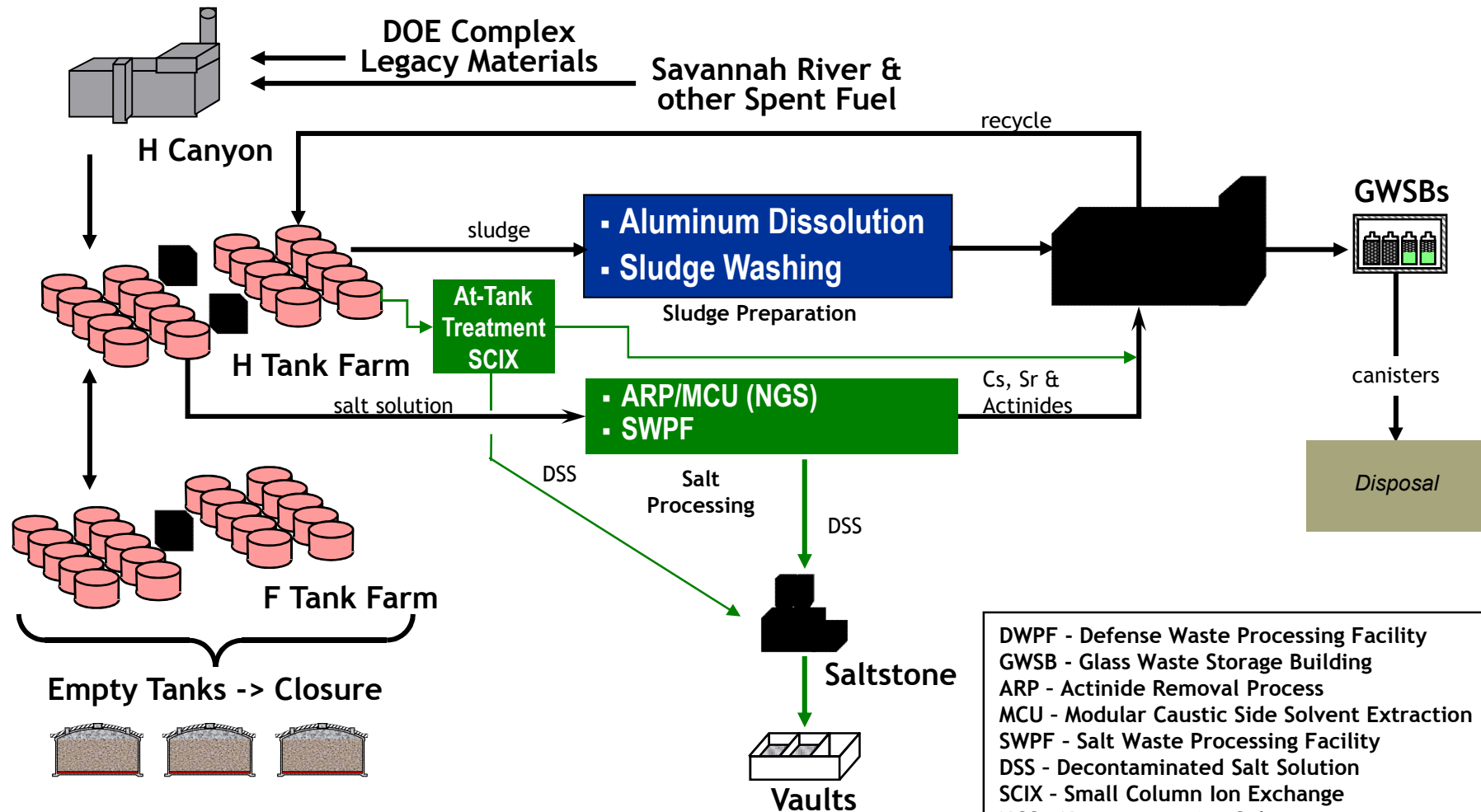
DWPF - Defense Waste Processing Facility
 GWSB - Glass Waste Storage Building
 ARP - Actinide Removal Process
 MCU - Modular Caustic Side Solvent Extraction Unit
 SWPF - Salt Waste Processing Facility
 DSS - Decontaminated Salt Solution
 SCIX - Small Column Ion Exchange
 NGS - Next-generation Solvent



Sludge Processing



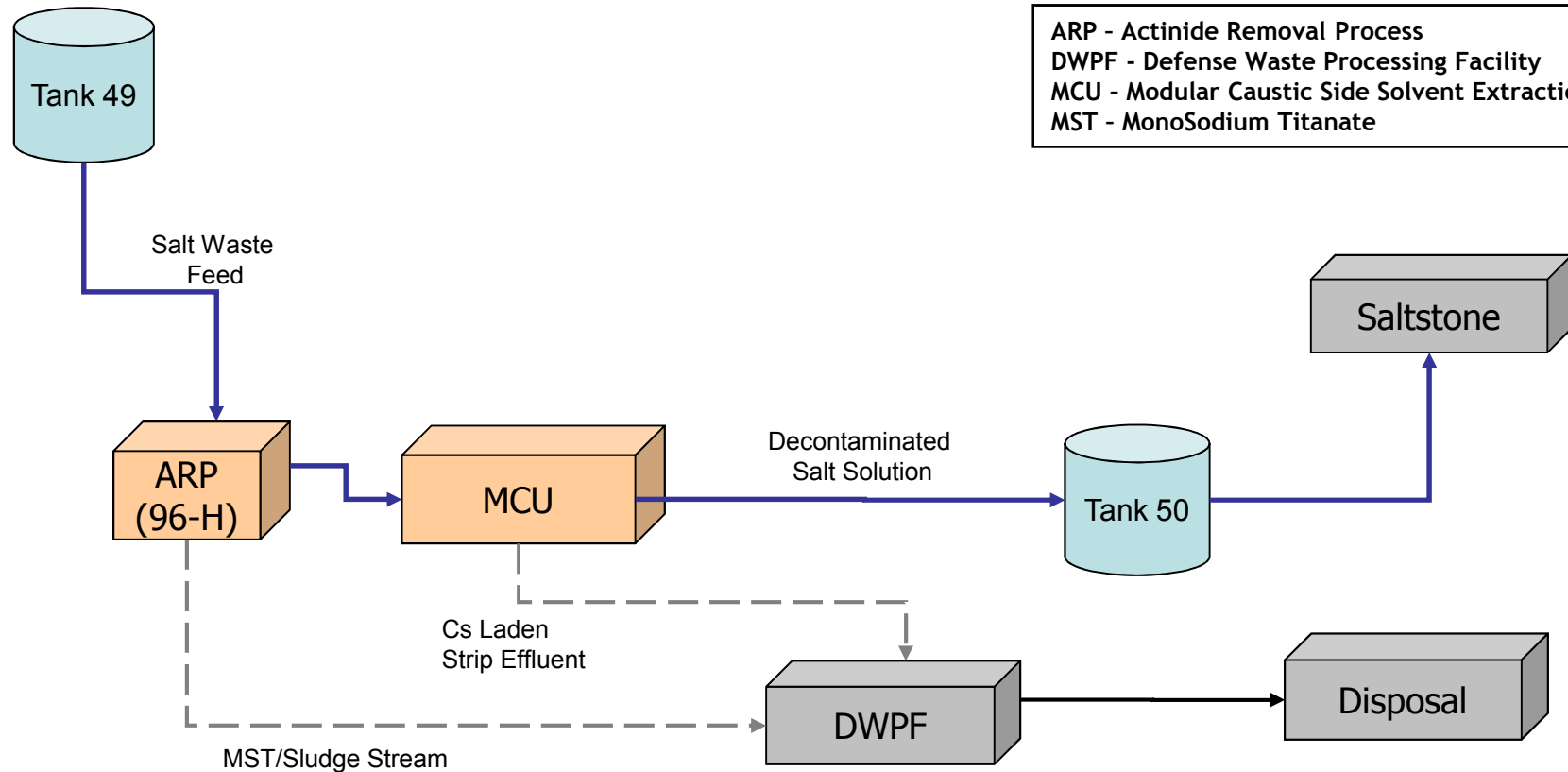
Liquid Waste System



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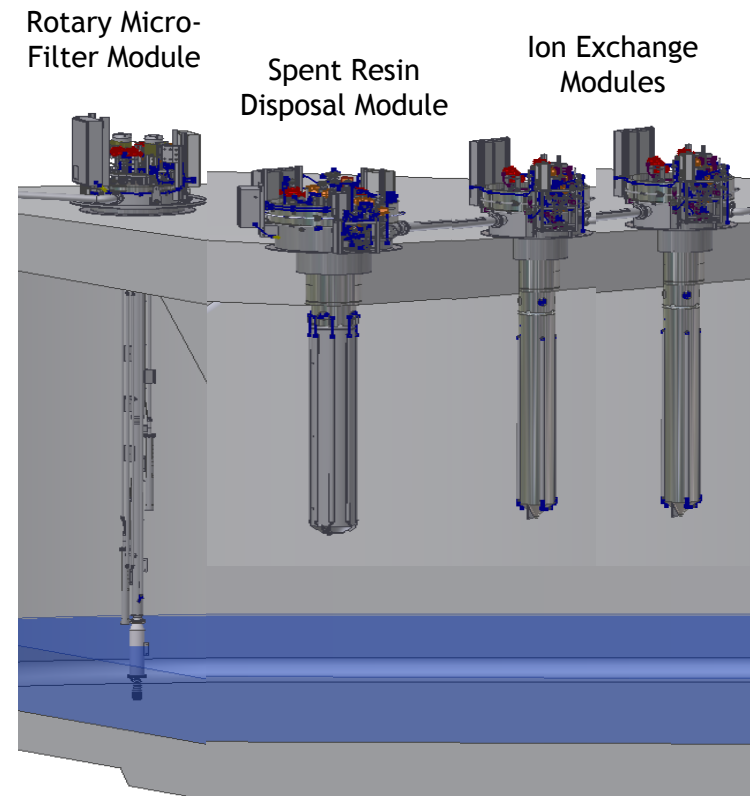


Salt Treatment Facilities



Small Column Ion Exchange (SCIX)

- 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





Saltstone Disposal Cells 2A & 2B



Future Disposal Cells



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



Acronyms

| | |
|------|--|
| 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 |

