

September 24, 2019

SRS LIQUID WASTE OVERVIEW

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SRR Chief Operating Officer and Deputy Project Manager



SRR Contract



- Savannah River Remediation is responsible for the safe storage and disposition of radioactive liquid waste produced from Cold War era nuclear weapons production
- SRR contract began on July 1, 2009
- 6-year base contract, plus 2-year option
- Contract extended to September 30, 2020
- Current workforce of ~2,500 employees (including subcontractors)

- **Record-setting worker safety**
 - 11 million safe hours without a missed day of work injury (December 2018)
 - 4 million safe hours through August 2019
 - SRR Construction >31 million safe work hours (20 years)
- **Earned DOE's Voluntary Protection Program Star of Excellence each year of the contract**



Zero Environmental Notices of Violation



Zero Price-Anderson Notices of Violation

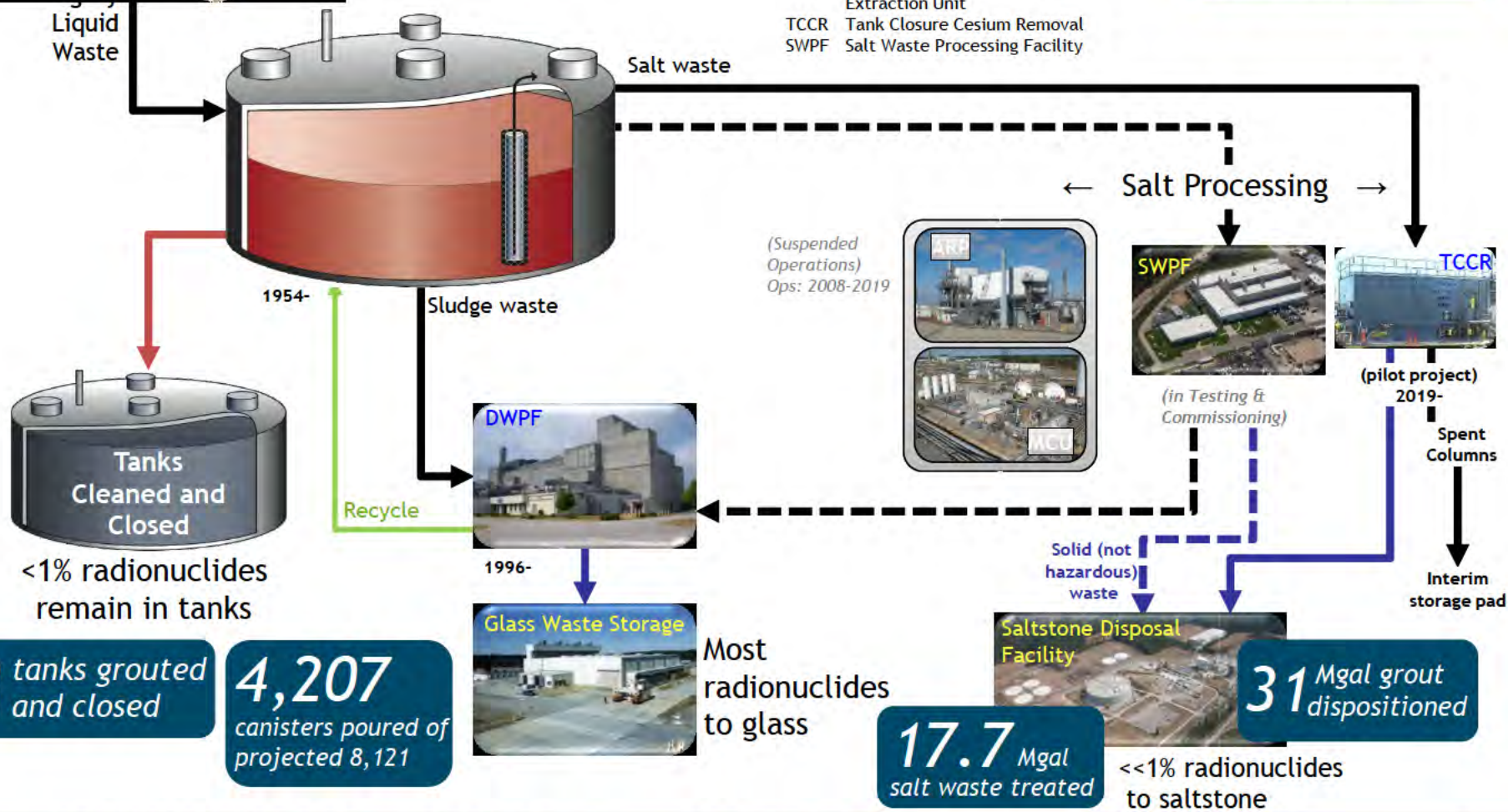
SRS Liquid Waste Program



- Operational Goals**
- ✓ Radionuclides to glass
 - ✓ Chemicals to Saltstone
 - ✓ Tanks cleaned and operationally closed

Legend:

ARP	Actinide Removal Process
BWRE	Bulk Waste Removal Efforts
DWPF	Defense Waste Processing Facility
ISS	Interim Safe Storage
MCU	Modular Caustic Side Solvent Extraction Unit
TCCR	Tank Closure Cesium Removal
SWPF	Salt Waste Processing Facility



8 tanks grouted and closed

4,207 canisters poured of projected 8,121

17.7 Mgal salt waste treated

31 Mgal grout dispositioned

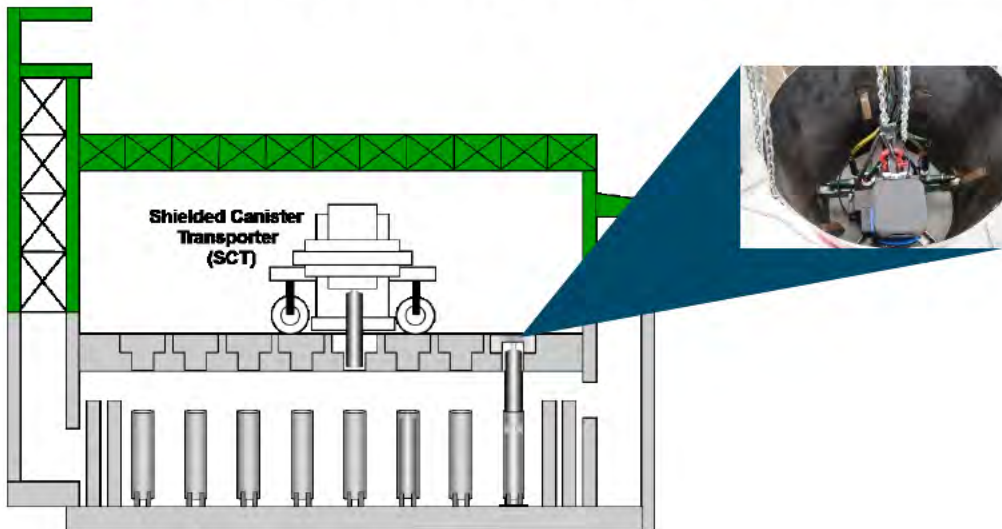
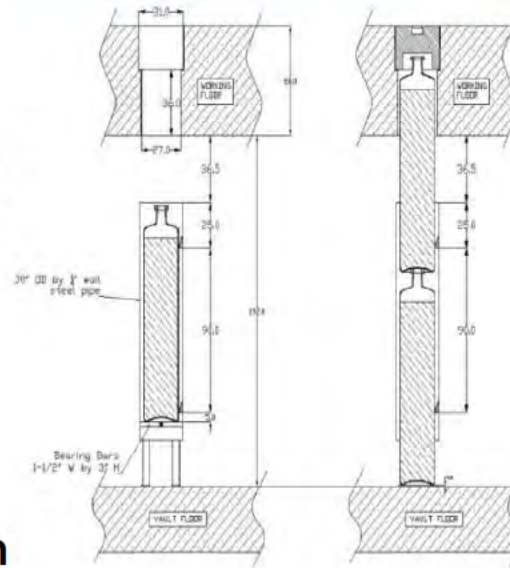
DWPF: Preparing for SWPF Streams

- Produced over 4,200 canisters (>1,460 under SRR) and poured over 6 million pounds of vitrified radioactive waste
- Installed melter bubbler innovation for mixing to improve glass rate by 50%
- Replaced Melter 2 with Melter 3 (completed December 2017)
- Installing Lab Waste Handling project to handle high strontium/cesium streams from SWPF



Glass Waste Storage Buildings: Canister Double-Stack

- Stacked the first two radioactive canisters in August 2016
- Modifies existing locations to store two canisters each (from 2,254 to 4,508)
- Creates safe interim storage through Fiscal Year 2029
- Postpones expense of another storage facility, saving >\$74 million



Glass Waste
Storage Buildings
#1 and #2

ARP/MCU: The Model for Salt Cleanup

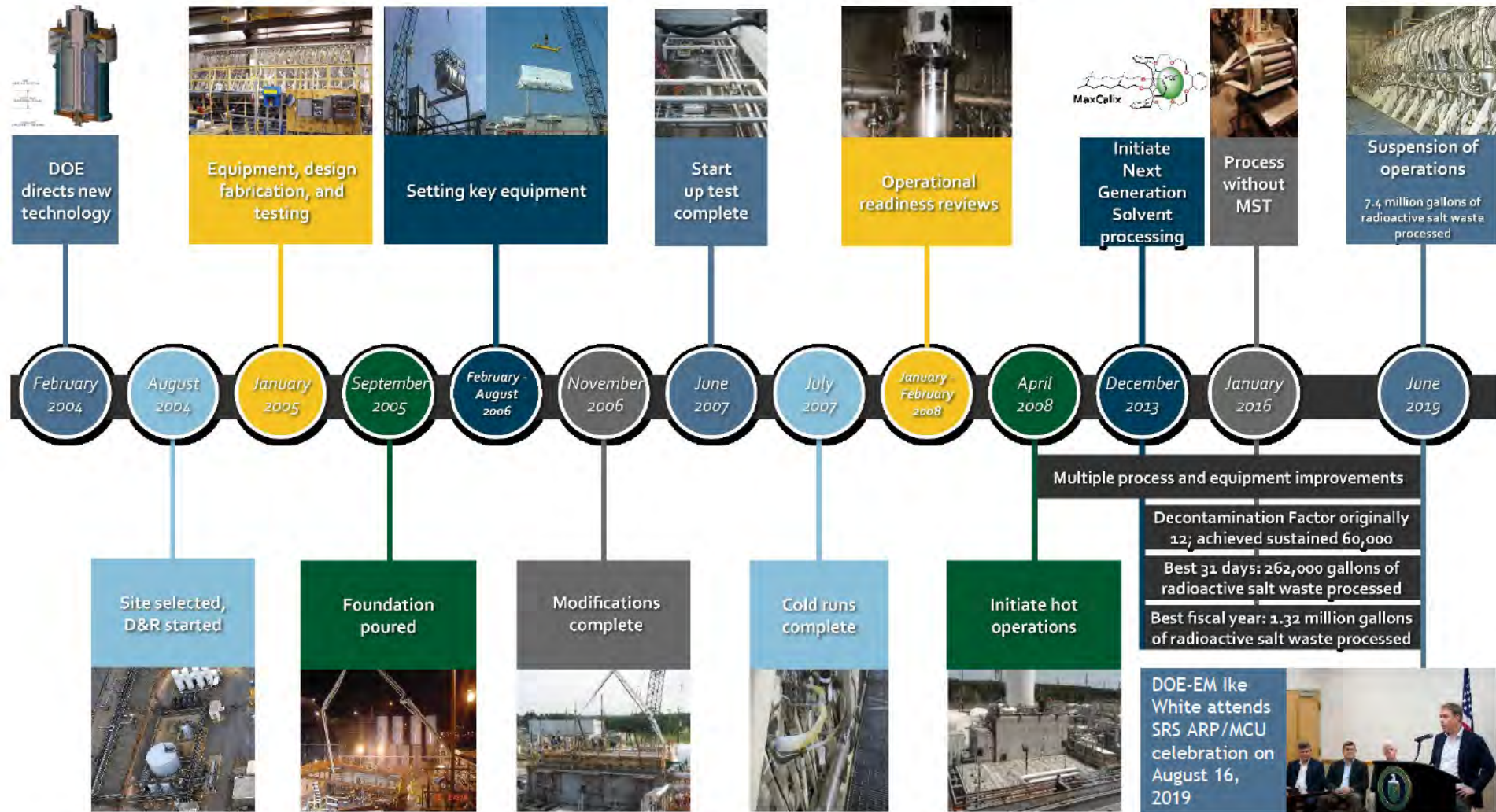
- Processed 7.4 million gallons of salt waste through interim salt processing facilities, the Actinide Removal Process/Modular Caustic Side Solvent Extraction Unit (ARP/MCU)
- Implemented Next Generation Solvent with demonstrated decontamination factors >60,000 for Cesium (>99.99 Cesium removal)
- Placed ARP/MCU in operational standby for final SWPF tie-ins (June 2019)



*Piloted and proved
the technology for
the Salt Waste
Processing Facility*

Modular Caustic Side Solvent
Extraction Unit

ARP/MCU: A Success Story



Tank Closure Cesium Removal (TCCR) : Demonstrating New Technology to Improve Tank Closure

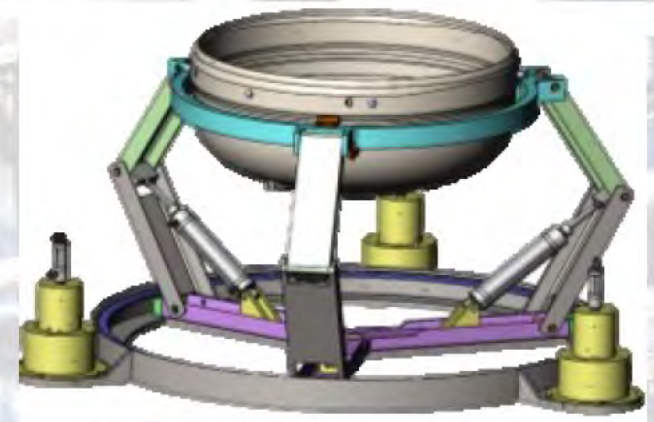
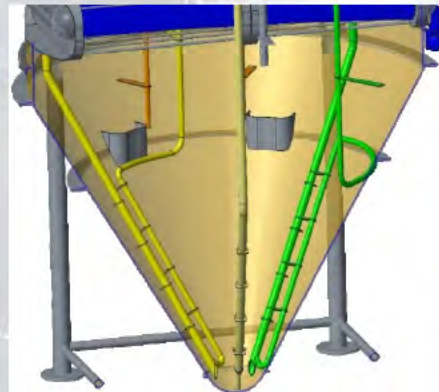
- Supplemental salt waste treatment capability to accelerate tank closures
- At-tank ion exchange cesium removal process
 - Demonstration effort to treat Tank 10
- Contract Award to Operational Facility: 2.5 Years
- Successfully processed >200,000 gallons



3H Evaporator: The Infrastructure



- 3H Evaporator operations shut down in February 2016 after a leak was detected
- Repaired and then restored in July 2018
- Since return to service, 3H has recovered > 1 million gallons of space
- Spare/Replacement vessel being fabricated as contingency



Saltstone Production Facility: Building Capacity



Saltstone Disposal Units: Before



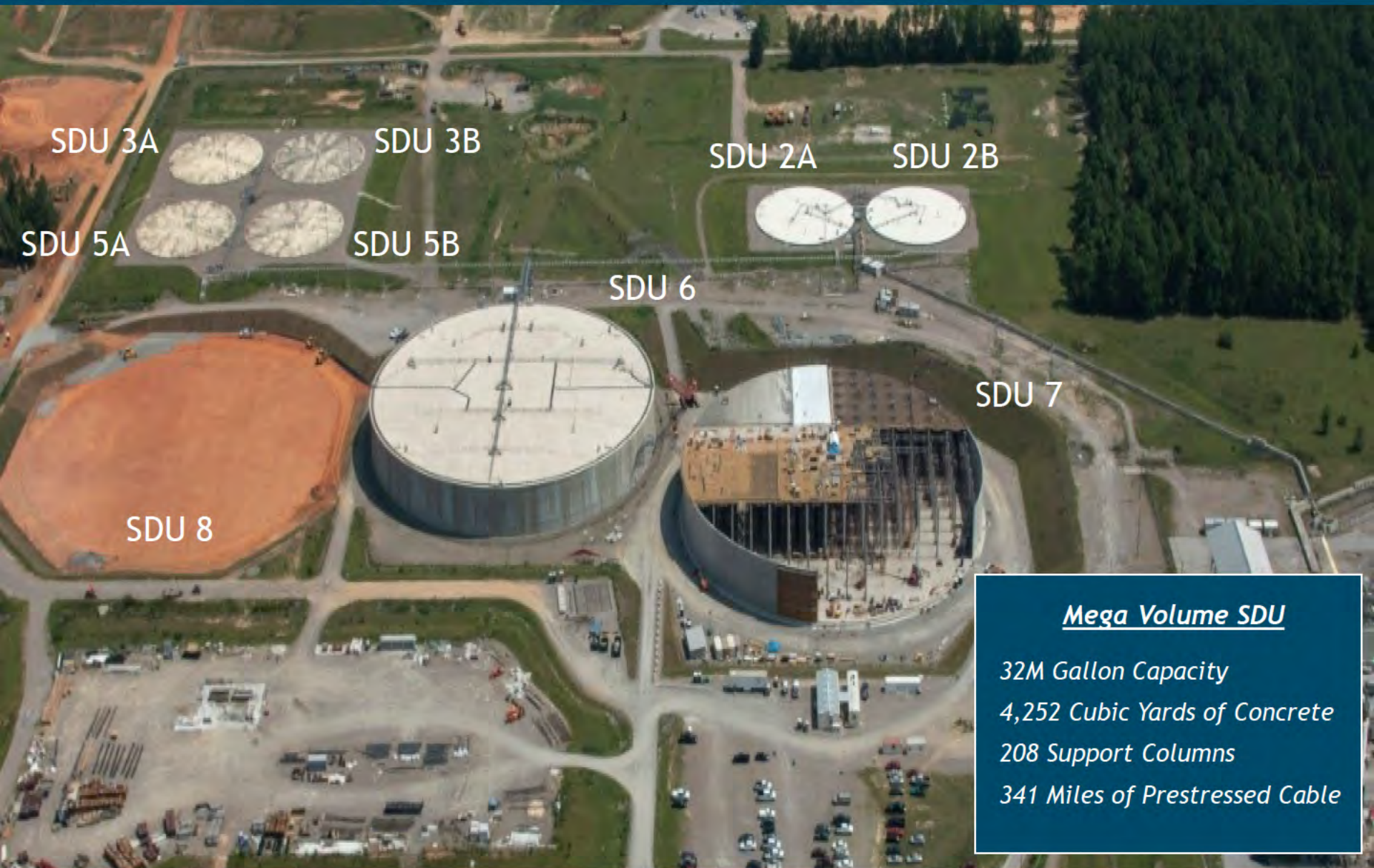
SDU 6

Construction Complete July 2017

Placed into Service August 2018

- ✓ *Began operating first mega-volume SDU*
- ✓ *EM Project of the Year*
- ✓ *DOE Award of Excellence*

Saltstone Disposal Units: Now



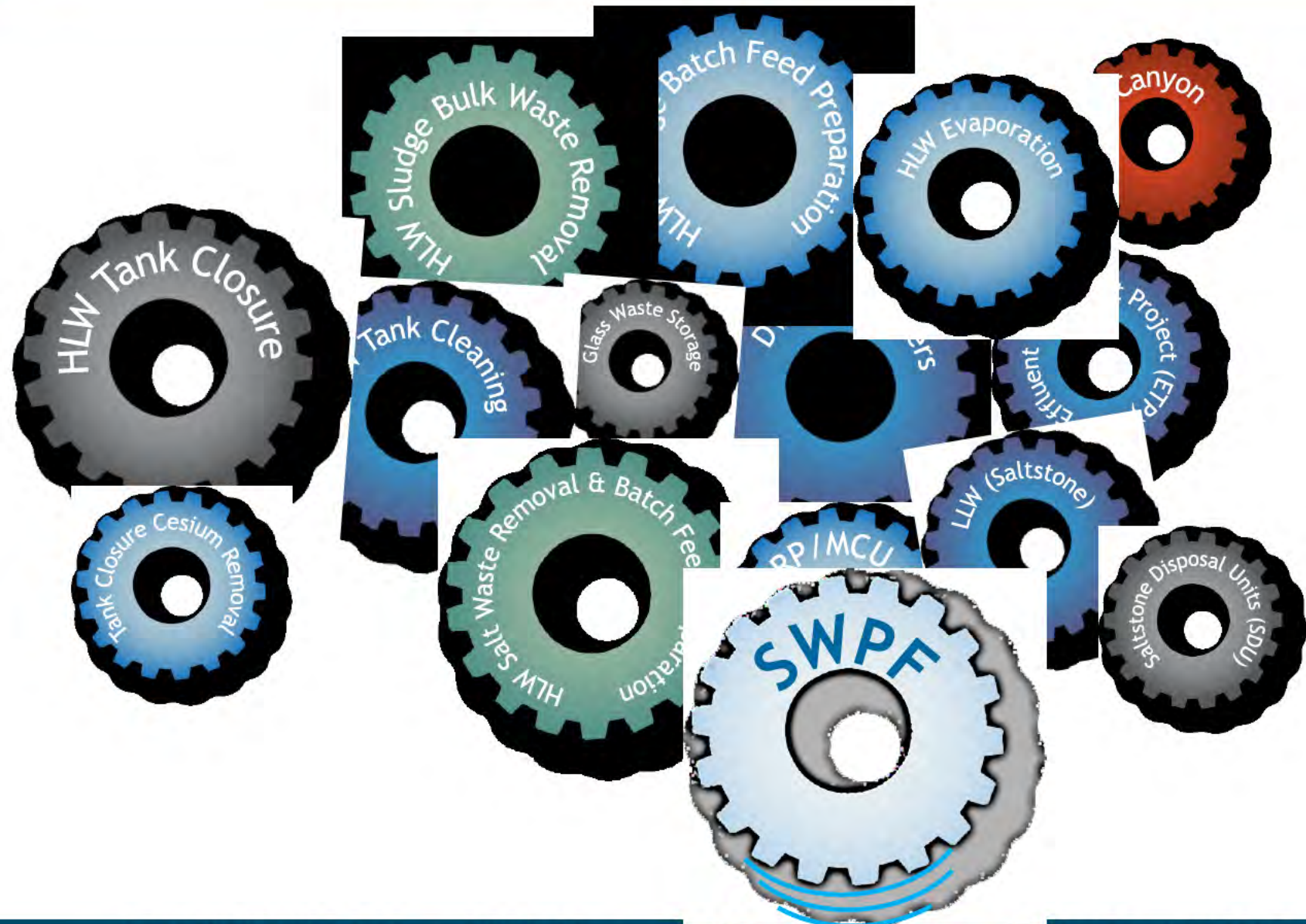
Mega Volume SDU

- 32M Gallon Capacity
- 4,252 Cubic Yards of Concrete
- 208 Support Columns
- 341 Miles of Prestressed Cable

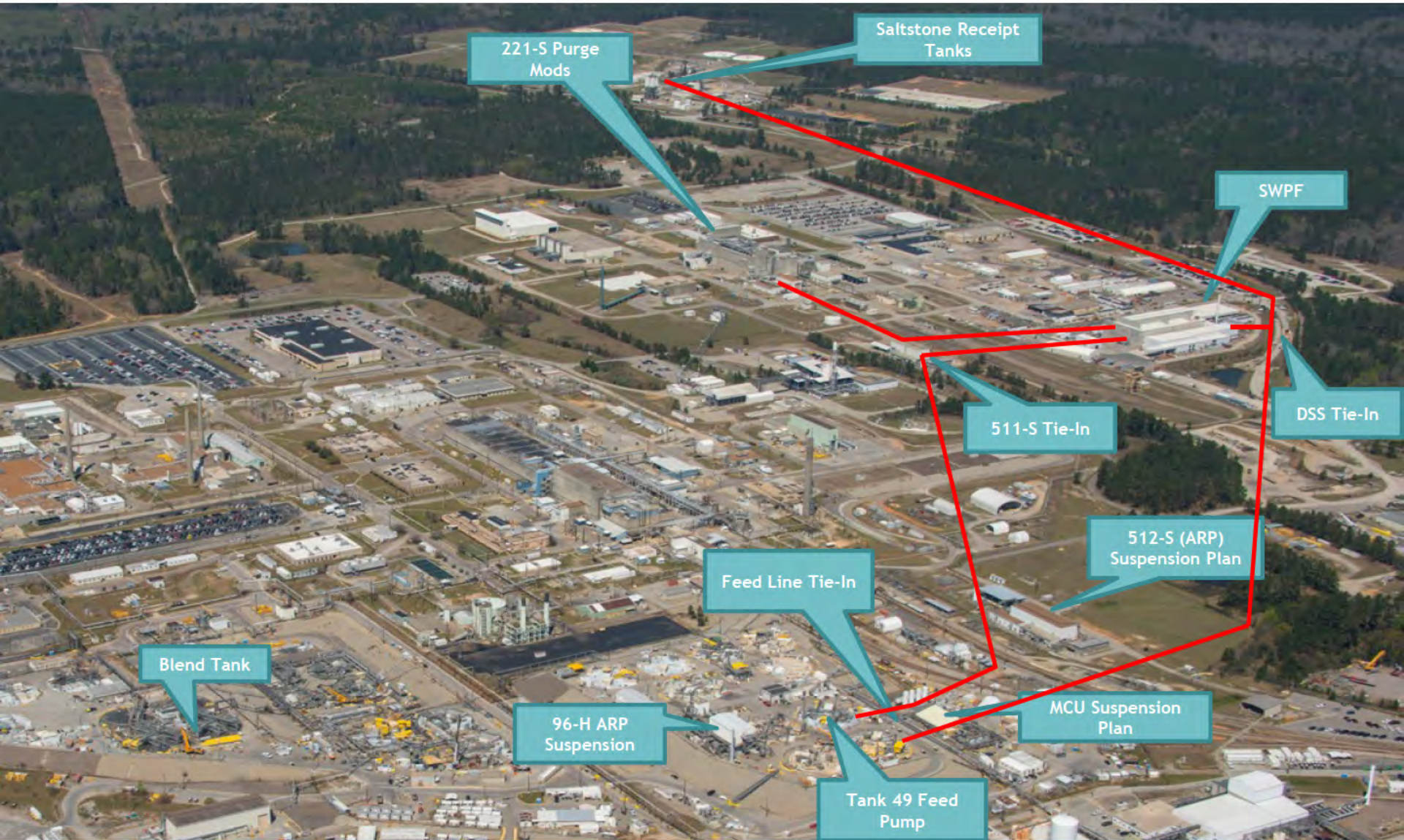
Saltstone Disposal Units: And in the Future



SRS Liquid Waste Program Integration



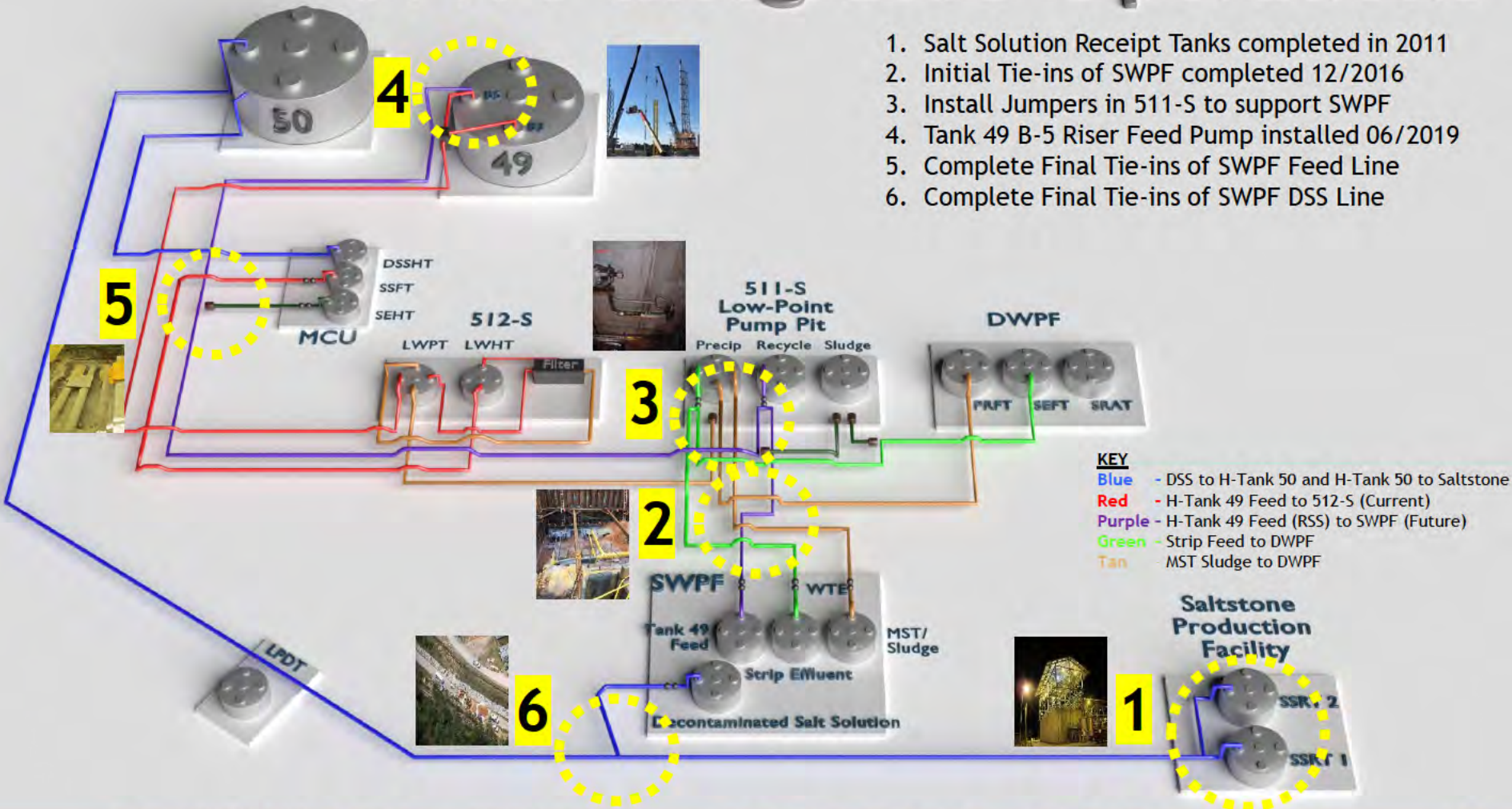
Challenge Ahead



LW/SWPF Piping Modifications

SWPF Integrated Operations

1. Salt Solution Receipt Tanks completed in 2011
2. Initial Tie-ins of SWPF completed 12/2016
3. Install Jumpers in 511-S to support SWPF
4. Tank 49 B-5 Riser Feed Pump installed 06/2019
5. Complete Final Tie-ins of SWPF Feed Line
6. Complete Final Tie-ins of SWPF DSS Line



KEY
 Blue - DSS to H-Tank 50 and H-Tank 50 to Saltstone
 Red - H-Tank 49 Feed to 512-S (Current)
 Purple - H-Tank 49 Feed (RSS) to SWPF (Future)
 Green - Strip Feed to DWPF
 Tan - MST Sludge to DWPF

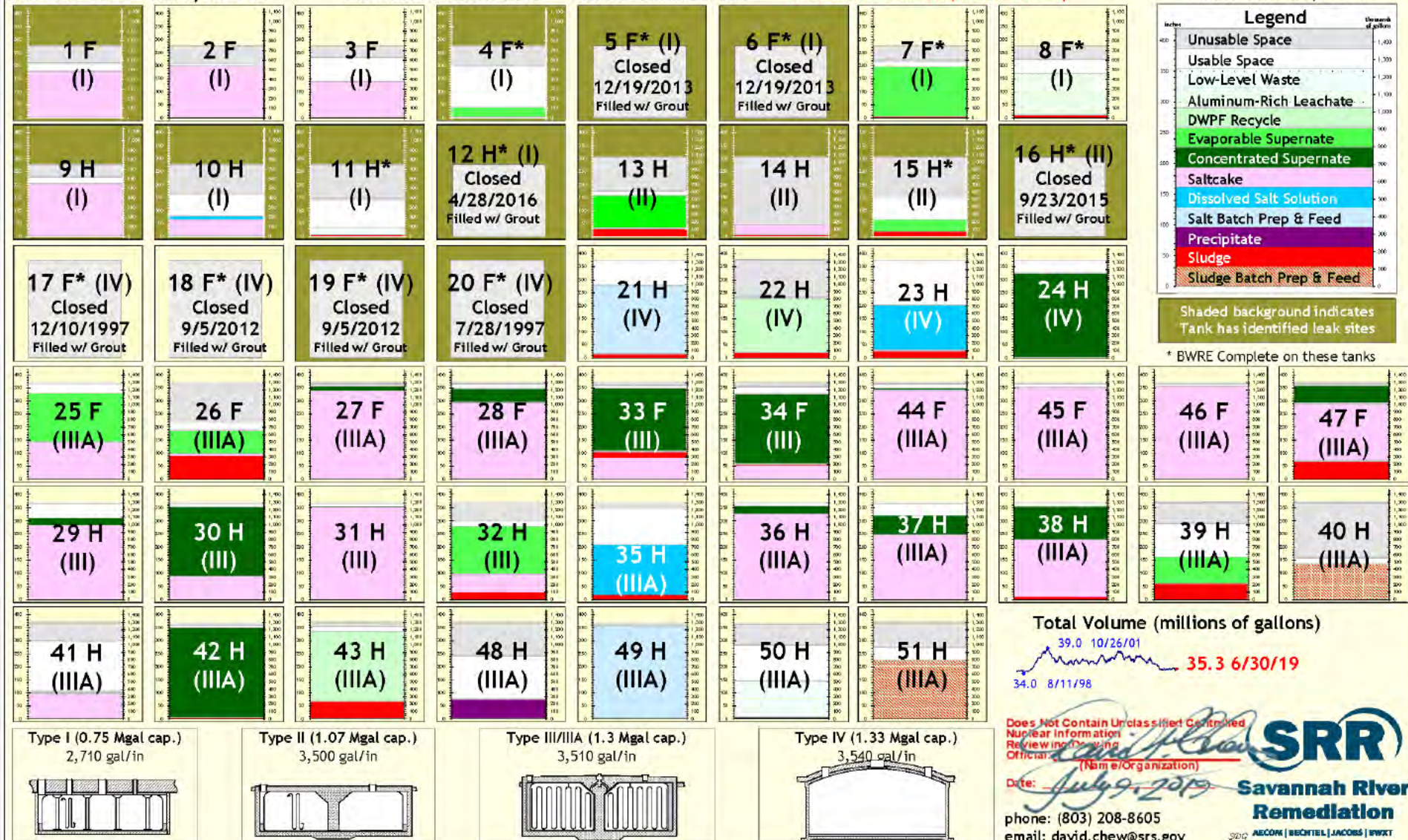
Waste Tank Status

SRR-LWP-2010-0001, Rev. 63

SAVANNAH RIVER SITE — WASTE TANK LEVELS

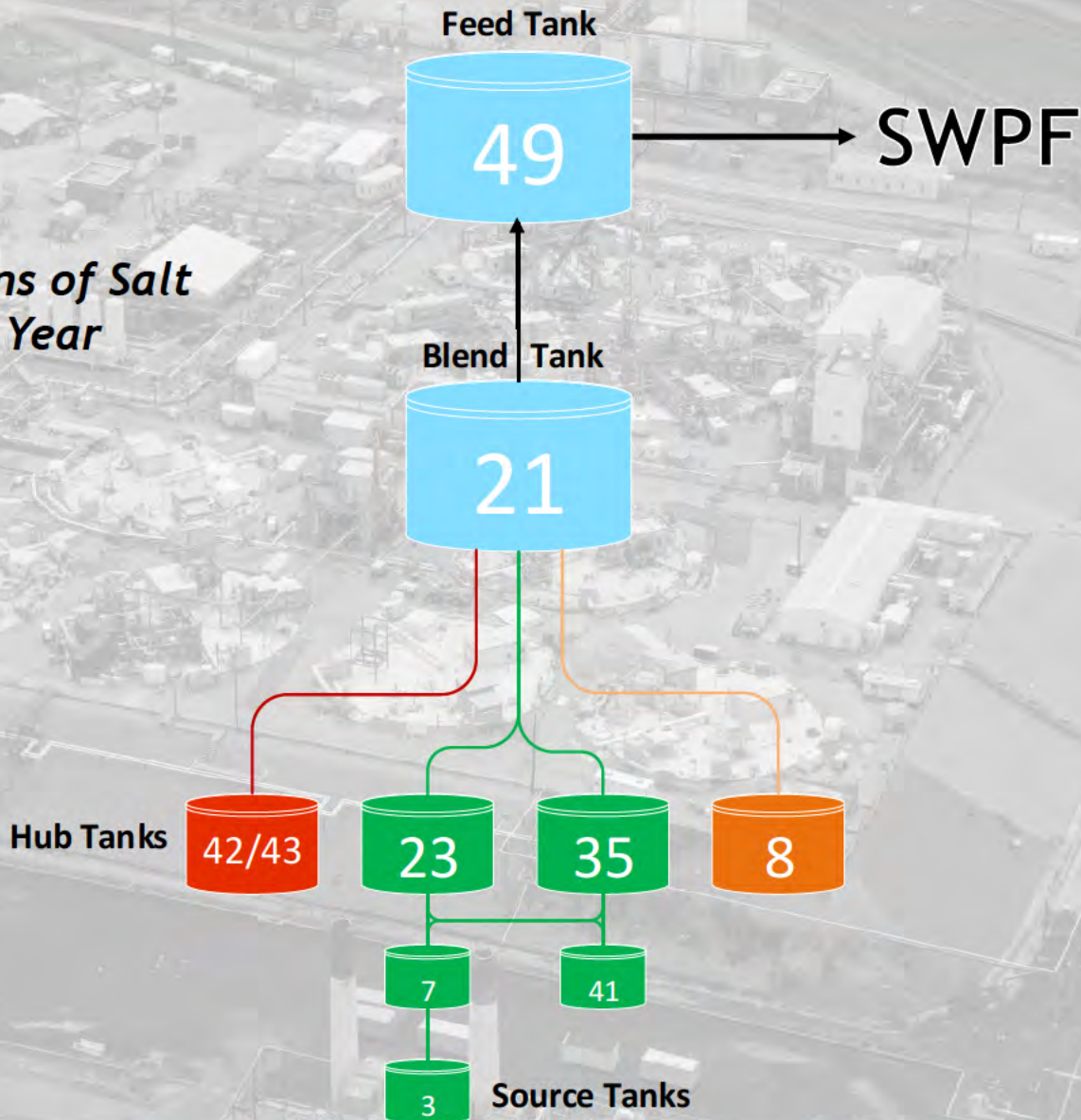
APPROVED for Unlimited (Release to Public)

As of: June 30, 2019



Now

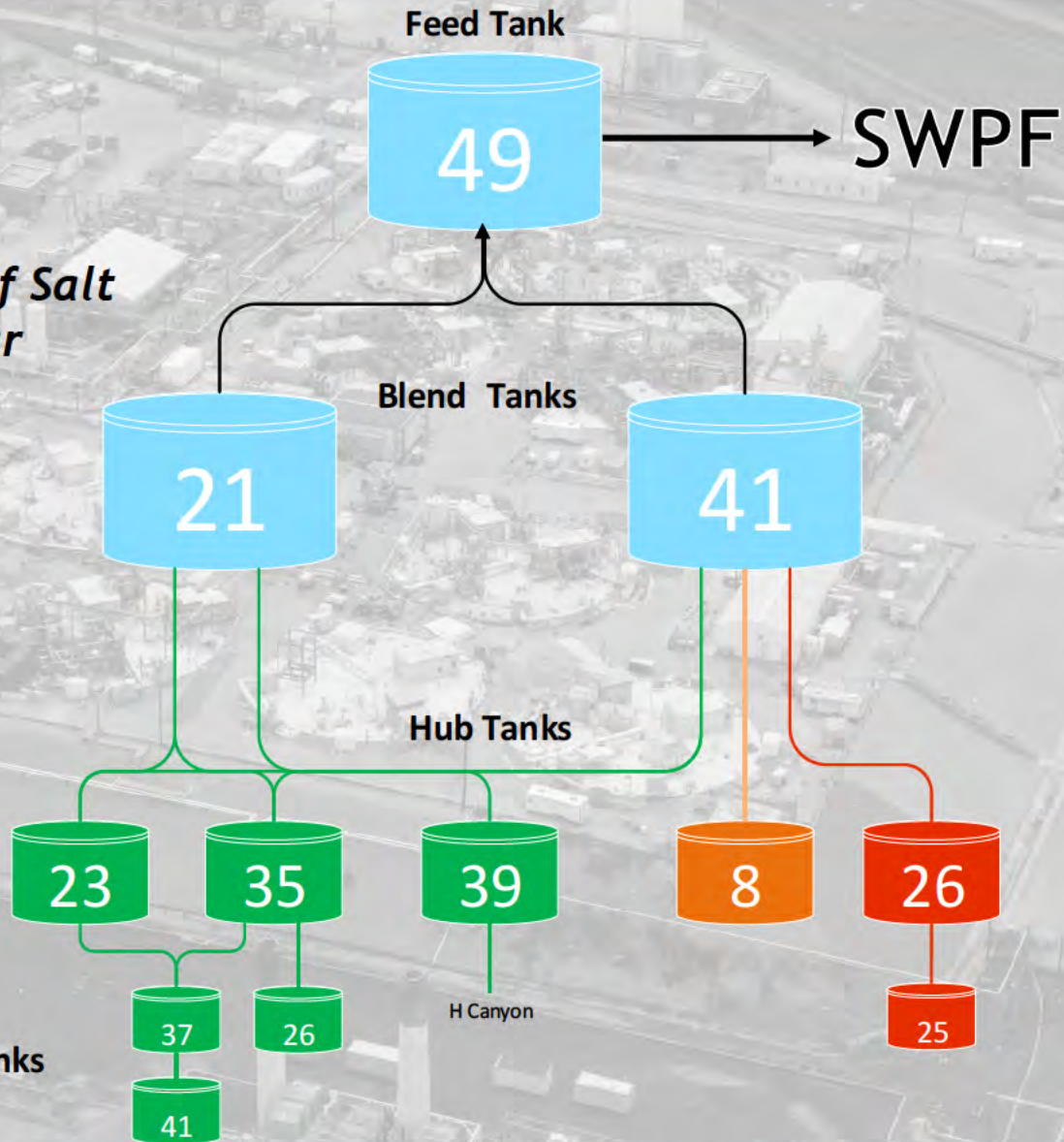
*3M Gallons of Salt
Feed Per Year*



Legend
Green = Salt
Red = Concentrate
Orange = Leachate

After SWPF Startup

6M Gallons of Salt Feed Per Year



Legend
Green = Salt
Red = Concentrate
Orange = Leachate

Source Tanks

SWPF in the Future

9M Gallons of Salt Feed Per Year

