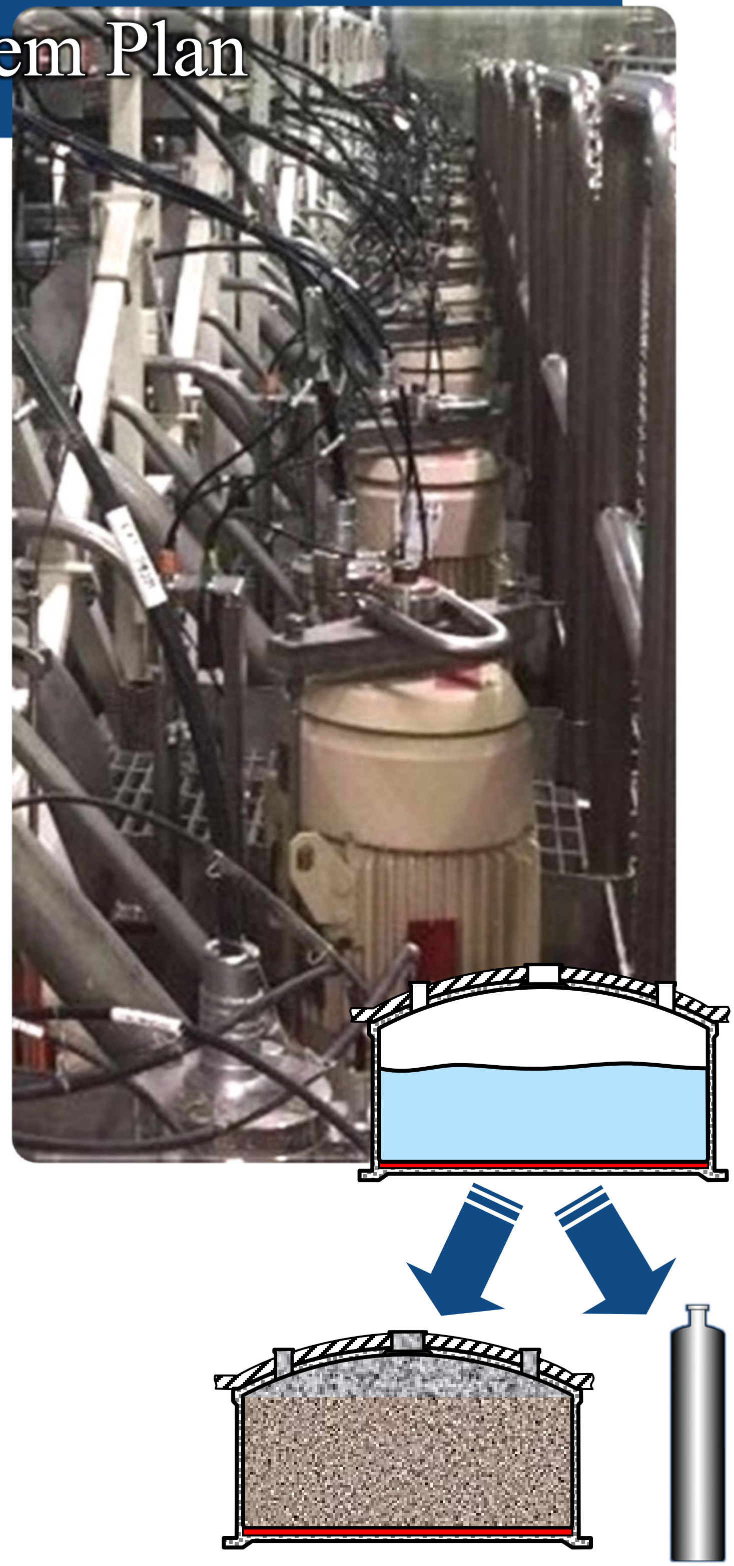
SRMC-LWP-2023-00001

SAVANNAH RIVER MISSION COMPLETION

LIQUID Waste System Plan



Integrated Liquid Waste Processing System at Savannah River Site

REVISION 24

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Liquid Waste System Plan Revision 24

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1. Executive Summary

The Savannah River Site (SRS) Liquid Waste (LW) Program is comprised of five closely integrated facilities that safely store, treat, and dispose of liquid nuclear wastes generated since the 1950s as a by-product of national defense weapons production, as well as medical isotope production, material for space exploration, and nonproliferation programs. Savannah River Mission Completion, LLC (SRMC) retains operational responsibility of the LW system and is making unprecedented strides in accomplishing the LW mission. This 24th Revision of the *Liquid Waste System Plan* (hereinafter referred to as the *Plan*) forecasts continued progress in achieving the waste processing goals of the Department of Energy (DOE) at SRS (DOE-SR), as well as the ultimate goal to complete closure of the tank farms and removal of the other LW facilities from service as early as 2037. The initial conditions for modeling in this *Plan* are those extant as of June 2025; generally, the data date for production status is as of the end of FY25 — September 30, 2025, *except as noted*.

The previous revision of the *Plan* (Rev 23-P) assumed little opportunity for program acceleration and significant risk for program extension. Since publication of that *Plan*, DOE and SRMC launched a risk reduction strategy, partnering with the regulators, that included focused investment on activities that reduced risk: prioritizing processing high-curie batches and eliminating waste in the tanks in the water table first. The results of this risk reduction strategy include:

- Of the sixteen high-curie salt batches identified, eight have already been processed; the other eight high-curie batches should result in processing 33% of the total remaining curies within the next three years.
- The total salt mission is 25% complete.
- The total sludge mission is 55% complete
- In addition to the two of eight tanks in the water table that had been previously closed, four received concurrence for Preliminary Cease Waste Removal (PCWR) since publication of Revision 23-P; the remaining two are expected to complete PCWR before the end of 2026
- 29% of the high level waste tanks, constituting 63% of the non-compliant tanks, are waste removal complete
- 16% of the tanks are closed.

This Revision 24 of the *Plan* utilizes technical and funding assumptions which result in a high confidence forecast. As a result, this *Plan* provides numerous opportunities for acceleration of the LW mission with very few risks that could extend the mission. This *Plan* demonstrates that completion of the LW mission by 2037 is still feasible if funding is given at the Requirements level. However, the mission will be completed in 2041 if recent below Requirement amounts are representative of future funding levels.

The main factors necessary for completion of the LW mission are **Capacity**, **Availability**, and **Closure**:

- **Capacity** improvements support an increase in a facility's instantaneous throughput. Many of these were identified in Revision 23-P in the "Climb-to-9" improvements. These capacity improvements have been largely implemented.
- **Availability** improvements increase the time that a facility is "open for business" and available to process waste — not in outage for repairs. Availability improvements such as increased spare parts inventory and more robust equipment reliability are actively being addressed. Many of these are depicted in Figure 5-9 — *Drive to 65*.
- **Closure** improvements are planned to increase the efficiency of the tank closure process, including sampling, sequencing, regulatory reporting, and grouting, thus reducing the time required for closure.

A wide variety of Capacity, Availability, and Closure improvements were completed and are highlighted below along with a few significant accomplishments that have been achieved by DOE and SRMC. These and other improvements that are in progress or planned are described in additional detail in Sections 2.2, 2.3, and 2.4:

Tank Farms

- **Preliminary Cease Waste Removal:** Completed waste removal and PCWR concurrence on seven "old-style" tanks (Tanks 3F, 4F, 8F, 9H, 10H, 11H, and 15H) by December 2025, exceeding the Federal Facility Agreement (FFA) [1] condition of concurrence of one PCWR by December 2024, three more by December 2025.
- **Drone Technology for Tank Inspections and Waste Sampling:** Successfully adapted and deployed drone technology for visual inspection of waste tank interior and annular spaces accompanied by centrifugal sampler technology for solids heel sampling, a first in the DOE Complex.
- **Accelerated Basin Disposal (ABD)** Tank 51H Sludge Batch (SB) 11 preparation included receipt of 480 kg of dissolved ABD waste from H-Canyon

- **Fast Critical Assembly (FCA):** Completed receipt of all 76 kgal of dissolved FCA waste from H-Canyon into Tank 51 Sludge Batch (SB) 11, as of November 2025. This represents significant schedule acceleration compared to previous plans, in which FCA wastes were expected to be incorporated in SB12–SB14 through 2028.
- **Evaporators:** Significant modifications have been completed on the 242-16H (16H aka 2H) Evaporator system to reduce the duration of future acid cleaning outages to four months from twelve months.
- **East Hill Utilities Upgrade Project:** The East Hill Utilities Upgrade Project moved utilities such as water, steam, plant air, and cooling chromate water into underground trenches or onto above-ground pipe bridges to increase system reliability, reduce costs, and reduce the risk of personnel or environmental contamination.
- **Risk Reduction Focus:** Prioritized waste retrieval from tanks in the water table and tanks containing higher radioactive concentration.

Salt Waste Processing Facility (SWPF)

- **SRMC processed 9.4 million gallons (Mgal)** of dissolved salt solution (DSS) of the total 11.9 Mgal processed since SWPF startup.
- **Demonstrated processing rate:** DOE and SRMC demonstrated the capability of operating at a rate of 9 Mgal/year in August 2025. More recently, starting October 13, 2025, SWPF processed 179,010 in a 7-day period which demonstrated a rate in excess of 9 Mgal per year.
- **Increased sodium molarity** of SWPF feed batches up to ~ 8.5 M Na from 6.44 M Na allowing SWPF to process more salt waste in each batch, thus reducing the SWPF forecast operating period by over two years of the lifetime of the process. This accelerates the reduction in environmental risk.
- **Extended Cross Flow Filters (CFF):** Extended CFFs replaced the original CFFs, nearly doubling filtering surface area with the result that filtration is no longer limiting the capacity of SWPF having more than doubled the filter performance.
- **New Vibration Monitoring System**: The vibration sensors monitoring the health of contactor bearings were upgraded and now support all 36 contactors, reporting data to the Machinery Health Manager software with speed data and certain vibration alarms reported via the upgraded DeltaV™ Distributed Control System (DCS). This supports higher plant availability.
- **New Contactors:** Procured a set of 16 new spare contactors to reduce maintenance downtime.
- **Direct SWPF to Saltstone Production Facility (SPF) Transfer Route:** Implemented a direct transfer path for DSS from SWPF to SPF, to supplement the existing transfer path from SWPF to Tank 50H to SPF. This provides operational flexibility to SWPF, SPF, and the Tank Farms.
- **High Curie Strategy:** Accelerated risk reduction by preferentially processing salt waste having the highest cesium-137 concentration.

Defense Waste Processing Facility (DWPF)

- **Main Process Cell (MPC) Crane Upgrade:** Upgraded the crane control systems and cameras, replacing the original, obsolete 1980s era technology. This reduces crane-related delays to operations and maintenance.
- **MPC Training Simulator:** Created unique, DWPF MPC-specific software and installed a separate, full-scale training simulator console, enabling realistic training for new crane operators without putting facility equipment at risk.
- **Sludge Receipt and Adjustment Tank (SRAT) Trickle Flow:** Installed a low-volume, steady flow water supply into the J-tube of the transfer pump and the sample pump inside the SRAT to reduce plugging-induced downtime.
- **Independent Steam Supply:** Designed and installed new steam supply piping connection to provide ability for vendor-supplied boiler steam to support continuity of facility operations when site steam is not available.
- **Strip Effluent (SE) Lag Storage:** Modified the 511-S and 512-S buildings to provide lag storage space for SWPF SE to support de-coupling of waste transfer send/receive timing between SWPF and DWPF.
- **Restore SRAT and Slurry Mix Evaporator (SME) capacity:** The closed loop steam generating system was restored to design values, accelerating processing rates.
- **Increased sludge transfers:** A third sludge transfer into each SRAT batch, increasing the canister waste loading, was confirmed by laboratory testing and computer simulations. Implementation is forthcoming.
- **"Super" SRAT:** Implemented the ability to have three or more Strip Effluent Feed Tank (SEFT) transfers into a SRAT batch, increasing the amount of SE into each SRAT batch.
- **Fissile loading:** Fissile loading in glass is allowed to exceed 2,500 g/m^3.
- **Canister Double-Stacking:** Completed double-stacking modifications in Glass Waste Storage Building (GWSB) 1 and initiated double-stacking modifications in GWSB 2, eliminating the need to build additional glass waste storage, yielding cost savings of approximately $200 million.

- **SEFT to SME:** Established a new, alternate transfer path for delivery of the SE stream from the SEFT directly to the SME vessel in addition to the existing path from SEFT into the SRAT. This creates an opportunity for more SE to be added to each DWPF glass batch.

End-Stream Delivery (ESD)

- **Effluent Treatment Facility (ETF) and SPF Consolidation**: ETF and SPF Operations personnel have been consolidated into a single organization called End-Stream Delivery (ESD) encompassing ETF, SPF, and the Saltstone Disposal Facility (SDF), including consolidation of the control rooms, to enhance facility operations flexibility and efficiency.
- **Saltstone Disposal Units (SDU):** SDU 8 and SDU 9 were completed and are operational. SDU 10 is complete but not yet operational. Construction of SDUs 11 and 12 is in progress and ahead of schedule.

This *Plan* assumes historically demonstrated performance of salt and sludge processing to forecast dispositioning the HLW in F Tank Farm (FTF) and H Tank Farm (HTF). Several cases for mission completion were evaluated and two are presented herein. The "Baseline/High Confidence" case (hereinafter referred to as "Baseline" case) assumes funding of $1.090B in FY26 (excluding SDU Capital Asset program) which is escalated in subsequent years. The "Goal/Early-Finish" case (hereinafter referred to as the "Goal" case) assumes the same technical inputs as the Baseline case but demonstrates a better case if funding is provided at the Requirements level.

SWPF processed almost 12 million gallons (Mgal) of dissolved salt solution since it began operation and completed the major upgrade of filter capability projected in Revision 23-P. DWPF poured 4,472 canisters since it began operation. This *Plan* forecasts 3,258 additional canisters for a total production of 7,730 canisters at mission completion. At the SDF, construction of SDU 8 – 10 was completed and construction of SDU 11 and SDU 12 continues. The Tank Farms completed waste removal and PCWR concurrence on seven non-compliant tanks (Tanks 3F, 4F, 8F, 9H, 10H, 11H, and 15H).

Purpose

This twenty-fourth revision of the *Plan*:

- Supports financial submissions development for the DOE-complex-wide Integrated Planning, Accountability, & Budgeting System (IPABS)
- Provides a technical basis for LW Contract and Contract Performance Baseline changes
- Provides input to the development of future FFA[1] Appendix L updates.

Results of the Plan

Table 1-1 — *Results of Modeled Cases* describes the major results of the *Plan*:

Table 1-1 — *Results of Modeled Cases*

Parameter	Goal	Baseline
Date last LW facility turned over to Dismantlement and Decommissioning (D&D)	2037	2041
Final Type I and II tanks complete operational closure	2031	2032
Complete SWPF salt processing	2034	2035
Complete DWPF operations	2036	2039
Last tank closed	2037	2041
Salt Solution Processed via SWPF	77 Mgal	85 Mgal
Total number of canisters produced	7,697	7,740
Total number of SDUs	12	12

SWPF and DWPF: This *Plan* forecasts completion of salt processing before completion of sludge processing. Processing of the remaining sludge at DWPF will continue past the end of SWPF Salt Waste operations. SWPF is planned to process DWPF recycle towards the end of the operation.
Canister Storage: Shipment of canisters from SRS is not included in this *Plan*.
Radionuclides dispositioned in SDF: This *Plan* is consistent with *SRS LW Strategy*[2], as amended by letter from South Carolina Department of Environmental Services (SCDES) to DOE-SR[3] and the *Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site*[4], and the *Dispute Resolution Agreement*[5] (Agreement).

2. Introduction

This twenty-fourth revision of the *Liquid Waste System Plan* documents a strategy to safely operate the LW System at SRS to receive, store, treat, and dispose of radioactive LW; close waste storage tanks and waste transfer systems; and flush waste processing facilities. The LW System is a highly integrated operation involving safely storing LW in underground storage tanks; removing, treating, and solidifying the low-level waste (LLW) fraction in concrete SDUs; vitrifying the higher activity waste at DWPF; and storing the vitrified waste in stainless steel canisters pending permanent disposition. After waste removal and processing, the storage tanks and ancillary equipment will be closed and processing facilities will be flushed for closure. Section 5—*System Description* of this *Plan* provides an overview of the LW System to give the reader some familiarity of the systems and processes discussed herein.

In total, the Tank Farms have received over 168 Mgal of waste from 1954 to the present. Having reduced the volume by disposing of some waste via vitrification and saltstone grouting and reducing other waste via evaporation, the Tank Farms currently store approximately 33.2 Mgal of waste containing approximately 191 million curies (MCi) of radioactivity; DWPF poured 4,472 vitrified waste canisters; and Saltstone placed over 64 Mgal of radioactive grout (Note: data current as of September 30, 2025; Tank Farm volume and curie inventory per the *2025-09-30—September 2025 WCS Curie and Volume Inventory Report*[6]).

This *Plan* assumes the disposition of spent fuel via dissolution at H-Canyon without uranium recovery. It forecasts the outcome for dispositioning the waste via operation of waste removal, the SPF, SWPF, and DWPF, with process improvements outlined in this *Plan*. It assumes there are no major equipment failures other than one DWPF melter replacement. It also assumes no major changes in safety requirements that would negatively affect the current planning basis for the storage, removal, transfer, or processing of waste. As described in the *Risk and Opportunity Management Plan*[7] (ROMP), some challenges will need to be managed to ensure successful completion of the mission.

2.1 *System Planning Overview*

System Plan Rev. 24 Goals

DOE's ultimate goal is to complete the LW mission by 2037 and meet the FFA milestones. Prioritized goals for development of this *Plan* are:

1. Continual safe storage of LW in tanks and temporary storage of vitrified canisters in GWSBs.
2. Risk reduction through waste disposition, i.e., maximizing processing of waste.
3. Completion of waste removal from H-Tank Farm tanks in the water table (i.e., Type I and Type II tanks).
4. FTF and IAL Closure
5. Support the ABD and FCA programs.

(Note: DOE is contemplating resuming uranium recovery at H-Canyon and discontinuing the ABD program. If uranium recovery is resumed, depending on the rate of processing at H-Canyon, the total canisters required to be poured by DWPF will be reduced by 50 to 170 canisters with a corresponding acceleration of the LW mission. Additionally, throughout this Plan, where a "last ABD discard" date is defined, that same date would represent the last discard of waste produced from uranium recovery operations.)

Constraints

Operations are planned within the boundaries established by applicable regulatory and processing constraints. For more information regarding regulatory constraints, refer to Section 3.4. The capacity of the operating facilities is accounted for in this *Plan* by assuming an availability factor for each of the facilities. This availability factor is based on actual operating history, the age of the facilities, and modeling projections. To illustrate, if a facility has an assumed availability of 65%, that means it is available to operate 65% of the time. Conversely, it is unavailable 35% of the time, i.e., about four months of downtime distributed throughout the year. Part of the 35% (in this example) downtime is for planned outages, such as the site steam outage or other planned maintenance outages (e.g., DWPF bubbler replacement or SWPF contactor replacement); and the rest of the 35% is for unplanned outages resulting from equipment failures. The unavailability is factored into the facility's processing rate, e.g., a facility that has a capacity to produce at a rate of 9.3 Mgal/yr will yield a forecast rate of 6.0 Mgal/yr after factoring in the 65% availability.

Processing constraints are primarily addressed within the context of tank space management. There is currently a premium on processing and storage space in the SRS radioactive LW tanks. Space is needed for safe storage of waste, volume reduction initiatives via evaporation, removal of waste from old-style tanks and subsequent cleaning of emptied tanks, preparation of sludge, dissolution of saltcake prior to treatment in downstream facilities, and receipt of influent wastes from both DWPF and H-Canyon and the occasional Savannah River National Laboratory (SRNL) sample returns. The Tank Farm space management strategy is based on a set of key assumptions involving projections of treatment facility throughput, evaporator performance, influent stream volumes, and forecast effluents to SWPF, DWPF, and SPF.

The 27 new-style tanks represent a maximum storage capacity of 35 Mgal, of which approximately 8.1 Mgal is empty space (~23%). However, not all that empty space is available for waste storage:

- 3.9 Mgal is margin as defense-in-depth operational control coupled with Safety Class (SC) or Safety Significant (SS) structures, systems, or components (SSC) to facilitate reasonably conservative assurance of more than adequate dilution and ventilation of potentially flammable vapors. This is controlled by the placement of high liquid level conductivity probes (HLLCP) according to engineering calculation with respect to corrosion control, hydrogen generation rates, etc.
- 1.3 Mgal is the procedurally required minimum contingency space for process recovery in the unlikely event of a large waste leak elsewhere in the Tank Farms
- 2.9 Mgal is operational "working" space available for waste storage and includes:
  - Contingency transfer space as operational excess margin above the procedurally required minimum
  - Excess margin to preserve salt batch quality and maintain uninterrupted treatment and disposition through SWPF and SPF
  - Excess margin to preserve sludge batch quality and maintain uninterrupted immobilization through DWPF
  - Excess margin to preserve uninterrupted support for H-Canyon.

Modeling

This revision of the *Plan* utilizes a model developed by DBD Inc. The All-Waste Simulation Model II (AWSM II) contains the logistical and chemical characteristics of the LW System, utilizing sub-models for handling different planning aspects. The Program Optimization Model (POM), developed using the Discrete Event Simulation (DES) engine AnyLogic, portrays facility behavior through resource loading, material transfer, and scheduling. The Chemistry Toolkit, developed using the differential equation-based process modeling engine General PROcess Modeling System (gPROMS), portrays chemical and material behavior through theoretical and empirical chemical equations. Such behaviors include monosodium titanate (MST) strikes and sludge settling durations. The sub-models together simulate logistical behavior based on chemical principles. For additional details, refer to Section 4.2.

At the current stage of development, the model incorporates facility run rates and operations logic, planned and unplanned outages, transfer prioritization, and salt and sludge batching algorithms. This information allows insight into the current state as well as mid- and long-term projections. The model has been benchmarked against previous *Plans* and been found to produce similar results when given similar inputs.

Multiple permutations of input sets were modeled for this revision of the *Plan*, where each set consists of ~450 facility and operation parameters as well as varying budget assumptions. The basis for this *Plan* contains two sets of parameters: a Baseline Case and a Goal Case.

2.2 *Achievements*

DOE and SRMC notched several notable achievements since the publication of Revision 23-P of the *Plan*. In addition, several activities are in progress that significantly advance the goals of the *Plan*. DOE and SRMC launched a risk reduction strategy, partnering with the regulators, that included focused investment on activities that reduced risk: prioritizing processing high curie batches and eliminating waste in the tanks in the water table first. The results of this risk reduction strategy include:

- Of the sixteen high-curie salt batches identified, eight have already been processed; the other eight high-curie batches should result in processing 33% of the total remaining curies within the next three years.
- The total salt mission is 25% complete.
- The total sludge mission is 55% complete
- Four tanks received concurrence for Preliminary Cease Waste Removal (PCWR) since publication of Revision 23-P; the remaining two are expected to complete PCWR before the end of 2026
- 29% of the high level waste tanks, constituting 63% of the non-compliant tanks, are waste removal complete
- 16% of the tanks are closed.

Other achievements include:

- **PCWR 2024 Accomplishments:** Completed waste removal and PCWR concurrence for three non-compliant tanks (Tank 4F, Tank 9H, and Tank 10H), exceeding the FFA condition of concurrence of one PCWR by December 2024. **COMPLETE**

- **PCWR 2025 Accomplishments, to date:** Completed waste removal and PCWR concurrence for four non-compliant tanks (Tank 3F, 8F, Tank 11H, and Tank 15H), meeting the FFA condition of three additional PCWR concurrences by December 2025 and two additional by December 2026. **COMPLETE**

Tank Farms

- **ABD Disposal in SB 11:** Tank 51H SB 11 preparation included receipt of ~478 kg of dissolved ABD waste via transfers from H-Canyon between March 1, 2023 and February 2, 2025. **COMPLETE**
- **Disposition of all FCA fuels:** Laboratory analysis of the FCA fuels and SB 11 waste composition confirmed SB 11 is available to accept the full volume of dissolved FCA fuel assemblies. This is a significant schedule acceleration for FCA waste disposition, as previous plans were to incorporate the FCA waste into SB12–SB14 through 2028. The transfers occurred in Fall 2025. **COMPLETE**

  ABD Disposal in Future Sludge Batches: Additional dissolved ABD waste is forecast for the remaining sludge batches. This supports DOE's current strategic objective to disposition legacy nuclear materials stored at SRS in the L-Area basin. *(Note: DOE is contemplating resuming uranium recovery at H-Canyon and discontinuing the ABD program. If uranium recovery is resumed, depending on the rate of processing at H-Canyon, the total canisters required to be poured by DWPF will be reduced by 50 to 170 canisters with a corresponding acceleration of the LW mission. Additionally, throughout this Plan, where a "last ABD discard" date is defined, that same date would represent the last discard of waste produced from uranium recovery operations.)* **IN PROGRESS**
- **PCWR 2026:** Tanks 13H and Tank 14H are anticipated to meet PCWR concurrence in 2026 which would exceed the PCWR FFA requirements of six tanks by the end of December 2026 by three tanks. **IN PROGRESS**

SWPF

- **SRMC processed 9.4 Mgal** of dissolved salt solution with 11.9 Mgal processed since SWPF startup. **COMPLETE**
- **Demonstrated processing rate:** DOE and SRMC demonstrated the capability of operating at a rate of 9 Mgal/year in August 2025. More recently, starting October 13, 2025, SWPF processed 179,010 gal of strip effluent in a 7day period which demonstrates a rate in excess of 9 Mgal per year. **COMPLETE**

DWPF

- **Canister double-stacking:** Completed double-stacking modifications in GWSB 1 and initiated double-stacking modifications in GWSB 2, eliminating the need to build additional glass waste storage. This achieves cost savings of approximately $200 million. **COMPLETE**
- **Fissile loading:** Fissile loading in glass is no longer limited by the previous 2,500 g/m^3 federal repository limit. Enrichment is controlled by the Nuclear Criticality Safety Assessment (NCSA), enabling greater quantities of ABD discards as well as supporting FCA as there is now a distinction in the limit between fissile uranium and total plutonium. **COMPLETE**
- **Increased sludge transfers:** A third sludge transfer into each SRAT batch, increasing the canister waste loading, was confirmed by laboratory testing and computer simulations. Implementation is forthcoming. **IN PROGRESS**

ESD

- **SPF Capacity:** Large volume transfers are necessary to support the forecast SWPF processing rates. This is demonstrated in July 2024 when SPF received 98,012 gallons and in November 2025 SPF received 128,687, its largest daily receipt from Tank 50H to date. **COMPLETE**
- **ETF and SPF consolidation**: ETF and SPF Operations personnel have been consolidated into a single organization to enhance facility operating flexibility and efficiency and minimize impacts of emergent and required periodic maintenance activities. **COMPLETE**
  - Operations and Engineering personnel were cross-qualified to support both facilities.
  - An SPF Simulator was deployed to allow Operator training on realistic facility scenarios without interrupting facility operations.
  - Two existing control rooms were consolidated into one. Both facilities can (and have been) operated by the same crew in the same shift.
- **SDUs:** SDU 8 and SDU 9 were completed and are operational. **COMPLETE**
- **SDUs:** SDU 10, SDU 11, and SDU 12 construction continues well ahead of projected need dates. **IN PROGRESS**

2.3 *Capacity Improvements*

Capacity improvements support an increase in a facility's instantaneous throughput. Many of these were identified in Revision 23-P, "*Climb-to-9*". Most capacity improvements have been implemented. While a few of the improvements are still in progress, LW facilities have already demonstrated the processing rates needed to complete this *Plan*. Starting October 13, 2025, SWPF processed 179,010 gallons of strip effluent in a 7day period (which is a rate in excess of 9 Mgal per year) and 628,641 gallons of strip effluent in a 30-day period. Likewise, DWPF has a 365-day production record of 341 canisters and is currently pouring each canister in 20 hours. This equates to an annual production rate of 438 canisters at 100% availability.

SWPF

- **Increased sodium molarity** of SWPF feed batch to ~ 8.5 M Na from 6.44 M Na, allowing SWPF to process more salt waste in each batch, thus reducing the SWPF operating period by over two years. This accelerates the reduction in environmental risk. **COMPLETE**
- **Extended CFF:** Three Extended CFFs, each 16 feet long and containing 288 tubes, recently replaced the original CFFs, which were each 10 feet long and contained 234 tubes. This change nearly doubles the filtering surface area with the result that filtration is no longer limiting the capacity of SWPF having more than doubled the filter performance. **COMPLETE**
- **Direct SWPF to SPF transfer path:** Implemented a direct transfer path for DSS from SWPF to SPF, which supplements the existing transfer path from SWPF to Tank 50H to SPF. This provides operational flexibility to SWPF, SPF, and the Tank Farms. **COMPLETE**
- **Optimized MST additions:** MST is a cold chemical added during the Alpha Strike Process to partition strontium and actinides (primarily plutonium) into a sludge solids stream transferred to DWPF. Optimization customizes addition of the MST based on the feed characteristics of each macro-batch increasing the number of concentration batches and thus reducing the frequency of MST sludge solids transfers to DWPF. **IN PROGRESS**
- **CFF Flowmeters:** New CFF Flowmeters will be installed to replace the existing turbidity meters, providing improved process monitoring and filter cleaning determinations for the alpha sorption filters. **IN PROGRESS**

DWPF

- **Increased SRAT and SME batch processing rates:** Steam coils inside each vessel provide heat necessary to drive chemical reactions. The closed loop steam generating system was restored to design values, accelerating processing rates. **COMPLETE**
- **Increased acid addition rate to SRAT:** Nitric acid addition rate was increased from 1 gpm to 2 gpm, saving approximately 3 hours of processing time per batch. The glycolic acid addition rate was increased from 1 gpm to 3 gpm and was consolidated from 4 separate transfers to a single transfer, saving approximately 6 hours per SRAT batch. **COMPLETE**
- **Reduced purge:** Conversion to the glycolic flowsheet reduced the catalytic hydrogen generation rate such that higher boil-up rates can be achieved in the SRAT and SME vessels, resulting in 40% faster concentration and allowing cycles to be completed faster. **COMPLETE**
- **Increased PRFT transfer rate:** Removed the orifice from the transfer jumper to increase the xfer rate from PRFT to SRAT from 8 gpm to 13 gpm. **COMPLETE**
- **Increased SEFT addition Rate:** Removed the orifice from the transfer jumper to increase the xfer rate from SEFT to SRAT from 5 gpm to 10 gpm. **COMPLETE**

2.4 *Availability Improvements*

Availability improvements increase the time that a facility is "open for business" and "available to process waste and not in an outage for repairs." Availability improvements such as increased spare parts inventory, repair time reduction, and more robust equipment reliability are actively being addressed. Specific improvements include:

Tank Farms

- **East Hill Utilities Upgrade Project:** Tank Farm utilities such as water, steam, plant air, and cooling chromate water are needed to support routine operations. Historically, utility pipes were encased in concrete and buried underground, making maintenance or repairs challenging and complex. The recently completed East Hill Utilities Upgrade Project moved all these services to underground trenches or above-ground pipe bridges. The new configuration increases system reliability, reduces costs, and reduces the risk of personnel or environmental contamination. **COMPLETE**
- **242-16H (16H** aka 2H**) Evaporator:** Processing higher sodium molarity SWPF batches will necessitate increased usage of the 16H Evaporator. Significant modifications were completed to reduce the duration of future nitric acid chemical cleaning campaigns from twelve months to about four months, increasing availability by eight months. **COMPLETE**
- **242-25H (25H** aka 3H**) Evaporator:** The primary mission of the 25H Evaporator system is to reduce the volume of sludge batch wash water decants. To enhance 25H system reliability, Tank 29H is being converted to 25H

Evaporator service, replacing Tank 30H, with its compromised cooling coils, as an alternate drop tank. **IN PROGRESS**

SWPF

- **Installed new vibration monitoring system**: SWPF uses vibration sensors to monitor the health of contactor bearings. The original vibration monitors were obsolete and did not provide enough data. They were replaced by new Emerson AMS 6500 Machinery Health Monitoring System, which now supports all 36 contactors, reporting data to the Machinery Health Manager software with speed data and certain vibration alarms reporting data via the upgraded DeltaV™ DCS. The new system provides predictive maintenance monitoring for contactor degradation. This supports higher plant availability. **COMPLETE**
- **Expanded maintenance staffing:** Additional maintenance staffing provides coverage 12 hours per day, 7 days per week to expedite contactor decontamination and maintenance at the 299-H facility. **COMPLETE**
- **Installed solvent drain tank filtration in SWPF Laboratory hot cell:** Operation of the CSSX system through various processes, such as solvent recovery from the SE Stilling Tank and SEC as well as routine cleaning of the SEC to recover its capacity, results in a mixed stream of organic and aqueous solutions entering the Solvent Drain Tank. As the aqueous solutions are a mix of acidic and basic solutions, solids can be generated in the Solvent Drain Tank. Some solids have been demonstrated to exist at the interface between the aqueous and organic phases. The Solvent Drain Tank solutions can be recirculated through a filter in the laboratory hot cell to remove solids, which prevents their transport to the CSSX centrifugal contactors and minimizes their fouling and subsequent required removal, cleaning, and rebuild. **COMPLETE**
- **Ultrasonic cleaning of contactors:** Implementation will shorten the duration of necessary decontamination prior to repairs. **COMPLETE**
- **New Contactors:** Procured a set of 16 new spare contactors to reduce maintenance downtime. **COMPLETE**
- **Electrical busducts:** Replacement will improve electrical system availability. **IN PROGRESS**
- **Contact maintenance area:** Identify equipment and strategies for expediting decontamination, shielding, and repair of equipment exposed to high cesium process streams. **IN PROGRESS**
- **Process ventilation:** Improve particle removal technology upstream of existing process ventilation pre-filters to reduce pre-filter replacement frequency: **PLANNED**

DWPF

- **MPC Crane Upgrade:** Completed a major upgrade of the crane control systems and cameras, replacing the original, obsolete 1980's era technology. This reduces crane-related delays to operations and maintenance, as the MPC is the only means available to lift cell covers, remove failed equipment, re-install refurbished or new equipment, and replace cell covers. **COMPLETE**
- **MPC Training Simulator:** Created unique, DWPF MPC-specific software and installed a separate, full-scale training simulator console, enabling realistic training for new crane operators without putting facility equipment at risk. **COMPLETE**
- **"Super" SRAT:** The ability to have three or more SEFT transfers into a SRAT batch was implemented, increasing the amount of SE into each SRAT batch. **COMPLETE**
- **SRAT Trickle Flow:** Designed, fabricated, and installed a low-volume, steady flow water supply line into the J-tube of the transfer pump and sample pump inside the SRAT, to prevent the J-tube from plugging during extended boiling operations. When the transfer pump J-tube plugs, the SRAT batch cannot be moved forward to the next process vessel, pausing processing until the plug is removed. When the sample pump J-tube plugs, the analysis required for acid additions cannot be performed. The SRAT trickle flow design is based upon the previous successful implementation of a similar trickle-flow line for the SME vessel transfer pump. Installation of the SRAT Trickle Flow Line improves facility availability. **COMPLETE**
- **Independent Steam Supply:** Designed and installed new steam supply piping connection to provide ability for vendor-supplied boiler steam to be used for continuity of facility operations when site steam is not available. **COMPLETE**
- **SE Lag Storage:** Added new jumpers and redesigned and redeployed existing equipment at the 511-S and 512-S buildings to provide lag storage space for up to ~ 7 Kgal of SE as needed prior to transferring it to DWPF. This supports de-coupling of waste transfer send/receive timing between SWPF and DWPF, enhancing efficiency of both facilities. Engineering also developed a unique remotable manual valve manipulator, coined the "mini-wrench," which will improve efficiency of operations and maintenance activities at the 511-S and 512-S buildings. SCDES permit modifications were approved. **COMPLETE**
- **Expand Contact Decontamination Maintenance Cell (CDMC) staffing:** A new dedicated mechanical and electrical maintenance shift will be staffed seven days per week to tackle the CDMC backlog and keep pace with emergent failures. **COMPLETE**

- **Replaced breathing air (BRA) compressor:** In February 2025, DWPF's original (1980s vintage) BRA compressor failed beyond repair. Prior to the MPC Crane Outage, two temporary portable BRA compressors were acquired, and a temporary design modification was implemented to increase reliability compared to use of portable breathing air compressors. **COMPLETE** Permanent modifications will provide redundancy. **IN PROGRESS**
- **SEFT to SME:** Established a new, alternate transfer path for delivery of the SE stream from the SEFT directly to the SME vessel in addition to the existing path from SEFT into the SRAT. This creates an opportunity for more SE to be added to each DWPF glass batch. **IN PROGRESS**
- **5th Shift Training:** Facility knowledge is declining due to attrition. Instituting a fifth operating shift (one week in every five-week rotation) will provide thirteen weeks of continuing training per year. The upgraded training simulator, including updated software, 512-S lag storage and SEFT to SME simulator, and the new MPC crane simulator will improve the effectiveness of training and ensure the workforce is prepared to meet production milestones. **IN PROGRESS**
- **Critical spare equipment procurement:** An ongoing effort to replenish critical spare equipment using (when possible) original vendors, which minimizes manufacturing time. However, the complexity of the custom designs often necessitates 2-3 years for fabrication. **IN PROGRESS**
- **Restaff the MPC Crane Supervisor position:** Having a supervisor dedicated to supporting MPC Crane operations will provide additional oversight for operational reliability. **IN PROGRESS**
- **Utilize Upgraded MPC Crane to Support Canyon Equipment Maintenance and Disposal:** Prior to the MPC Crane upgrade, crane availability was limited, so crane activities directly supporting essential facility operations were prioritized over installed equipment maintenance or disposal to the extent possible. However, this challenged efficient operations. Upon completion of the upgrade, equipment maintenance and disposal can resume, which will support achieving production throughput goals. **IN PROGRESS**
- **Refurbish clean canyon spare equipment and repair contaminated spares in the canyon**: As needed, replace pump bearings, jumper gaskets, cannibalized components, etc. **IN PROGRESS**
- **Improve facility equipment**: Leverage SE lag storage availability to conduct preventive maintenance (PM) activities without disrupting SWPF operations; convert temporary modifications to permanent installations; replace aging/obsolete variable frequency drives (VFDs) and uninterruptible power supply (UPS); refurbish/replace the Mechanical Equipment Testing System (METS) used to test repaired contaminated equipment prior to re-installation; explore new techniques for enhanced equipment decontamination. **IN PROGRESS**
- **Streamline administrative controls to improve process efficiencies:** Utilize process knowledge in lieu of sample results to support process chemistry decisions; evaluate modifications to Documented Safety Analysis (DSA) constraints for trapped hydrogen in process vessels; reclassify some equipment from SS to production support (PS), thereby simplifying procurement, vendor services, maintenance activities, and work planning; evaluate possible use of an air bubbler to reduce/eliminate Isopar®L in the SE stream from SWPF. **IN PROGRESS**

ESD

- **Minimized duration of SPF mixer replacement outage**: Replaced a worn mixer with a rebuilt mixer, rather than cleaning and rebuilding the mixer in place. **COMPLETE**
- **ESD maintenance staffing:** Provide maintenance personnel 12 hours per day, 7 days per week to enable troubleshooting and repair of production affecting components on weekends. **COMPLETE**
- **SPF dust collectors:** Replace obsolete dust collectors that are reaching the end of their operating life. **IN PROGRESS**
- **SPF dry material screw feeder:** Replace existing obsolete dry material screw feeder system. **IN PROGRESS**
- **SPF process room ventilation and cooling system:** Upgrade equipment and/or transition to higher temperature rated components to extend grout pump operating life. **IN PROGRESS**

All Facilities

- **Completed Emerson DeltaV™ Upgrades:** The DCS used to monitor and operate all LW facilities received a complete overhaul of both hardware and software systems. In all, 18 control systems, which include 125 servers, 195 workstations and 236 controllers, were either replaced or upgraded. This was necessary to avoid obsolescence issues and the potential cybersecurity risks that accompany outdated systems. **COMPLETE**

Availability Summary

Figure 5-9 — *Drive to 65* depicts the key availability improvement activities currently in progress or planned across the LW facilities. Once implemented, these activities (among others) are expected to achieve consistent complete system availability of at least 65%.

2.5 ***Closure Improvements***

The PCWR accomplishments achieved to date provide opportunities for implementing lessons learned to reduce the cost and schedule for closing tanks. The tank closure lifecycle can be divided into two primary phases. The first phase, "Waste Removal," includes design and field work activities facilitating the removal of waste and culminating in the achievement of PCWR for the tank. Waste removal activities phase historically took 4–5 years to complete but the duration has been reduced by approximately one year. The second phase aligns with what is commonly referred to as the "Tank Closure" activities, which historically took 3–4 years to complete and includes: Sampling Preparations, Sampling, Sampling Analysis, Isolation Design, Isolation, Grout Design, Grout Preparations, and Grouting. Through a series of Rapid Improvement Events and other focused change efforts, the duration of these Closure Activities has been reduced by 1–2 years. These overall schedule improvements include:

- **Waste Removal without Waste Tank Modifications**: DOE and SRMC have successfully removed waste from several HLW Tanks and achieved PCWR without waste tank modifications. In total, these efforts avoided cost of ~$13.5 million dollars, reduced the safety risk to site employees, and reduced the potential radiological risk to those same employees, the public, and the environment. **COMPLETE**
- **Tank Closure Documentation Efficiencies:** SRMC collaborated with DOE-SR, SC DES and EPA through a Rapid Improvement Event to reduce the Closure Document review and approval process from a 14-month duration to a 7-month duration accelerating the grouting of tanks. **COMPLETE**
- **Drone Technology for Tank Inspections:** Successfully adapted and deployed drone technology with onboard digital video capability for visual inspection of waste tank interior and annular spaces, a first in the DOE Complex. The maneuverability of the Flyability Elios 3 drone provides access to the entire space, whereas camera access was previously limited by riser location. The improved video quality (see the illustration to the right) provides a better basis for calculating remaining waste heel volume, an essential factor in the environmental Performance Assessment for site closure. **COMPLETE**

- **Drone Sample Collection:** DOE and SRMC are extending the use of the aerial drones to include new technologies for more cost-effective and efficient residual heel sample collection. Drones present several advantages over the tank crawlers previously used: the unit capital cost of a drone is about 85% less than that of a tank crawler, and a drone requires less manpower to operate. The drone can be maneuvered around in-tank obstacles without a tether, but the crawler must navigate all obstacles with a tether, which is more time-consuming and risks irrecoverable entanglement. Several on-board sampling technologies including centrifugal sampler technology are being explored with the drones to support varying sampling needs. **IN PROGRESS**
- **Design Improvements:** Adjusting design features in the Task Requirements and Criteria (TR&C) simplifies the designs, making installation more efficient with less risk of rework. This includes temporary power versus permanent power inside installed conduit and raceways, and improved strategies for anchoring equipment to the tank tops to avoid interferences and potential rework. Using existing installed equipment in place of specially designed equipment avoids unnecessary waste removal design and tank modifications. **IN PROGRESS**
- **Execution Improvements:** Full utilization of Work Authorization Design Change Forms (DCFs) allows tank modifications to continue while any identified design rework is conducted. Early procurement of materials reduces installation and fabrication delays caused by emergent supply chain shortfalls. Verifying work task readiness for multiple work scopes at a time and streamlining the Construction Discipline Engineering

organization to support timely work package development reduces the time required to accomplish specific work scopes. **IN PROGRESS**

- **Grouting:** The Grout Design and Grout Prep phase durations have been reduced by revising the grouting strategy. Improvements include upgrading the types of equipment used for grout placement, such as employing a pumper truck with an articulating arm which can execute grout placement using just two tank risers, instead of relying on cumbersome slick lines connected to four tank risers. This approach is also expected to reduce the potential for grout "mounding" in the tank. **IN PROGRESS**
- **Schedule Improvements:** Project schedule reviews verify minimal activity constraints and manage float. Reducing the disassembly and removal (D&R) of installed equipment during the Sample Prep phase (based on the revised tank closure sampling strategy) and delaying the isolation design and isolation field work phases until after operational closure is complete, allows adjacent isolations to be grouped and executed in parallel, thereby reducing the overall time required. **IN PROGRESS**
- **Operational Closure Sample Analysis Efficiencies**: DOE and SRMC reduced the time and costs associated with analyzing waste tank residual heel samples. For the required samples, SRMC is optimizing and streamlining the sample preparation activities and has put in place contracts with commercial vendors that result in significant cost and schedule savings for sample analyses. **IN PROGRESS**

2.6 *Opportunities and Risk Assessment*

The draft ROMP[7] documents the comprehensive identification and analysis of technical and programmatic opportunities and risks associated with the LW program and presents strategies for enhancing those opportunities and mitigating those risks in the near-term and outyears. This *Plan* provides numerous opportunities for acceleration of the LW mission with very few risks that could extend the mission.

2.6.1 Opportunities

The ROMP identifies several opportunities associated with this *Plan*. These opportunities, if realized, could help reduce risks, accelerate completion of the mission, ensure timely completion of FFA milestones, and potentially improve schedule durations. New opportunities are also under evaluation that may yield benefits to the mission once they have matured. These opportunities include but are not limited to:

- Decouple SWPF MST/SS Stream from DWPF: Transferring the SWPF MST/SS stream into the DWPF sludge batch that is being prepared in the Tank Farm would relieve a close-coupling constraint between SWPF and DWPF. Additionally, this would reduce variability between SRAT batches which would enable simplification of SRAT processing enabling accelerated processing at DWPF. Furthermore, by directing the MST/SS stream to the Tank Farm additional tankage within DWPF could be utilized for SE Lag Storage.
- DWPF availability improvements: Planned improvements to increase DWPF availability are more effective than assumed and not only relieve the close-coupling bottleneck between SWPF and DWPF to a greater extent than modelled but also enable increased consumption of sludge by DWPF
- Discontinuation of ABD: The ABD program is projected to increase the number of canisters produced at DWPF by 268 (included in this *Plan*). While some of these incremental canisters will still occur as a result of ABD and FCA discards into Sludge Batch 11 that have already occurred, if H-Canyon were to resume uranium recovery, a number of the incremental canisters would be eliminated which would result in a corresponding reduction of the LW mission. The reduction in canisters from eliminating ABD would be offset to some extent by the waste resulting from uranium recovery at H-Canyon.
- Improved SE Concentration Factor: The Baseline case assumes a strip effluent concentration factor of 15:1. Higher concentration factors are possible with the BobCalix flowsheet. A higher concentration factor would reduce the volume of strip effluent created by SWPF to be processed at DWPF. Reducing the volume of strip effluent would decrease SRAT cycle times and accelerate canister production.
- Increased Canister Waste Loading: Including the MST/SS stream in sludge batch compilation will reduce SRAT batch variability. Reduced SRAT batch variability would enable frit selections that target higher waste loadings without negatively impacting melt rate. This could reduce the number of canisters remaining to be poured which would accelerate the LW mission.
- Funding: Implementation of cost saving strategies and the possibility of enhanced funding profiles in excess of $1.090B in FY26 (excluding the SDU Capital Asset program) escalated in subsequent years.

2.6.2 Risks

This *Plan* is a high confidence plan. The assumed Baseline funding is $1.066B excluding the SDU Capital Asset Program and nearly all of the technical inputs are at the modeled values (or better). As such, very few risks exist.

Several of the risks, if realized, have the potential to extend the LW program beyond the mission completion date, including but not limited to:

- Aging Infrastructure: While the assumed availability factor for the facilities addresses expected normal failures of various components, the *Plan* end date places significant stress on increasingly aging infrastructure and equipment. Such failures, e.g., the 25H Evaporator pot leak in 2016, provide insight into problems that may be encountered while operating the HLW System until the end of the mission.
- Emergent Changes to Requirements: Changes to business, project management, or technical requirements may adversely affect plans for the provision of necessary facilities (e.g., SDUs), or performance of necessary activities (e.g., transfers). This could interfere with normal operational expectations assumed in the *Plan*.
- Funding: Program funding is less than the assumed Baseline amount ($1.090B in FY26 and escalated in subsequent years).

3. Planning Bases

Dates, volumes, and chemical or radiological composition information contained in this *Plan* are planning approximations only. Specific flowsheets guide actual execution of individual processing steps. The activities described are summary-level activities, some of which have yet to be fully defined. The sequence of activities described herein reflects the best judgment of the planners. The individual activity execution strategies contain full scope, schedule, and funding development. Upon approval of scope, cost, and schedule baselines, modifications of this *Plan* may be necessary.

3.1 *Common Values and Goals*

In a meeting held on June 29, 2022, DOE, the SCDES, the U.S. Environmental Protection Agency (EPA), and SRMC agreed to the following common values and goals:

VALUES

1. Maintain transparency with open communication between regulators, DOE, and the contractor on program progress and significant emerging issues.
2. Ensure DOE's strategy and plans are subject to stakeholder engagement and input, including SCDES permitting processes, and *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), as appropriate.
3. Maximize the amount of curies (especially long-lived radionuclides) vitrified and ready for ultimate disposal out of state.
4. Limit disposal of curies onsite at SRS so that residual radioactivity is as low as reasonably achievable.

GOALS (in priority order)

1. Reduce risk to the environment by removing waste and closing tanks.
2. Reduce operational and environmental risk by aggressively removing curies from the waste tanks.
3. Reduce operational and environmental risk by optimizing operations to minimize LW program total life cycle.
4. Complete waste removal and subsequent grouting of all waste tanks and ancillary structures, while recognizing the potential for future emergent conditions or opportunities, using a risk-based priority order:
    a. Tanks in the water table
    b. FTF tanks
    c. Remainder of waste tanks
    d. Ancillary structures.

3.2 *Funding*

Progress toward the goal of immobilizing all the LW at SRS is highly dependent on available funding. With any reduction from full funding, activities that ensure safe storage of waste claim priority. Funding above that required for safe storage enables risk reduction activities, i.e., waste removal, waste treatment, and removal of waste tanks from service, as described in this *Plan*. Most importantly, funding in excess of the Baseline amount ($1.090B in FY26 excluding the SDU Capital Asset program) and escalated in subsequent years, enables more aggressive procurement of critical spares and implementation of the availability improvements previously discussed in this plan. Funding for the LW program is primarily provided from PBS 14C.

3.3 *Inputs and Assumptions*

The following inputs and assumptions were generated to develop this 24th revision of the *Plan*.

- **Priorities for Scenario Development (these are goals, not necessarily outcomes):**
    1. Continual safe storage of LW in tanks and vitrified canisters in storage.
    2. Risk reduction through waste disposition, i.e., maximizing processing of waste.
    3. Completion of waste removal from H-Tank Farm tanks in the water table (i.e., Type I and Type II tanks).
    4. FTF and IAL Closure
    5. Support disposition of ABD and FCA

(Note: DOE is contemplating resuming uranium recovery at H-Canyon and discontinuing the ABD program. If uranium recovery is resumed, depending on the rate of processing at H-Canyon, the total canisters required to be poured by DWPF will be reduced by 50 to 170 canisters with a corresponding acceleration of the LW

mission. Additionally, throughout this Plan, where a "last ABD discard" date is defined, that same date would represent the last discard of waste produced from uranium recovery operations.)

- **Funding**
  - FY25 appropriations of $1.066B escalated in subsequent years excluding the SDU Capital Asset Program
  - PBS-14C funds provided to the DOE and Maintenance and Operations (M&O) Site Operations Contractor, Savannah River Nuclear Solutions (SRNS), in support of LW are assumed to be less than $162M per year
  - Pension payments are not included beyond FY26.
  - Additional funding will be provided for any additional scope or increases to Unit Billed Services (UBS), Material Handling, or Procurement Cost
- **Accelerated Basin Deinventory (ABD)**
  - Utilize SRNS-E1122-2020-00021[8] to characterize ABD discard
  - ABD transfers will be supported only to the degree that they do not impact the overall LW mission
  - DOE will select to perform supernate U-235 depletion in the Tank Farm thus enabling ABD discards at higher U-235 enrichments
  - In the Baseline Case, the final ABD discard will be received no later than December 2035 to avoid LW mission impact. *(Note: DOE is contemplating resuming uranium recovery at H-Canyon and discontinuing the ABD program. If uranium recovery is resumed, depending on the rate of processing at H-Canyon, the total canisters required to be poured by DWPF will be reduced by 50 to 170 canisters with a corresponding acceleration of the LW mission. Additionally, throughout this Plan, where a "last ABD discard" date is defined, that same date would represent the last discard of waste produced from uranium recovery operations.)*

3.4 *Regulatory Drivers*

Numerous laws, constraints, and commitments influence LW System planning. Described below are requirements most directly affecting LW system planning. This *Plan* assumes the timely acquisition of regulatory approvals.

3.4.1 South Carolina Environmental Laws and Permits

Under the *South Carolina Pollution Control Act*, S.C. Code Ann. §§ 48-1-10 *et seq*., SCDES is the delegated authority for air pollution control and water pollution control. The State has empowered SCDES to adopt standards for protection of water and air quality and to issue permits for pollutant discharges. Further, SCDES is authorized to administer both the federal Clean Water Act and the Clean Air Act. Under South Carolina's *Hazardous Waste Management Act*, S.C. Code Ann. §§ 44-56-10 *et seq*., SCDES is granted the authority to manage hazardous wastes. With minor modifications, SCDES has promulgated the federal *Resource Conservation and Recovery Act* (RCRA) requirements, including essentially the same numbering system. The *South Carolina Solid Waste Policy and Management Act*, S.C. Code Ann. §§ 44-96-10 *et seq*., provides standards for the management of most solid wastes in the state. For example, SCDES issued to DOE-SR permits such as the *Modified Class 3 Landfill Permit for the SRS Z-Area SDF* (permit ID 025500-1603). This landfill permit contains conditions for the acceptable disposal of non-hazardous waste in the SDF, including provisions for fines and penalties. Additional agreements provide that SRS minimizes the quantity of radionuclides (as measured in curies) dispositioned in the SDF, keeping the total curies at or below the amount identified in *Savannah River Site—Liquid Waste Disposition Processing Strategy*[9] (SRS LW Strategy) as amended by letter from SCDES to DOE-SR[10], the *Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site*[15], and the "*Solid Waste Landfill Agreement*"[11]. Other principal permits required to operate LW facilities pursuant to the state's environmental laws include:

- SCDES Bureau of Land and Waste Management
  - Class 3 Solid Waste Landfill Permit for SDF
- SCDES Bureau of Water:
  - Industrial wastewater treatment facility permits (e.g., Tank Farms, DWPF, ETF, SPF, SWPF)
  - *National Pollutant Discharge Elimination System* (NPDES) permit (H-16 Outfall discharges from ETF)
- SCDES Bureau of Air Quality:
  - Part 70 Air Quality Permit (one Site-wide Air Permit including the LW facilities).

One feature of this *Plan* is incorporation of the provisions of the *Agreement*[3] executed in October 2016. That *Agreement* designates specific technology incorporation (e.g., sonar mapping demonstration, etc.) into the LW disposition matrix. Salt processing goals and deadlines are identified. Along with the goals and timing is a recognition of the challenges of operating a complex set of interdependent facilities, many of which are older, such that documentation of *force majeure* events is allowed.

Additional principles guiding the development of this Plan include:

- Comply with applicable permits and consent orders, including the State-approved *Consolidated General Closure Plan*[12] (CGCP)

3.4.2 Site Treatment Plan

The *Site Treatment Plan* (STP)[13] for SRS describes the development of treatment capacities and technologies for mixed wastes and provides guidance on establishing treatment technologies for newly identified mixed wastes. The STP allows DOE, regulatory agencies, the States, and other stakeholders to efficiently plan mixed waste treatment and disposal by considering waste volumes and treatment capacities on a national scale. The STP identifies vitrification in DWPF as the preferred treatment option for appropriate SRS liquid high-level radioactive waste streams and solidification in Saltstone for low-level radioactive waste streams. In 1996, SRS committed that:

> *"Upon the beginning of full operations, DWPF will maintain canister production sufficient to meet the commitment for the removal of the backlogged and currently generated waste inventory by 2028."*

The commitment for the removal of the waste by 2028 encompasses bulk waste removal and heel removal scope of this *Plan*. Final cleaning, deactivation, and removal from service of storage and processing facilities follow the satisfaction of this commitment. *Note that with the changes in technology and challenges in implementing the various technologies this* Plan *does not meet this commitment, even with additional salt processing.*

3.4.3 Federal Facility Agreement (FFA)

The EPA, DOE, and SCDES executed the SRS Federal Facility Agreement (FFA) on January 15, 1993, with an effective date of August 16, 1993. It provides standards for secondary containment, requirements for responding to leaks, and provisions for the removal from service of leaking or unsuitable LW storage tanks. Tanks scheduled for operational closure may continue to be used but must adhere to the FFA schedule for operational closure and the applicable requirements contained in the Tank Farms' industrial wastewater treatment facility permit. Several agreements since then have modified the original agreement recognizing the realization of previously identified risks (*e.g.*, delays in SWPF start-up date). Appendix L of the FFA, updated to add the *2022 High Level Waste Tank Milestones Agreement* signed by DOE, SCDES, and EPA in December 2022, includes the *Schedule for Remaining Non-Compliant Tanks* (Table 3-1).

Table 3-1 — *FFA Schedule for Remaining Non-Compliant Tanks*

Milestone Date	PCWR (№ of Tanks)	Operational Closure (№ 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

3.4.4 National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires federal agencies to assess the potential environmental impacts of proposed actions. Nine existing NEPA documents and their associated records of decision directly affect the LW System and support the operating scenario described in this *Plan*:

- *DWPF Supplemental Environmental Impact Statement* (SEIS) (DOE/EIS-0082-S)
- *Final Waste Management Programmatic Environmental Impact Statement* (PEIS) (DOE/EIS-0200-F)

- *SRS Waste Management Final Environmental Impact Statement* (EIS) (DOE/EIS-0217)
- *Interim Management of Nuclear Materials EIS* (DOE/EIS-0220)
- *SRS High-Level Waste Tank Closure Final EIS* (DOE/EIS-0303)
- *Environmental Assessment (EA) for the Closure of the HLW Tanks in F and H Areas at SRS* (DOE/EA-1164)
- *SRS Salt Processing Alternatives Final SEIS* (DOE/EIS-0082-S2).
- *Final EA for the Commercial Disposal of DWPF Recycle Wastewater from SRS* (DOE/EA-2115)
- *Supplement Analysis for the Defense Waste Processing Facility Failed Melter Aboveground Storage* (DOE/EIS-0082-S-SA-01)

3.4.5 Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005

The *Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005* (NDAA) Section 3116 (NDAA §3116) allows determinations by the Secretary of Energy, in consultation with the Nuclear Regulatory Commission (NRC), that certain radioactive waste from reprocessing is not high-level waste and may be disposed of in South Carolina pursuant to a State-approved closure plan or State-issued permit. For salt waste, DOE removes specific fission products and actinides using a variety of technologies and combining the removed fission products and actinides with the metals being vitrified in DWPF. NDAA §3116 governs solidifying the remaining low-activity salt stream into saltstone grout for disposal in SDF. For tank removal from service activities, NDAA §3116 governs the Waste Determinations (WD) for the Tank Farms that demonstrate that the tank residuals, the tanks, and ancillary equipment (evaporators, diversion boxes, etc.), at the time of removal from service and stabilization, can be managed as non-high-level waste.

Conduct of operations are planned in accordance with the following applicable portions of the NDAA:

- *Section 3116 Determination for Salt Waste Disposal at the Savannah River Site*[14]
- *Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site*[15]
- *Section 3116 Determination for Closure of F-Tank Farm at the Savannah River Site*[16]
- *Basis for Section 3116 Determination for Closure of F-Tank Farm at the Savannah River Site*[17]
- *Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site*[18]
- *Basis for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site*[19].

4. Planning Summary and Results

This section summarizes the key attributes of this *Plan*. Detailed discussion of risks and associated mitigation strategies are included in other documents such as the ROMP and individual implementation activity risk assessments.

In addition, this *Plan* assumes receiving adequate funding to achieve the required project and operations activities. Failure to obtain adequate funding will have a commensurate impact on the programmatic objectives.

This section summarizes the *Plan*, based on the key assumptions and bases. Tabular results of the lifecycle, on a year-by-year basis, or graphical results of the lifecycle are included in:
Appendices A1 & A2 — *Salt Solution Processing*
Appendices B1 & B2 — *Canister Storage*
Appendices C1 & C2 — *LW System Plan—Revision 24 Summary (Baseline Case DNA)*
Appendices D–E — *PCWR & Tank Removal from Service*

4.1 *System Planning Process*

The LW System Plan is one of a suite of interrelated planning documents and graphics used to guide long-range execution of the LW program through mission completion. Other documents include:

- Risk and Opportunity Management Plan[7]
- 1-Year Integration Plan
- 4-Year Integration Plan
- Tank Farm Operating Plan and Integration Graphic
- Effluent Treatment Facility Plan
- Various facility and project schedules
- Various project and activity risk assessments
- *SRMC Waste Removal and Operational Closure Strategy*[20]

In addition, the near-term LW Strategy is built upon several other spreadsheets and graphics, including:

- Salt Dissolution Metric
- Salt Batch Need Dates
- Salt Batch Dashboard
- Sludge Batch Dashboard

The documents and graphics listed above are variously produced by SRMC personnel from the System Planning group, Funds Control, Risk Management, Project Management, and Project Controls organization, with input from others as needed. For more detailed descriptions of each document, refer to the *System Integration Management Plan* (SIMP)[21].

4.2 *DBD Modeling*

The bulk of System Planning lifecycle modeling is provided by the model suite developed by DBD, Inc. including the **All-Waste Simulation Model II** (AWSM II). It consists mainly of two sub-models: the **Program Optimization Model** (POM) and the **Chemistry Toolkit**. The combination of sub-models simulates the chemical and material constraints of the Liquid Waste system.

Model behaviors are built from the bottom-up, where the combination of the equipment and process throughput rates and attributes form the overall facility throughput rates, as opposed to assumed annual targets impacting the component's attributes. AWSM II simulates material and strategic improvements by manipulating these components' specific behaviors. Analysis is provided by interpreting the change in facility performance via performance markers and metrics. Much of this information is processed through PowerBI and Java generated graphics.

First, DBD built the POM, an operational research model that portrays facility behavior mainly through resource constraints, material transfer volumes, and timings. It uses the Discrete Event Simulation (DES) engine AnyLogic. *Second*, DBD built the Chemistry Toolkit, a supplemental chemical model that portrays facility behavior through theoretical and empirical chemical equations. It uses the differential equation-based process modeling engine gPROMS.

The **POM** models the four interdependent waste processing flowsheets managed by SRMC:

- The Tank Farms store and prepare waste batches (salt and sludge) for processing and disposition.

- SWPF separates radionuclides from salt solutions using adsorption onto MST, filtration, and a liquid-liquid solvent extraction — CSSX. SWPF produces three output streams:
    - SE, containing cesium
    - MST, including adsorbed strontium, actinides such as plutonium, with sludge solids
    - DSS, which is largely depleted of radioactive contaminants
- DWPF processes the SE and the MST sludge solids with sludge from the Tank Farms, combines it with borosilicate material, and melts and pours the resultant molten glass stream into stainless steel canisters which are stored on site pending final storage in a federal repository
- The SPF combines slag and fly ash with DSS to form grout. The grout is then pumped to the Saltstone Disposal Units, where it hardens into the final disposition waste form known as saltstone.

All facilities are part of an integrated system that impact each other through their outages and upgrades. The POM allows DOE and SRMC to anticipate the bottlenecks in its processes and suggest modifications that could be effective in clearing them. It can also model the order of tank waste removal in the Tank Farms, and the impact on the overall mission. By tracking waste transfers between the vessels across all facilities, POM tracks the chemical composition of waste streams throughout the process. POM then simulates LW operations strategies and controls by manipulating subsequent waste transfers and/or chemical additions. This allows for a reasonable projection of system behaviors dynamically responding to simulation events, instead of relying on steady-state assumptions.

While POM easily tracks 'well mixed' assumed streams, the Chemistry Toolkit supplements POM through applying differential equations when necessary. Such equations describe chemical and transport phenomena impactful to the LWO. These include the MST strikes at SWPF and solid settling times during the sludge batch washing process. Both processes are examples of high frequency activities that require moderate to significant resources to calculate at the lifecycle scale. The automation of these complex calculations allows for rapid simulation at higher fidelity in lifecycle projection.

The POM and Chemistry Toolkit provide DOE and SRMC with a sandbox to test approaches to remediating the SRS tank farm and the liquid waste within it. The toolset is being used to forecast an operational timeline that meets DOE's, SRMC's, and their stakeholders', needs and objectives. The simulations are updated as new information becomes available and will underpin waste processing plans through the end of the mission.

4.3 *Key Inputs and Results for the Cases*

Two planning cases, a Baseline Case, and a Goal Case, were evaluated for this *Plan*. A brief description and key inputs and results of each case are as follows.

4.3.1 Baseline (High Confidence) Case

The Baseline case is a high confidence case utilizing technical inputs that have already been implemented or demonstrated, e.g., achieving 18.5 gpm throughput in the CSSX system at SWPF, improving filtration rate through the extended crossflow filters at SWPF, restoring steaming capacity for DWPF processing vessels, etc. The Baseline case also includes technical inputs for process improvements whose implementation is in progress or planned soon, e.g., SEFT to SME transfers, making three sludge transfers per SRAT batch in DWPF etc.

The Baseline case assumes $1.090B in FY26 (excluding the SDU Capital Asset Program) escalated in subsequent years

4.3.2 Goal (Early-Finish) Case

The Goal case utilizes the same technical inputs as the Baseline case.

However, the Goal case assumes a funding profile consistent with SRMC's Requirements Case which is $1.1229 B in FY26 excluding the SDU Capital Asset Program. The additional funding enables accelerated waste retrievals (e.g., more tanks worked simultaneously, faster equipment installation) which supports increased salt and sludge feed for SWPF and DWPF respectively. More importantly, additional funding also enables more aggressive procurement of critical spares and implementation of the availability improvements discussed in Section 2.4 "*Availability Improvements*" and shown in Figure 5-9 — *Drive to 65*. The most significant benefit of aggressive procurement of critical spares is seen at DWPF where the Mean Time Between Failure (MTBF) of critical components are extended and the corresponding Mean Time to Repair (MTTR) are shortened. To give an example, the Main Process Cell (MPC) crane at DWPF is integral to facility operations. In the Baseline case it is calculated that the MPC crane will experience a minor failure every 17 days which will require 4 days to repair and a major failure every 83 days requiring 8.5 days to repair. With the increased funding assumed in the Goal case, these values become a minor failure every 25 days requiring 3 days to repair and a major failure every 110 days requiring 7 days to repair. The net benefit of the additional funding applied to procurement of critical spares and improved maintenance capabilities is an approximate 10% increase in the overall availability of the LW system. The combination of increased availability paired with accelerated waste retrievals significantly shortens the liquid waste mission compared to the Baseline Case. An additional benefit of accelerated waste retrievals (e.g., more tanks worked simultaneously, faster equipment installation) is that the model is able to batch salt more efficiently which reduces the total volume of salt required to be processed at SWPF. More efficient salt batches combined with the reduction in DWPF recycle generated due to fewer years of operations at DWPF reduce the total SWPF feed required to be processed by over 7 million gallons. While this reduction does not shorten the LW mission directly, it enables SWPF to transition DWPF recycle processing support sooner which supports accelerated closure of the 2H Evaporator and associated waste tanks in HTF.

4.3.3 Key Results

Table 4-1 — *Results of Modeled Cases* describes the major results of the *Plan*:

Table 4-1 — *Results of Modeled Cases*

Parameter	Goal	Baseline
Date last LW facility turned over to Dismantlement and Decommissioning (D&D)	2037	2041
Final Type I and II tanks complete operational closure	2031	2032
Complete SWPF salt processing	2034	2035
Complete DWPF operations	2036	2039
Last tank closed	2037	2041
Salt Solution Processed via SWPF	77 Mgal	85 Mgal
Total number of canisters produced	7,697	7,740
Total number of SDUs	12	12

SWPF and DWPF: This *Plan* forecasts completion of salt processing before completion of sludge processing. Processing of the remaining sludge at DWPF will continue past the end of SWPF Salt Waste operations. SWPF is planned to process DWPF recycle towards the end of the operation.

Canister Storage: Shipment of canisters from SRS is not included in this *Plan*.

Radionuclides dispositioned in SDF: This *Plan* is consistent with *SRS LW Strategy*[22], as amended by letter from South Carolina Department of Environmental Services (SCDES) to DOE-SR[23] and the *Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site*[24], and the *Dispute Resolution Agreement*[25] (Agreement).

5. System Description

5.1 *Liquid Waste System Definition*

The LW System is the integrated series of facilities at the SRS that safely manage the existing waste inventory and disposition the waste stored in the tanks into a final glass or grout form. This system includes facilities for storage, evaporation, waste removal, pre-treatment, vitrification, and disposal.

The goal is to convert the waste into one of two final waste forms: glass, which will contain over 99% of the radioactivity, and grout, which will contain most of the volume. Each of the waste types at SRS needs to be treated to accomplish disposal in these two waste forms. The salt must be treated to separate the bulk of the radionuclides from the non-radioactive salts in the waste. This separation occurs in SWPF, with the resultant higher-level waste streams transferred to DWPF. The sludge must be washed to remove non-radioactive salts that would interfere with glass production. The washed sludge can then be sent to DWPF and combined with the SWPF waste streams for vitrification into glass. The bulk of the volume of waste, after most of the radioactivity has been removed, is transferred to SPF for disposal as grout in SDUs.

5.2 *Overview*

SRS is a 310-square-mile DOE Complex located in South Carolina. Since 1953, SRS facilities have produced nuclear materials for national defense, research, and medical and space programs. Both the F-Canyon's Plutonium Uranium Reduction Extraction (PUREX) process and the H-Canyon's modified PUREX process (HM) utilized acid-side separation processes to isolate special nuclear materials and enriched uranium from irradiated targets and spent reactor fuel. H-Canyon also recovered Np-237 from spent fuel and formed it into targets for irradiation in SRS reactors, producing Pu-238 for use in in long-life thermoelectric power generators and heat sources for civil and military programs. Altogether, over 168 Mgal of a complex mixture of chemical and radioactive wastes were transferred to 51 underground tanks created for safe, long-term storage in the F Tank Farm and H Tank Farm from the various separations processes, the Receiving Basin for Offsite Fuel (RBOF), and recycle from DWPF. The LW facilities occupy 512 acres near the center of SRS containing two Tank Farms, DWPF, SWPF, the Saltstone facilities, and ETF.

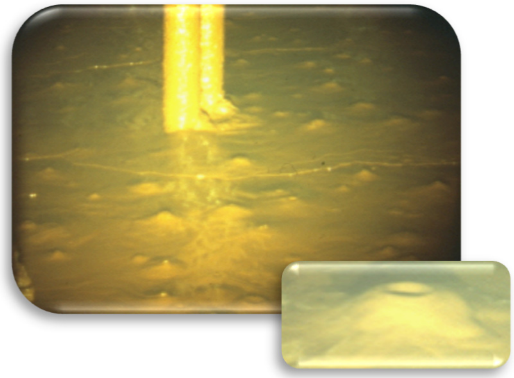
Salt waste is dissolved in the liquid portion of the waste. It can be in normal solution as Supernate (top picture) or, after evaporation, as salt cake (bottom picture) or concentrated supernate. The pipes in all the pictures are cooling coils.

Differences in the material processed by the PUREX and HM processes necessarily produced differences in the chemical compositions of the principal sludge components — insoluble hydroxide solids of iron, aluminum, uranium, manganese, nickel, mercury, and noble metals, as well as actinides and strontuim-90. In addition, waste streams from the 1st cycle (high heat) and 2nd cycle (low heat) extractions from each canyon were stored in separate tanks to better manage waste heat generation. Therefore, some variability in both nuclide and chemical content occurred.

Acidic separations processes produce acidic waste, which is incompatible with carbon steel waste storage tanks. To avoid corrosion of the tanks, the waste was converted to an alkaline form before being transferred to the Tank Farms. The resulting precipitate settled into four characteristic sludges: PUREX high activity waste, PUREX low activity waste, HM high activity waste, and HM low activity waste. Fission product concentrations are about three orders of magnitude higher in both PUREX and HM high activity waste sludges than the corresponding low-activity waste sludges. Historically, fresh waste receipts were allowed to settle and cool in the tanks where they were initially deposited.

The soluble portion of the waste includes a significant volume of water. To conserve tank storage space, the supernate is decanted, blended, and evaporated, thereby producing either a concentrated liquid supernate (which contains most of the Cs-137), or a solid crystalline saltcake with interstitial salt solution. Saltcake and concentrated supernate together are considered salt waste. Their compositions tend to be similar from tank to tank. More recently, transfers of sludge slurries to sludge washing tanks, dissolution of saltcake for tank removal from service, receipt of DWPF recycle streams, and space limitations restricting full evaporator operations, have resulted in mixing the waste between the two Tank Farms. This intermingling of PUREX and HM salt waste will continue through the end of the program.

Continued long-term storage of these radioactive liquid wastes poses a potential environmental risk. Therefore, an integrated system of unique waste treatment facilities has been designed, constructed and is operated to remove waste from tanks, pre-treat it, and vitrify or grout it, thereby converting the liquid waste into a solid form that is environmentally safe for long-term storage or disposal.



Sludge consists of insoluble solids that settle to the bottom of a tank. Note the offgas bubbles, including hydrogen generated from radiolysis.

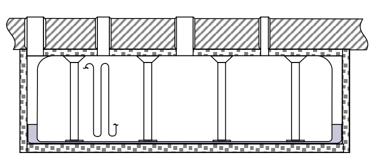
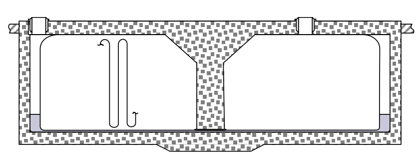
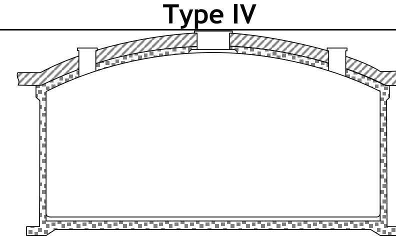
5.3 *Tank Storage*

Tanks under construction. Note tank size relative to construction workers. Later, dirt is backfilled around the tanks to provide shielding

SRS has 51 underground waste storage tanks, placed into operation between 1954 and 1986, located in two tank farms. FTF contains 22 tanks while HTF contains 29 tanks. There are four types of waste tanks—Types I through IV (see Table 5-1 and Table 5-2). The Types I, II, and IV tanks, commonly referred to as "old-style" tanks, lack full secondary containment. The FFA addresses the removal of these tanks from service (see § 3.4.3).

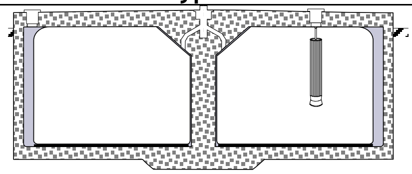
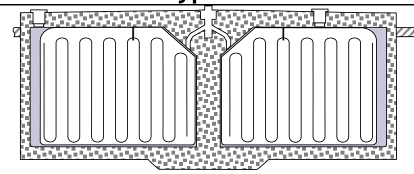
Waste tanks were constructed at grade. Later, dirt was backfilled around and over the tanks to provide shielding. Prior to the beginning of waste processing in 1996, the inventory of waste in the SRS tank system contained over 560 million curies (MCi)[26]; prior to the initiation of salt processing, the Tank Farms had reached a total volume of almost 39 Mgal. As of September 2025, 33 Mgal of radioactive waste, containing 191 MCi[6] of radioactivity, are stored in the 43 active waste storage tanks.

Table 5-1 — *"Old-Style" Tanks*

Type I		Type II	Type IV	
 Constructed: 1951-1953 Nominal Capacity 750 kgal Includes cooling coils		 Constructed: 1955-1956 Nominal Capacity 1,070 kgal Includes cooling coils	 Constructed: 1958-1962 Nominal Capacity 1,330 kgal No cooling coils	
FTF	HTF (in water table)	HTF (in water table)	FTF	HTF
***1**: removal in progress **2**: removal in progress **3**: PCWR concurrence ***4**: PCWR concurrence ***5**: closed ***6**: closed **7**: removal in progress **8**: PCWR concurrence	* **9**: PCWR concurrence ***10**: PCWR concurrence ***11**: PCWR concurrence ***12**: closed	***13**: removal in progress ***14**: removal in progress ***15**: PCWR concurrence ***16**: closed * tanks with leakage history	**17**: closed **18**: closed ***19**: closed ***20**: closed	**21**: Salt Blend Tank **22**: DWPF Recycle receipt **23**: Storage **24**: Storage

The Types III/IIIA tanks, sometimes referred to as "new-style" tanks, have full secondary containment.

Table 5-2 — *"New-Style" Tanks*

<table>
<tr><th colspan="2">Type III</th><th colspan="3">Type IIIA</th></tr>
<tr><td colspan="2">
Constructed: 1967–1972
Nominal Capacity 1,300 kgal
Includes deployable cooling coils</td><td colspan="3">
Constructed: 1976–1981
Nominal Capacity 1,300 kgal
Includes cooling coils</td></tr>
<tr><td>FTF</td><td>HTF</td><td>FTF</td><td colspan="2">HTF</td></tr>
<tr><td>33: Storage
34: Storage (LTAD decants)</td><td>29: 25H Evap support
30: 25H Evap support
31: Storage
32: 25H Evap support</td><td>25: Storage
26: Storage
27: Storage (future salt blend)
28: Storage
44: Storage
45: Storage
46: Storage
47: Storage</td><td>35: Storage*
36: Storage
37: 25H Evap support
38: 16H Evap support
39: H-Canyon receipt
40: DWPF Feed
41: Salt Blend Tank

* 35 is a hybrid, a Type IIIA with deployable coils</td><td>42: Salt Blend Tank
43: 16H Evap support
48: Precipitate storage
49: SWPF Feed
50: Saltstone Feed
51: Sludge batch prep</td></tr>
</table>

Although the sludge component of the radioactive waste represents 2.8 Mgal of waste (9% of total), it contains 106 MCi (54% of total), including the majority of the long-lived (half-life greater than 30 years) radionuclides (e.g., actinides and strontium). The salt waste makes up the remaining 30.4 Mgal of waste (91% of total) with 85 MCi (45% of total). Of that salt waste, the supernate accounts for 16.4 Mgal and 75 MCi and saltcake accounts for the remaining 10 Mgal and 10 MCi. Well over 95% of the salt waste radioactivity is short-lived (half-life less than 30 years) Cs-137 and its daughter product, Ba-137m, along with lower levels of Sr-90 and actinide contamination. The cesium concentration varies according to the waste stream (e.g., canyon waste, DWPF recycle waste). The precipitation of salts following evaporation can also change the cesium concentration. The concentration of cesium is significantly lower than non-radioactive salts in the waste, such as sodium nitrate and nitrite, therefore, the cesium does not reach its solubility limit and only a small fraction precipitates[27]. As a result, the cesium concentration in the saltcake is much lower than in the liquid supernate and interstitial liquid fraction of the salt waste.

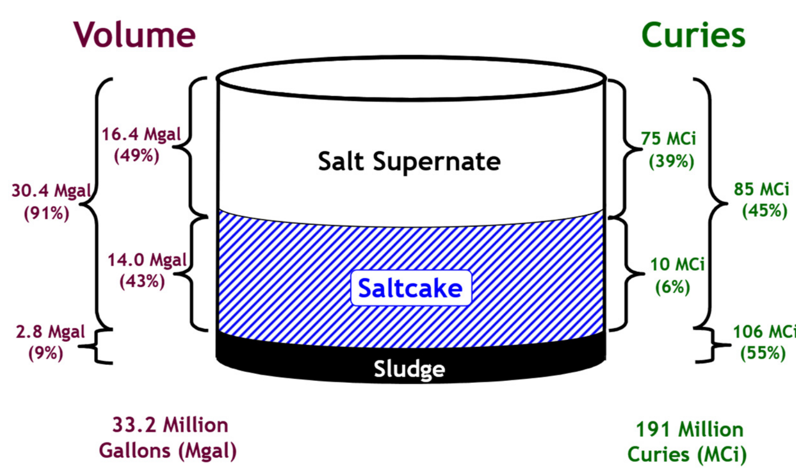


Figure 5-1 — *Waste Tank Composite Inventory (as of September 30, 2025)*

The sludge is being stabilized in the DWPF through a vitrification process that immobilizes the waste in a borosilicate glass matrix. The salt is separated in the SWPF into a higher-level component being stabilized in DWPF and a lower-level component solidified in SPF.

Radioactive waste volumes and radioactivity inventories reported herein are based on the *Waste Characterization System*[28] (WCS) database, which includes estimates of the chemical and radionuclide inventories on a tank-by-tank basis. WCS is a dynamic database frequently updated with new data from ongoing operations such as decanting and concentrating free supernate via evaporators, preparation of sludge batches for DWPF feed, waste transfers between tanks, waste sample analyses, and influent receipts such as H-Canyon waste and DWPF recycle.

5.4 *Waste Tank Space Management*

Successful operation of the LW System requires careful management of the working space available in the Tank Farms. This valuable space is needed to:

- remove waste from old-style tanks
- prepare emptied old-style tanks for closure
- support operations of the 16H and 25H Evaporators
- prepare and qualify sludge waste for treatment
- prepare and qualify salt waste for treatment
- receive the DWPF recycle waste stream
- support stabilization and disposal of nuclear materials from H-Canyon

Failure to successfully manage tank space could lead to the Tank Farms becoming "waterlogged," meaning so much of the usable Type III tank space has been filled that operations are impaired. Tank Farm space management strategy is based on a set of key assumptions involving current projections of influent stream volumes, offset by Tank Farm evaporator performance, SWPF processing rates, DWPF canister production rates, SPF grout production rates, and space gain initiative implementation. Additionally:

- The DWPF recycle stream is beneficially reused when feasible, to reduce the volume of fresh water being added to the Tank Farm inventory. When water must be added, volumes are carefully controlled to both limit adverse impacts on available tank space, and support production of high sodium molarity salt waste feed
- Influent LW is evaporated to reduce its volume. Of the approximately 168 Mgal of LW received by the Tank Farms since 1954, over 110 Mgal have been evaporated, the balance having been dispositioned via DDA and waste treatment facilities: Actinide Removal Process (ARP) / Modular CSSX Unit (MCU), SWPF, DWPF, and SPF with approximately 33 Mgal remaining in the storage tanks today
- Several "old-style" tanks also serve as Hub Tanks or Blend Tanks supporting immobilization and disposition of high-level salt waste, or as Hub Tanks for waste removal.

There are currently ~8.1 Mgal of empty space (~23%) in the new-style tanks as of September 30, 2025:

- 3.9 Mgal is margin as defense-in-depth operational control coupled with SS or SC SSCs to facilitate reasonably conservative assurance of more than adequate dilution and ventilation of potentially flammable vapors. This is controlled by the placement of HLLCPs according to engineering calculation with respect to corrosion control, hydrogen generation rates, etc.
- 1.3 Mgal is the procedurally required minimum contingency space for process recovery in the unlikely event of a large waste leak elsewhere in the Tank Farms
- 2.9 Mgal is operational "working" space variously used to provide:
  - Contingency transfer space as operational excess margin above the procedurally required minimum
  - Excess margin to preserve salt batch quality and maintain uninterrupted treatment and disposition through SWPF and SPF
  - Excess margin to preserve sludge batch quality and maintain uninterrupted immobilization through DWPF
  - Excess margin to preserve uninterrupted support for H-Canyon
  - Margin to ensure efficient operation of the 16H and 25H Evaporators.

The LW System flowsheet does not simply move waste in a straight line from receipt through storage and treatment to disposal. In fact, the flowsheet is somewhat circular. Some facilities process high-activity effluent streams, which recover space and reduce the radioactivity in the Tank Farms, even as they produce low-activity influent streams, which then occupy some Tank Farm storage space. For example, sludge batch preparation in the Tank Farms produces sludge feed to DWPF (a high-activity effluent), as well as sodium-rich wash water decants (a low-activity influent). DWPF receives the washed sludge, as well as SE and MST sludge solids from SWPF, and produces glass waste canisters (a high-activity effluent). However, for every gallon of high-activity waste transferred to DWPF from Tank 40H, the DWPF feed tank, for vitrification, 1.3 gallons of a dilute, low-activity "recycle stream" is returned to the Tank Farm (a low-activity influent). Nevertheless, the LW System flowsheet reduces the risk posed by Tank Farm waste by permanently removing the highest activity waste from storage.

Similarly, salt waste removal, preparation, and batching typically require the addition of three gallons of water per gallon of saltcake stored to dissolve the salt into a pumpable liquid. Given these parameters, the "key to reducing the overall risk is processing high-level waste as expeditiously as possible and managing the total tank space efficiently," as recognized by the Defense Nuclear Facilities Safety Board (DNFSB) letter dated January 7, 2010[29].

Evaporation

The Tank Farm's two evaporators, 16H and 25H, each play key roles in managing Type III/IIIA tank space:

- The 16H Evaporator System includes Tank 43H, which serves as the feed and vent tank, and Tank 38H, which is the 16H Evaporator's concentrate receipt (or "drop") tank. The 16H Evaporator supports Tank Farm space management by evaporating DWPF recycle.
- The 25H Evaporator System includes Tank 32H, which serves as the feed tank, and Tank 37H, which is the drop tank. In addition, Tank 29H, currently the vent tank, will be deployed as a drop tank following salt dissolution campaigns planned for FY26. The 25H Evaporator supports Tank Farm space management by evaporating sludge batch washing decants. It also supports H-Canyon waste receipts.

To effectively support tank space management in the Tank Farms as a whole, additional space management requirements are necessary to support efficient evaporator system operations. In the 25H Evaporator System, space is needed for evaporator concentrate receipt to support periodic salt dissolutions and storage of high-hydroxide waste that does not precipitate into salt. This "boiled-down" liquid is commonly referred to as "liquor" or "concentrate." Removing the "liquor" from an evaporator system is referred to as "deliquoring." Evaporator effectiveness is diminished when the drop tank salt level is 300″ or greater—at this point, the evaporator system is said to be "salt bound." Deliquoring both the 16H and 25H Evaporators and salt removal from drop tanks are planned on a regular basis to ensure continued viability of the evaporators. Lack of evaporator working space could hinder tank removals from service, canister production rate at the DWPF, or H-Canyon support.

DWPF recycle waste is beneficially reused within the Tank Farms, when possible, or evaporated in the 16H Evaporator. High concentrations of silica in the recycle dictate that this stream is kept segregated from the 25H system, lest sodium aluminosilicate (NAS) plate out on the steam coils in the 25H vessel (or "pot.") leading to unsafe concentrations of fissile material in the large 25H pot. The smaller pot of the 16H Evaporator allows for control of the NAS using regular chemical cleaning of the 16H Evaporator to remove accumulations of NAS solids.

The 25H Evaporator is assumed to operate through mission completion, without requiring an evaporator pot replacement. Similarly, no evaporator pot replacement is forecast for the 16H Evaporator. Were either evaporator to need a pot replacement, spare evaporator pots are available for both evaporators.

5.5 *Waste Removal*

The first step in the disposition of sludge and salt waste is waste removal. The waste removal phase extracts the majority of the tank waste, including salt cake, sludge solids, and contaminated liquids, leaving only the residual heel. Waste removal efforts intend to remove or decontaminate all residues from structures and equipment to the extent practicable from an engineering perspective. However, SCDES and EPA recognize that DOE cannot practicably remove or decontaminate all the waste from the structures and equipment. Therefore, after SCDES, EPA and DOE mutually agree that waste removal for a given tank may cease, any residual contaminants will be stabilized and the waste tank removed from service

Waste removal is a mechanical process using agitation mixer pumps to suspend and potentially dissolve the solids, and then transfer the waste for further processing. Sludge is removed from the waste tank and sent either to a sludge hub tank, a tank set up to receive and transfer sludge to a feed preparation tank, or directly to the feed preparation tank, ensuring sludge waste is continuously available for treatment at DWPF. Salt is dissolved, removed, and staged in an alternate salt solution Source (storage) tank, a salt solution Hub tank or a salt solution Blend tank, where discrete SWPF feed batches are prepared and qualified prior to treatment at SWPF.

5.5.1 Sludge Removal

Current sludge removal strategies utilize the local control rooms and standardized support skids to increase the efficiency of the sludge removal process. The process utilizes several mixer pumps and sufficient liquid to suspend sludge solids. Existing supernate is used, when practical, to minimize introduction of new liquids into the system. Operation of commercial submersible mixing pumps (CSMP) suspends the solids, which are then transferred as a slurry from the tank. This operation is repeated, periodically lowering the CSMPs, until the remaining contents of the tank can no longer be effectively removed by this method (see Figure 5-2).

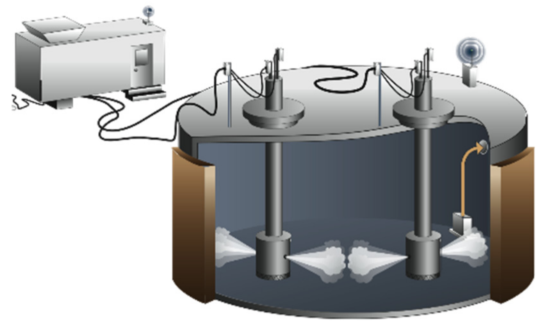


Figure 5-2 — *Mechanical Agitation Waste Removal*

Sludge batches were originally configured to preferentially remove sludge from old style Type I and II tanks. Most of the sludge has been successfully removed from these old-style tanks. Tank 13H, a Type II tank in HTF, is being used as a sludge hub tank to store and transfer sludge from other tanks; final Tank 13H heel removal is planned for 2026. Tanks 26F, 33F, 35H, and 39H, all Type III tanks, are also planned as sludge hub tanks, as needed.

5.5.2 Salt Removal

Salt waste removal strategy is developed on a tank-specific basis and may employ a variety of approaches. If liquid supernate is present above the salt layer, it is removed first. After that, tanks that are full of salt at the beginning of the salt waste removal process may be approached using a Drain, Add, Remove (DAR) method (see Figure 5-3 — *Drain, Add, Remove Method for Salt Waste Removal*)

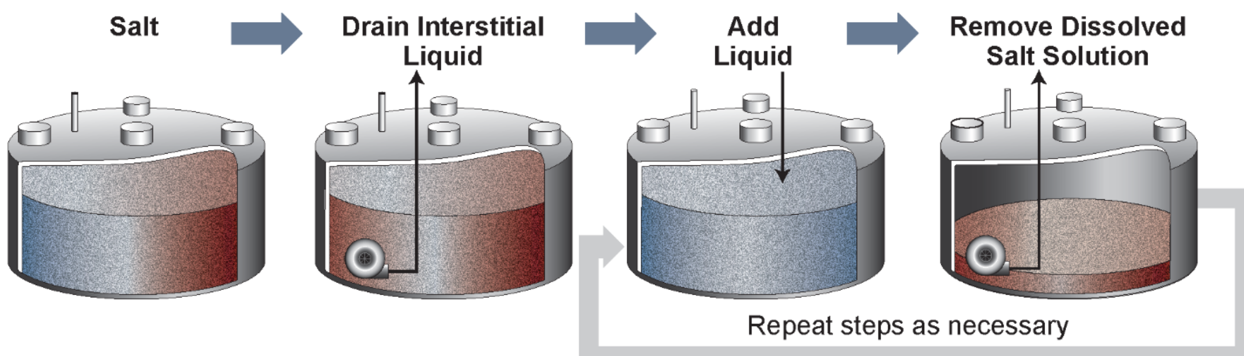


Figure 5-3 — *Drain, Add, Remove Method for Salt Waste Removal*

The Drain step removes the highly concentrated interstitial liquid salt solution, often by mining into the saltcake and placing a pump and caisson at a lower elevation in the tank. This allows the interstitial liquid to drain through the salt and collect where it can be pumped out. The interstitial liquid often has higher concentrations of sodium and higher levels of radioactivity compared to dissolved salt. It may be segregated in collection tanks apart from dissolved salt solution collection tanks for strategic salt batch planning.

During the Add step, liquid is added to dissolve the solid saltcake. This dissolution liquid may be inhibited water (IW), well water (WW) to which small quantities of sodium hydroxide and sodium nitrite have been added to prevent corrosion of the carbon steel waste tanks; or dilute LW (e.g., DWPF recycle or Tank 51H spent wash water) beneficially reused to dissolve salt. The dissolution liquid may be added in small batches, or it may be added at a very slow rate while simultaneously removing dissolved salt solution. The Add step may also be accomplished by using a liquid addition downcomer or a Low Volume Mixing Jet (LVMJ) which entrains existing liquid to promote more contact with the bulk saltcake. When using a downcomer for liquid additions, the Add step is more effective if the dissolution media can be sprayed directly onto the salt surface. Care is taken to minimize the formation of preferential flow channels during salt solution removal.

The Removal step ends the process, with the transfer of dissolved salt solution to a collection tank. Tanks 7F, 13H, 26F, 33F, 30H, 35H, and 39H may be utilized as salt hub tanks, as needed.

While effective, salt dissolution using DAR is a slow process. The preferred, more efficient method of salt dissolution involves the use of CSMPs to increase the contact between the saltcake and the dissolution media, resulting in faster salt dissolution. CSMPs are also effective at disturbing insoluble materials that may blanket the salt surface, which may otherwise reduce the effectiveness of the DAR process. Use of CSMPs generally requires lower bulk saltcake level in the tank to ensure the CSMPs have adequate liquid coverage for cooling, and a larger tank vapor space to account for the higher rate of gas release during salt dissolution. Thus, LVMJs may be used initially for water additions when the salt level is too high to effectively operate CSMPs. Water addition with LVMJs can add water in small batches or, during simultaneous removal of dissolved salt solution using a transfer pump, for semi-continuous dissolution (SCD). During SCD, as the density of the dissolved salt solution decreases, the LVMJs and transfer pump are lowered closer to the bulk saltcake surface to promote more effective salt dissolution. Once the salt level has decreased enough to allow the effective use of CSMPs, the LVMJs are removed and CSMPs are installed to promote faster and more efficient salt dissolution.

Heel Removal

After the majority of the waste has been removed, heel removal, consisting of a potential combination of mechanical and chemical cleaning is performed. Typically, mechanical removal is done by vigorous mixing and transfer. The mixing may be done by any combination of existing or new mixing pumps, indexing or rotating mixing pumps to address particular mounds of waste, indexed lancing of sludge mounds, or remotely operated robotic crawlers as necessary to reach the desired removal. Chemical cleaning may be required, typically taking the form of Low Temperature Aluminum Dissolution (LTAD) similar to that used in sludge processing (see “LTAD” in Section 5.6.1 below).

Tanks having Documented Leak Sites

Several Type I, II, and IV tanks have documented leak sites. All Type IV tanks having documented leak sites have been operationally closed, and all Type I tanks with documented leak sites have either achieved PCWR status or have been operationally closed. Only two Type II tanks with leakage history, Tank 13H and Tank 14H, remain operational at this time; waste retrieval operations are in progress. Waste removal operations on some of the Type I and II tanks occasionally reactivate old leak sites or expose new leak sites in those tanks. Contingency equipment and procedures are utilized to contain leakage when it occurs and prevent release to the environment. Tank-specific waste removal plans avoid liquid levels above known leak sites, when feasible; focused monitoring is employed when these levels cannot be avoided.

5.5.3 Tank 48H Treatment

Tank 48H contains legacy organic waste, tetraphenylborate (TPB), from previous salt treatment processes. Several technologies have been considered, including Fluidized Bed Steam Reforming and Copper Catalyzed Peroxide Oxidation, to treat the organic components. The goals of the treatment process are to enable the resulting streams to be dispositioned as grout or glass followed by eventual operational closure of the tank. Currently, the most promising treatment option is the use of sodium permanganate to destroy the legacy organic waste. The sodium permanganate flowsheet was selected based on the recent success of the sodium permanganate flowsheet used at DWPF for the destruction of glycolate in the recycle stream coupled with initial Tank 48H proof of concept testing. Testing started in FY25 to define the parameters of the flowsheet and is anticipated to continue into FY26. The *Plan* assumes Tank 48 treatment is slated to begin in FY34, but efforts are underway to accelerate the effort. To ensure adequate grout capacity is available, this *Plan* assumes Tank 48H waste disposition yields 2 Mgal to be received in SPF.

5.6 *Sludge and Salt Batch Preparation*

Each of the waste types at SRS needs to be treated to accomplish disposal in these two waste forms. The sludge must be washed to remove non-radioactive salts that would interfere with glass production. The salt must be dissolved and prepared for processing in SWPF, which separates the bulk of the radionuclides from the non-radioactive salts in the waste.

5.6.1 *Sludge Batch Preparation*

Each sludge batch is comprised of sludge from two or more source tanks. Sludge batch planning uses the estimated mass and composition of sludge and known processing capabilities to develop processing sequences. Sludge batch processing through DWPF will be the critical path to completing the LW mission.

The basic steps for sludge processing (Figure 5-4) are:

1. Sludge removal from tanks
2. LTAD in Tank 51H
3. Blending and washing of sludge in Tank 51H
4. Concurrent sampling and qualification
5. Transfer of fully qualified SB to Tank 40H from Tank 51H
6. Sludge feeding to the DWPF from Tank 40H
7. Vitrification in DWPF.

Low Temperature Aluminum Dissolution (LTAD)

Sludge generated by the PUREX process in F-Canyon produces high-heat sludge with small amounts of aluminum. However, H-Canyon uses a modified version of the PUREX process, HM, to separate special nuclear material and enriched uranium. High-heat sludge generated from the HM process has high amounts of aluminum solids in the form of gibbsite or boehmite. Some of this aluminum can be removed from the sludge by dissolving the aluminum and then decanting the liquid. This reduces the number of canisters needed to disposition the sludge by reducing the sludge solids mass and increasing glass waste loading. Aluminum dissolution is achieved by application of added caustic, elevated temperature, mixing, and sufficient reaction time. “Low Temperature” refers to the use of a maximum temperature of approximately 75ºC to achieve the dissolution, as demonstrated for SB 5, SB 6, and SB 10. Most or all of the future sludge batches are expected to utilize LTAD. The dissolved aluminum liquid is processed with the salt waste.

Sludge Washing

Sludge is washed to reduce the amount of sodium and other non-radioactive soluble salts (e.g., sulfates, nitrates, nitrites) in the sludge slurry. Washing is performed by adding water to the sludge batch, mixing with slurry pumps, securing the pumps to allow gravity settling of washed solids, and decanting the sodium-rich supernate to a salt preparation tank, an evaporator system for concentration, or occasionally for salt dissolution. This cycle is repeated until the desired molarity (typically ~1.0 M Na) is reached. Some types of sludge settle slowly, extending wash cycles. Sludge settling and washing typically constitute over 75% of batch preparation time. The total number of washes performed, and volume of wash water used, are minimized to conserve waste tank space. Sludge batch size and wash volumes are also limited by the hydrogen generation rate associated with radiolysis of water. Tank contents are mixed on a periodic frequency to release hydrogen retained within the sludge layer, resulting in a limited window within operating constraints for gravity settling. Once sludge washing has achieved its chemical composition objective and the batch has been qualified for compliance with the DWPF Waste Acceptance Criteria (WAC), the sludge batch is transferred to Tank 40H, which feeds DWPF in small (5 kgal–10 kgal) batches. On average, a single sludge batch is approximately 600 kgal and requires nominally two years to prepare.

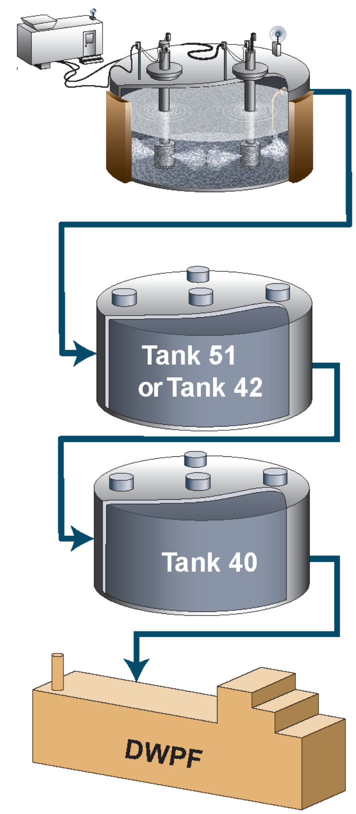


Figure 5-4 — *Sludge Feed Preparation*

5.6.2 Supporting Nuclear Material Stabilization

ABD materials, as described in *Accelerated Basin Deinventory Baseline Projection*[8] will be received into the sludge preparation tanks during the sludge batch preparation process.

ABD scope includes processing and discard of aluminum spent nuclear fuel (ASNF), fuels that have aluminum-based cladding, as well as fuels with cladding made with other materials, such as stainless steel and Zircaloy, i.e., Non-Aluminum Spent Nuclear Fuel, (NASNF). The fissile waste stream is expected to be similar for both; metal dissolution products from cladding are anticipated to be different.

H-Canyon discards are expected to be received into the remaining planned sludge batches. The fissile material coming from H-Canyon is expected to be mostly U-235, with one batch, SB 11, receiving the majority of the Pu-239 discarded. As shown in Table 5-3 below, the majority of the fissile material in future sludge batches will be from ABD program discards, not the waste currently residing in the Tank Farms. The fissile concentration in glass is forecast to exceed 2,500 g/m^3.

The mass of radionuclides and elements received during the ABD program is modeled using the ABD inventory[8]. Uranium enrichment depends on the waste stream as characterized by H-Canyon. Additional depleted uranium will be added to a sludge batch if nuclear criticality limits are not met. For the purposes of this *Plan*, it is assumed that DOE will select to perform supernate U-235 depletion in the Tank Farm thus enabling ABD discards at higher U-235 enrichments (up to 66 wt% U-235). If supernate depletion is not selected, the total fissile discarded via ABD will be significantly lower as will the resulting glass fissile loadings.

(Note: DOE is contemplating resuming uranium recovery at H-Canyon and discontinuing the ABD program. If uranium recovery is resumed, depending on the rate of processing at H-Canyon, the total canisters required to be poured by DWPF will be reduced by 50 to 170 canisters with a corresponding acceleration of the LW mission. Additionally, throughout this Plan, where a "last ABD discard" date is defined, that same date would represent the last discard of waste produced from uranium recovery operations.)

Table 5-3 — *Fissile Material by Sludge Batch*

	ABD Program				
Sludge Batch	U-235 (kg)	U-233 (kg)	Pu-239 (kg)	Pu-241 (kg)	Assumed U-238 (kg)
SB 12	509	0	2	0	546
SB 13	510	0	2	0	2313
SB 14	417	0	3	0	1705
SB 15	617	14	17	1	783
SB 16	574	1	13	1	1742
SB 17	194	0	2	1	318

5.6.3 Salt Batch Preparation

Salt waste batches are prepared using designated tanks in the Tank Farms:

- "Source" tanks store salt cake, dissolved salt solution, or evaporator concentrate (or a combination of those) and then transfer that waste to either an interim "Hub" tank or a "Blend" tank. Any Type I, II, III/IIIA or Type IV tank may be a Source tank at some point.
- "Hub" tanks provide a convenient place to collect the source material until such time as a Blend tank is ready to receive it. This approach decouples salt dissolution project schedules from feed batch formation schedules, providing flexibility in Tank Farm operations. Hub tanks are strategically selected based primarily on their ability to support transfer paths from multiple Source tanks to multiple Blend tanks.
- "Blend" tanks receive, mix, and chemically adjust the source material in prescribed quantities according to approved recipes to create each unique salt macro-batch. A Blend tank must be able to meet three basic requirements:
  - Receive salt waste from Source Tanks or other tanks
  - Mix the salt waste into a feed batch for SWPF
  - Transfer the qualified and approved batch to the Feed tank.

To support SWPF's maximum throughput, multiple Blend tanks are operated in a round-robin fashion. Tank 41H and Tank 42H (both Type IIIA) and Tank 21H (Type IV) are currently outfitted for service as Blend tanks. As infrastructure improvements occur and demands shift, the selection of Blend tanks will change to operate as safely and efficiently as possible. Tank 27F (Type IIIA) in FTF provides multiple transfer paths with the other FTF tanks so it will be converted for blend tank service, replacing Tank 42H. This reduces the number of inter-area transfers required to remove salt from FTF. Salt dissolution in Tank 27F is planned for FY26 and; once completed, Tank 27F will be converted to Blend Tank service. To support closure of FTF, Tank 31H replaces Tank 27F as a blend tank in FY34.

The "Feed" tank receives the batch from the Blend tank and transfers it in approximately 25 kgal batch increments to SWPF. Tank 49H is the current Feed tank for SWPF. The piping within the 16H Evaporator cell was modified so that Tanks 41H and 42H have direct transfer paths to Tank 49H, which reduces transfer conflicts and improves operating efficiency. Each macro-batch of SWPF feed is nominally 1 Mgal and can be prepared and qualified in approximately 4 months.

It should be noted that the remaining Type IV tanks in HTF are integral to closing FTF as they provide much needed usable Hub tank space. Therefore, the model utilized the HTF Type IV tanks to support FTF closure and SWPF feed availability prior to their being scheduled for closure.

5.7 ***Salt Processing***

Prior to SWPF, four different processes were used to treat salt:

- **Deliquification, Dissolution, and Adjustment** (DDA) – In this process, the salt was first **D**eliquified by draining and pumping and then **D**issolved by adding water and pumping out the salt solution. The resulting salt solution was aggregated with other Tank Farm waste to **A**djust batch chemistry for processing at SPF. This process was used in FY07 and FY08 to treat a limited amount of salt that met the SPF WAC using DDA-solely. No further DDA-solely treatment is planned.
- **Actinide Removal Process (ARP)/Modular Caustic-Side Solvent Extraction (MCU) –** The ARP/MCU processes were used in tandem from 2008-2019, piloting the processes now used in SWPF. Operations at ARP/MCU were suspended in May 2019 to tie in SWPF.
    - **Actinide Removal Process** (ARP) – Extraction of the interstitial liquid reduces Cs-137 and soluble actinide concentrations in the source tank. However, upon dissolving the remaining salt, the Cs-137 and actinide concentrations remained too high to meet the SPF WAC. In ARP, MST was added to the dissolved salt solution whereupon the actinides sorbed onto the MST. The actinide-bearing MST solids were then filtered out of the liquid. Those solids were dispositioned at DWPF. The effluent stream was sent to MCU.
    - **Modular CSSX Unit** (MCU) – The ARP effluent stream requires reduction in the concentration of Cs-137 using CSSX. The key ingredient of the four-part solvent is the cesium extractant. When it started in 2008, MCU used the solvent BoBCalix but, beginning September 2013, MaxCalix was introduced. The solvent is fed to one end of a bank of centrifugal contactors while the waste is fed to the other end in a counter-current flow. The solvent extracts the cesium, with each successive contactor stage extracting more, resulting in a DSS stream and a cesium-laden solvent stream. The solvent stream is stripped of its cesium, washed, and the solvent is reused. The cesium-laden SE is transferred to DWPF. The DSS stream was solidified into grout at the SPF and disposed in the SDUs.
- **Tank Closure Cesium Removal** (TCCR) – TCCR consisted of an ion exchange process for the removal of cesium from liquid salt waste to provide supplemental treatment capability. The configuration was an "at-tank" modular arrangement located alongside Tanks 9H, 10H and 11H, which began demonstration in January 2019. The demonstration was suspended in February 2022 to accelerate the closure of the associated tanks.

5.7.1 ***Salt Waste Processing Facility (SWPF)***

SWPF incorporates both the ARP and CSSX processes in a full-scale shielded facility capable of handling salt with higher levels of radioactivity, at a higher throughput rate. Like predecessor processes ARP/MCU, SWPF produces three effluent waste streams: the MST sludge solids and cesium-laden SE streams, which are transferred to DWPF to be incorporated into glass, and the decontaminated salt solution, which is transferred to Saltstone for incorporation into grout and disposal in the SDUs.

To increase operational flexibility for SWPF, DWPF, and SPF, lag storage capacity has been introduced for temporary storage of waste streams between facilities. Recent facility modifications allow SWPF the option of transferring DSS either directly to the Salt Solution Receipts Tanks (SSRTs) at SPF, or to Tank 50H in the Tank Farm, which transfers DSS to the SSRTs as operating conditions allow. Additionally, facility modifications at 511-S and 512-S provide limited lag storage of the SWPF SE stream at 512-S for those occasions when the SE cannot be transferred directly to DWPF.

SWPF uses the BoBCalix solvent. Testing with a next generation solvent did not demonstrate an advantage that would overcome the lost production that would be attributed to the conversion.

Hot commissioning of SWPF began in October 2020 with full operations beginning in January 2021. To maximize risk reduction, DOE and SRMC arranged the batch recipes to process the higher curie and higher sodium concentration batches to the early part of the program, through StB №22. This accelerates reduction of the total radioactivity remaining in the Tank Farms. SWPF is the most effective technology to quickly eliminate salt waste and is planned to process the balance of the salt waste.

SWPF Throughput

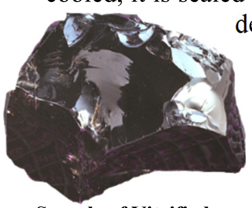
Initial operations at SWPF demonstrated a throughput rate of approximately 2 Mgal/year of salt waste feed. Since then, numerous process improvements have been implemented, gradually increasing the SWPF throughput rate; the facility demonstrated a 9 Mgal/year rate in August 2025. (see section 2.2—for more details)

- The original cross flow filters were removed and replaced by larger filters, which increased the overall filter surface area to 428 ft^2 from 216 ft^2 so that filtration is no longer limiting the capacity of SWPF.
- Contactors were removed and replaced with new contactors
- Improved vibration monitoring was installed on the contactors to improve predictive maintenance so that contactors can be replaced prior to causing a process upset.

5.8 ***DWPF Vitrification***

Canisters being received
(prior to being filled with radioactive glass)

Final processing for the washed sludge and MST sludge solids and cesium SE from SWPF occurs at DWPF. In a complex sequence of carefully controlled chemical reactions, this waste is blended with glass frit and melted to vitrify it into a borosilicate glass form. The resulting molten glass is poured into stainless steel canisters. As the filled canisters cool, the molten glass solidifies, immobilizing the radioactive waste within the glass structure. After a canister has cooled, it is sealed with a temporary plug, the external surfaces are decontaminated to meet United States Department of Transportation requirements, and the canister is then permanently seal welded. The canister is then ready to be stored on an interim basis on-site. A low-level recycle waste stream from DWPF is returned to the Tank Farms. DWPF has been operational since 1996.



Sample of Vitrified Radioactive Glass

DWPF Throughput

Historically, melter performance has been the limiting factor for DWPF throughput. To mitigate this throughput limitation, argon bubblers were installed in the melter providing more uniform melt temperatures. Prior to installation of the bubblers, the DWPF melters averaged 230 canisters per year. However, after bubblers were installed in September 2010, the melter performance was no longer the bottleneck. The feed preparation systems internal to DWPF have demonstrated a capacity of greater than 325 canisters/yr, with 341 canisters having been poured during a one-year period beginning June 2011 and a monthly record of 40 canisters poured in August 2013.

Many significant facility modifications have been made to improve DWPF throughput. Refer to Section 2.2 for details.

DWPF Recycle

Operation of the DWPF process generates an aqueous waste stream consisting primarily of process vessel ventilation system condensates, equipment decontamination streams, and assorted drains. This stream is referred to as "recycle," because it is transferred back to the Tank Farms and collected in Tank 22H. Aside from the SWPF DSS received into Tank 50H and transferred directly to Saltstone, DWPF recycle is the largest influent stream received by the Tank Farm. The DWPF recycle rate, historically between 1.5 and 1.9 Mgal/yr prior to SWPF, could increase to over 2.2 Mgal/yr during SWPF operations because of water in the SE and MST slurry streams received into DWPF.

In this *Plan*, disposition of the recycle stream is handled in one of three ways, depending on processing circumstances:

- Recycle may be evaporated in the 16H Evaporator System
- Recycle may be beneficially reused within the LW system. As the recycle contains less than 1.0 M sodium, it is suitable for salt solution molarity adjustment, salt dissolution, or heel removal
- Upon completion of salt waste processing through SWPF, recycle will be diverted away from Tank Farm facilities and dispositioned directly through SWPF, allowing closure of Tank 22H, the DWPF recycle receipt tank.

5.8.1 Failed Equipment Storage Vaults (FESVs) and Melter Storage Boxes (MSBs)

The core component of the DWPF vitrification process is the melter, which has a finite operational life. While the original design of the DWPF facility forecast a melter replacement every two years, the first melter operated over eight and a half years before it reached its end of life. Melter 2 had operated for fourteen years when it reached the end of life in 2017. Melter 3 began radioactive operations in December 2017, so it has been operating for seven and a half years as of the date of this *Plan.* This *Plan* assumes Melter 3 will reach the end of its life in early FY29, at which point it will be replaced by Melter 4. Per standard practice, in the unlikely event that a melter fails at installation, an extra melter is available to minimize a five-year downtime to procure a replacement. Melter 5 is under construction as a contingency measure to support timely completion of the LW mission.

Each highly radioactive failed melter is placed in a specially designed transport and storage Melter Storage Boxes (MSB). An MSB containing a failed melter is placed in an underground Failed Equipment Storage Vault (FESV) for interim storage. The original DWPF project constructed two FESVs . Each FESV is designed to store one MSB containing a failed melter.

Melter 1 (inside MSB 1) was placed in FESV 2 in December 2002. Melter 1 had a relatively low external radiation field and was placed in the northernmost vault, FESV 2, since the next vault pair to be constructed would be adjacent to FESV 2. Melter 2 was placed in FESV 1 in May 2017. Space is reserved for construction of up to ten FESVs, as needed.

This *Plan* assumes a storage location for MSB 3 will be completed prior to Melter 3 reaching its end of life. This will either be by the construction of additional FESVs or an alternative strategy. Alternative strategies are being evaluated to allow the lower dose Melter 1, Melter 2, or both to be removed from FESVs for above ground storage. This would free up the space in the existing FESVs to store the presumably higher dose Melter 3 when it reaches end of life.

Currently, the FESV 200-ton gantry crane is designed to interface only with an MSB designed primarily to contain failed melters. The placement of other large failed DWPF equipment (which do not have disposal paths) in FESVs has been considered, but the complete engineered system to move large, contaminated equipment from the 221-S Canyon to the FESV has not been designed or constructed. Alternative methods for disposal of large, contaminated equipment from DWPF (not including melters) are under evaluation.

5.8.2 Glass Waste Storage Building (GWSB)

The canisters of vitrified HLW glass produced by DWPF are currently stored on-site in two dedicated interim GWSBs. A Shielded Canister Transporter (SCT) moves one canister at a time from the Vitrification Building to a GWSB. The schedule for filling the GWSBs is found in Appendix D—Canister Storage.

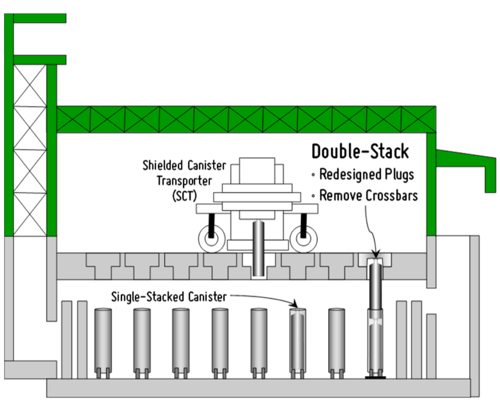


Figure 5-5 — *Double Stacking*

GWSB 1 consists of a below-grade seismically qualified concrete vault containing support frames for vertical storage of 2,262 standard canisters. Conversion of GWSB 1 began in FY15 for stacking two canisters in each storage location (Figure 5-5 — *Double Stacking*) for a total capacity of 4,524 standard canisters within the guidelines of *Heat Transfer Analysis of Double Stacking of Canisters in the Glass Waste Storage Building #1*[30]. Double-stacking modification in GWSB 1 was completed in March 2024. As of September 30, 2025, GWSB 1 contained 2,731 canisters including one archived non-radioactive canister.

GWSB 2, with a similar design to GWSB 1, has 2,340 standard storage locations. The first radioactive canister was placed in GWSB 2 on July 10, 2006. Double-stack conversion of GWSB 2 began in April 2024. The forecast is for 300 positions to be modified per year with a potential final capacity in GSWB 2 of 4,680 canisters. It may be necessary, however, to keep some of the positions in GWSB 2 as single-stack capable of accommodating any canisters that may have a higher heat generation rate than is allowable in the double-stack configuration. Additionally, this *Plan* does not foresee the need for all the positions in GWSB 2 to be double stacked so some of the positions may remain unconverted. As of September 30, 2025, GWSB 2 stored 1,728 including two non-radioactive canisters. The schedule for shipment of the canisters from SRS is not included in this *Plan*.

5.9 ***Saltstone Disposition***

The Saltstone Facility consists of two facility segments: the SPF and the SDF. SPF is permitted as a wastewater treatment facility per SCDES regulations (see Section 3.4.1). SPF receives and treats the decontaminated salt solution to produce grout by mixing the LLW liquid stream with cementitious materials (fly ash and slag). The resulting slurry is pumped into SDUs, located in SDF, where the slurry solidifies into a monolithic, non-hazardous, solid LLW form known as saltstone grout. SDF is permitted as an Industrial Solid Waste Landfill site (see Section 3.4.1). SPF is expected to receive up to 12 Mgal/yr from SWPF effluents with ETF contributing about 100 kgal/yr.

The SDF contains several large concrete SDUs. Each of the SDUs will be filled with grout. The grout itself provides primary containment of the waste, while the walls, floor, and roof of the SDUs provide secondary containment.

Approximately 15 feet of overburden were removed to prepare and level the site for SDU construction. All SDUs are built at or slightly below the grade level that exists after overburden and leveling operations are complete. The bottom of the grout monoliths will be at least five feet above the historic high-water table, thus avoiding disposal of waste in a zone of water table fluctuation. Run-on and run-off controls minimize site erosion during the operational period.

The first SDU (Vault 1), approximately 100 feet by 600 feet by 25 feet high, is divided into six cells. The second SDU (Vault 4), approximately 200 feet by 600 feet 26 feet high, has twelve cells. These two vaults, used during the initial operation of SPF, are slated for closure with no plans for future placement of grout.

SDU 2 and SDU 5 (which are full), and SDU 3 (currently in use) each have two cells, each cell being 150 feet in diameter by 22 feet high. This design is used commercially for storage of domestic water. After accounting for interior obstructions (support columns, drain water collection systems, etc.), the nominal usable volume of a cell is 2.8 Mgal. Recent operating experience averages 1.76 gallons of grout produced for each gallon of feed, yielding a nominal cell capacity of approximately 1.6 Mgal of feed.

Each of the remaining SDUs (SDU 6 through SDU 12), have a 375-foot diameter 43-foot tall single-cell design. SDU 6 (currently in use) has a capacity of over 32.8 Mgal of contaminated grout or 18.7 Mgal of feed. SDU 7 (in use, as well) through SDU 12, reflect a design change to remove column footers and increase the fill height, giving each SDU a capacity of about 34.5 Mgal (19.6 Mgal of feed).

Construction of the SDF and the first two vaults were completed between February 1986 and July 1988. The SDF initiated radioactive operations June 12, 1990. SDU 2, completed in June 2012, began filling in September 2012 and completed filling in July 2014. SDU 3 and SDU 5 were completed in September 2013. SDU 5 began filling in December 2013 and completed filling in February 2017. SDU 3 began filling in February 2017. The large SDU 6 began construction in December 2013, was construction complete in June 2018, and began filling in August 2018. SDU 7 construction was complete in July 2021 and began filling in March 2022. SDU 8 was completed in June 2023 and SDU 9 in March 2024. SDU 10 is construction complete but not yet available to receive grout. SDU 10 through 12 are in various phases of construction.

Closure operations will begin near the end of the active disposal period in the SDF, i.e., after most or all the SDUs have been constructed and filled. Backfill of native soil will be placed around the SDUs. The present closure concept includes both engineered and earthen layers designed to divert water away from the SDUs and a shallow-rooted vegetative cover. SDU closures are not included in the *Plan*. Deactivation activities are planned for a subsequent contractor.

5.10 *Effluent Treatment Facility (ETF)*

The Effluent Treatment Facility, located in H-Area, collects and treats process wastewater that may be contaminated with small quantities of radionuclides and process chemicals. The primary sources of wastewater include the 16H and 25H Evaporator overheads and H-Canyon contaminated water. The wastewater is processed through the treatment plant and pumped to Upper Three Runs Creek for discharge at an NPDES permitted outfall. Tank 50H receives ETF residual waste for storage prior to treatment at SPF and final disposal at the SDF's SDUs. A 35-kgal Waste Concentrate Hold Tank provides storage capacity at ETF to minimize transfer impacts directly to Tank 50H or SPF during SWPF operations.

5.11 *Tank Closure*

This section describes an overview of the major closure activities required to complete the last phase of the LW mission: closure and grouting. For full documentation of waste removal and tank closure strategy, refer to the *SRMC Waste Removal and Operational Closure Strategy*[31].

5.11.1 Preliminary Cease Waste Removal Decision

As described in the CGCP for F-Area and H-Area Waste Tank Systems, when DOE is satisfied that waste removal activities are sufficiently complete, a briefing will be provided to EPA and SCDES to present the preliminary waste removal data, the estimated remaining residuals volume, the plan to characterize the residuals, the initial isolation strategy and whether the standard or alternate closure module preparation approach will be used. Following the briefing, DOE submits a letter to SCDES and EPA requesting concurrence that further waste removal is not technically practicable from an engineering perspective. Upon SCDES and EPA concurrence, SCDES and EPA each provide a concurrence letter to DOE to suspend active waste removal activities and to proceed to the sampling and analysis phase. This agreement to proceed to the sampling and analysis phase is a non-binding preliminary decision and does not satisfy the requirement of FFA Appendix L, requirement 9.b for demonstrating that waste removal activities may cease.

So far, under SRMC, these waste tanks have received PCWR concurrence from SCDES and EPA:

2024: Tank 4F, Tank 9H, and Tank 10H
2025: Tank 3F, Tank 8F, Tank 11H, and Tank 15H.

5.11.2 Closure Prep

Additional cleaning activities prepare each emptied waste tank for closure.

Cooling Coil Flushing

Type I, Type II, and Type III/IIIA tanks have cooling coils. The inner surface of the cooling coils may be flushed with water to remove any remaining chromated cooling water, residual waste, and other contaminants that may have migrated into the coils. The flush also reduces the corrosion inhibitor (sodium chromate) coating on the interior surface of the coils. The cooling coil flush is repeated until the environmental risks have been reduced to the maximum extent practical.

Annulus Cleaning

Some Type I and II tanks have waste in the annular spaces, typically a soluble form of salt appearing as dried nodules on tank walls at leak sites and on the bottom of the annulus pan. These tanks will be inspected to determine if annulus cleaning is required. If so, this waste will be removed from the annulus by dissolving the salt deposits with water and transferring the solution out of the annulus. Spray wands or crawlers may be used to rinse salt nodules from the tank walls to the floor where the solution can be collected and transferred to the tank primary or to another tank. The annulus cleaning step is normally performed near the end of heel removal. This material is removed to the extent technically practicable from an engineering perspective and the highly radioactive radionuclides removed to the maximum extent practical before declaring the tank ready for grouting.

5.11.3 Operational Closure and Stabilization of Tanks

Type I, II, and IV tanks are planned for operational closure in accordance with a formal agreement among the DOE, EPA Region IV, and SCDES as expressed in the approved FFA. Eight of these tanks were operationally closed and stabilized (grouted): FTF Tanks 17F and 20F in 1997, Tanks 18F and 19F in 2012, Tanks 5F and 6F in 2013, and HTF Tank 16H in 2015 and Tank 12H in 2016.

Operational closure and stabilization consist of those actions following waste and heel removal that bring liquid radioactive waste tanks and associated facilities to a state of readiness for final closure of the Tank Farm complex, including:

- Sampling and Characterization
- Developing tank-specific regulatory documents
- Stabilizing by grouting of the primary tank, remaining equipment, annulus, and cooling coils
- Capping of select tank risers.

Sampling and Characterization

Before declaring a tank ready for grouting, the tank and annulus are inspected, the residual volume is estimated, and the residual waste is sampled in accordance with a tank-specific sample plan. Laboratory analysis of the samples yields concentrations of radiological and non-radiological constituents in the remaining material. Sampling and laboratory analysis are performed under the SCDES-approved *Liquid Waste Tank Sampling and Analysis Program Plan*[32] and associated *Liquid Waste Tank Residuals Sampling–Quality Assurance Program Plan*[33]. Concentration and volume data are used to characterize the residual material to produce radiological and non-radiological inventories.

Closure Documentation Development

Tank-specific closure documents and other regulatory documentation are prepared to demonstrate compliance with State and DOE regulatory requirements as well as NDAA §3116. An area-specific WD approach ensures the NDAA §3116 tank operational closure process is implemented as efficiently as possible. A Performance Assessment (PA) and NDAA §3116 Basis Documents were generated for each Tank Farm. The NDAA §3116 Basis Documents include the waste tanks as well as ancillary structures located within the boundary of the respective Tank Farm (see Section 3.4.5). The CGCP[12] was developed and approved by SCDES.

DOE Radioactive Waste Management Manual 435.1-1 mandates a Tier 1 Closure Plan and associated Tier 2 Closure Plans. Each Tier 1 plan is area-specific and provides the bases and process for moving forward with tank grouting. This document is approved at the DOE-Headquarters level. Each Tier 2 document is tank-specific, follows the approved criteria established in the Tier 1 document, and is locally approved by DOE-SR.

Development of a tank-specific Closure Module (CM), per the State-approved CGCP, follows completion of tank cleaning activities. The CM describes the waste removal and cleaning activities performed and documents the proposed end state. Final characterization data supports the performance of a Special Analysis which determines whether final residual inventories continue to support the conclusions of the area-wide PA. In the unlikely case that the final characterization does not confirm the PCWR analysis, the PA model is reviewed to confirm it is adequate. If further analysis continues to be inadequate, further tank cleaning would be pursued.

Grout Selection and Manufacture

A reducing grout provides long-term chemical durability and minimizes leaching of residual waste over time. The reducing grout selected is self-leveling, and encapsulates any equipment remaining inside the tank and annulus. The grout also provides for intruder prevention in tanks that do not have a thick concrete roof. Grouting preparation activities include field modifications, temporary ventilation installation, grout plant mobilization, and grout procurement.

Grout Placement

Grout fill operations, including site preparation, pumper truck set up, grout delivery lines, and grout equipment setup are established around the tanks (see Figure 5-6). Generally, grouting provides structural support for the tank wall. For tanks with an annulus, grouting the annulus and primary tank in alternating steps ensures voids are filled and the structural integrity of the tank is maintained.

Figure 5-6 — *Grout Placement*

Equipment Grouting

For tanks with installed equipment or cooling coils, internal voids are filled with a flowable grout mixture. In those tanks where the cooling coils have broken, alternative techniques are used to minimize voids in the grout matrix.

Riser Grouting and Capping

The final step, after filling the tank, may include encapsulating select risers. When necessary, forms are built around the risers and grout is used to encapsulate the risers providing a final barrier to in-leakage and intrusion. The final grouted tank configuration is an integral monolith with minimal voids ensuring long-lasting protection of human health and the environment (see Figure 5-7).

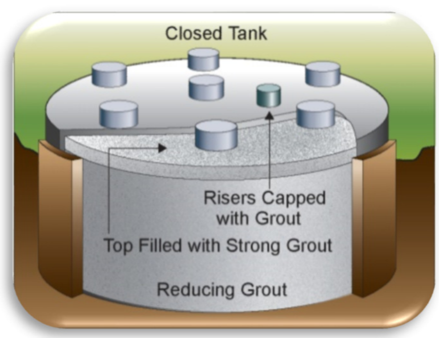


Figure 5-7 — *Grouted Tank*

Tank Isolation

Tank isolation is the physical process of disconnecting the tank from Tank Farm systems and services, thereby prohibiting chemical additions or waste transfers into or out of the tank. Further isolation of a tank, after filling with grout, is planned to include cutting and capping or blanking mechanical system components (air piping/tubing, steam piping, etc.) and disconnecting electrical power to process components on the tank.

5.11.4 Operational Closure and Stabilization of Ancillary Structures

Both FTF and HTF contain ancillary structures with internal equipment which may have a residual contaminant inventory; this must be accounted for as a part of final closure of the Tank Farms complex. These ancillary structures include such things as buried transfer lines, pump tanks, and evaporators, many of which have been in contact with LW during the operating life of the facilities. Ancillary structures were used in the FTF and HTF to transfer waste (e.g., transfer lines, pump tanks) and reduce waste volume through evaporation (e.g., the evaporator systems). In some cases, the ancillary structures served as access points for transfer systems and as secondary containment for associated jumpers (i.e., diversion boxes). In this manner, ancillary structures can be compared to the waste tanks which have primary containment (i.e., the primary steel tank) and secondary containment (i.e., the partially or fully lined annulus). The amount of contamination associated with these components depends on such factors as the component service life, materials of construction, and the contaminating medium in contact with the component. One difference with operational closure of the ancillary structures is that, depending on their final inventory, a reducing grout may not be necessary. The ancillary structures, nonetheless, will need to be filled with an appropriate material to prevent future collapse of the structure.

As required by the FTF and HTF NDAA §3116 WDs, Tier 1 Closure Plans, and the State-approved CGCP, the ancillary structures must go through the same operational closure process as described above for the waste tanks. All regulatory documentation and associated approvals by SCDES, EPA, and DOE required for the waste tanks are also required for operational closure of the ancillary structures, including a CM, Special Analysis, and Tier 2 Closure Plan. A specific listing of the ancillary structures which must follow this process is listed in the CGCP and includes:

- FTF
  - 1F Evaporator
  - 2F Evaporator
  - Transfer line systems, including over 45,000 feet of below grade double-wall pipe
  - Leak detection boxes and modified leak detection boxes
  - Three pump pits and a condensate transfer system pump pit
  - Six diversion boxes
  - One catch tank
  - Isolating the tanks from all operating systems in the surrounding Tank Farm (e.g., electrical, instruments, steam, air, water, waste transfer lines, and tank ventilation systems)

  All flushing of the FTF ancillary structures will be done before closure of the Inter-Area Line (IAL) in 2034.

- HTF
  - 1H Evaporator
  - 16H (2H) Evaporator
  - 25H (3H) Evaporator
  - Transfer line systems, including over 74,750 feet of below grade double-wall pipe
  - Leak detection boxes and modified leak detection boxes
  - Ten pump pits and two condensate transfer system pump pits
  - Eight diversion boxes
  - One catch tank
  - Isolating the tanks from all operating systems in the surrounding Tank Farm (e.g., electrical, instruments, steam, air, water, waste transfer lines, and tank ventilation systems)

  All flushing of the HTF ancillary structures will be done before 2037. Final closure of the ancillary structures in both FTF and HTF will be accomplished after 2037.

Of the ancillary structures in FTF and HTF, F-Diversion Boxes (FDB)-5 & 6 were closed in FY22 consistent with the FFA, Appendix L, 2019 Suspension Agreement. The FTF structures will be flushed and prepared for closure by 2034 when the IAL from FTF to HTF is ready for closure. The HTF structures will be flushed and prepared for closure by 2039. Final operational closure of the ancillary structures will be completed by 2039.

5.11.5 Transfer Line Infrastructure

Efforts are made to keep the number of transfers between tanks to a minimum. However, efficient SWPF operation necessitates an increased operational tempo in the Tank Farms; executing this *Plan* requires more frequent transfers than have historically occurred. Therefore, there is less "idle time" in the transfer system to accommodate short downtimes needed to address emergent repair activities.

New infrastructure is required to accomplish transfers to support SWPF and DWPF, while also continuing activities such as waste removal and evaporation. Discovery of unexpected conditions in existing transfer systems could impact the installation of new transfer lines and equipment.

The transfers in this *Plan* are based on the known, current infrastructure. The actions described can be executed as long as the planned modifications are made, and significant failures of key transfer equipment do not occur or can be mitigated quickly enough to allow activities to proceed as planned. While this *Plan* does not attempt to explain all the modifications needed or anticipate the failure of specific pieces of transfer equipment, much of this is addressed in the ROMP.

5.12 *Sequence for Flushing the LW System at Mission Completion*

The scope of the LW contract includes closing (grouting) the 43 remaining waste tanks. Beyond the Tank Farms, facilities will be flushed and prepared for removal from service. Any additional actions needed to close those facilities will be accomplished under a separate contract.

The general priority is to close geographically proximate tanks and equipment, thus minimizing long-term cost. However, the actual sequence of events will be predicated on the completion of each facility's mission, in support of removing waste from tanks and processing it through to final waste forms. The priority (but not necessarily the sequence) is modeled as:

1. Type I and II tanks
2. F-Area waste tanks, the 2F Evaporator, and ancillary equipment (including 1F Evaporator and the concentrate transfer system)
3. H-Area West Hill waste tanks, the 25H Evaporator, and ancillary equipment (including 1H Evaporator)
4. H-Area East Hill waste tanks, the 16H Evaporator, and ancillary equipment (including any remaining ARP/MCU equipment)

After the HTF and FTF tanks and ancillary equipment have been closed, the LW facilities outside the Tank Farm—DWPF, SWPF, SPF, SDF, and associated ancillary equipment—will be available for beneficial reuse, if needed. Otherwise, these facilities will be flushed and prepared for removal from service.

Note that ETF is expected to remain operational, in support of ongoing site missions. It will be transferred to the M&O contractor at the appropriate time.

In the Baseline case of this *Plan*, the key Liquid Waste mission completion dates are:

- Waste removal is complete from all Type I and II tanks (2029)
- All Type I and II tanks are operationally closed (2032)
- 25H Evaporator shut down (2034)
- H-Canyon processing influents cease (2036)
- 16H Evaporator shut down (2035)
- FTF waste removal is completed (2034)
- IAL removed from service (2034)
- HTF (West Hill) waste removal is complete (2036)
- FTF Type III tanks are operationally closed (2037)
- SWPF shut down (2039)
- HTF (East Hill) waste removal is complete (2039)
- DWPF shut down (2039)
- All facility flushes are complete (2040)
- All tanks are operationally closed (2041)

Facility deactivation is not included in the *Plan*. Deactivation activities are planned for a subsequent contract phase.

Figure 5-8 — *SRS Liquid Waste Facilities*

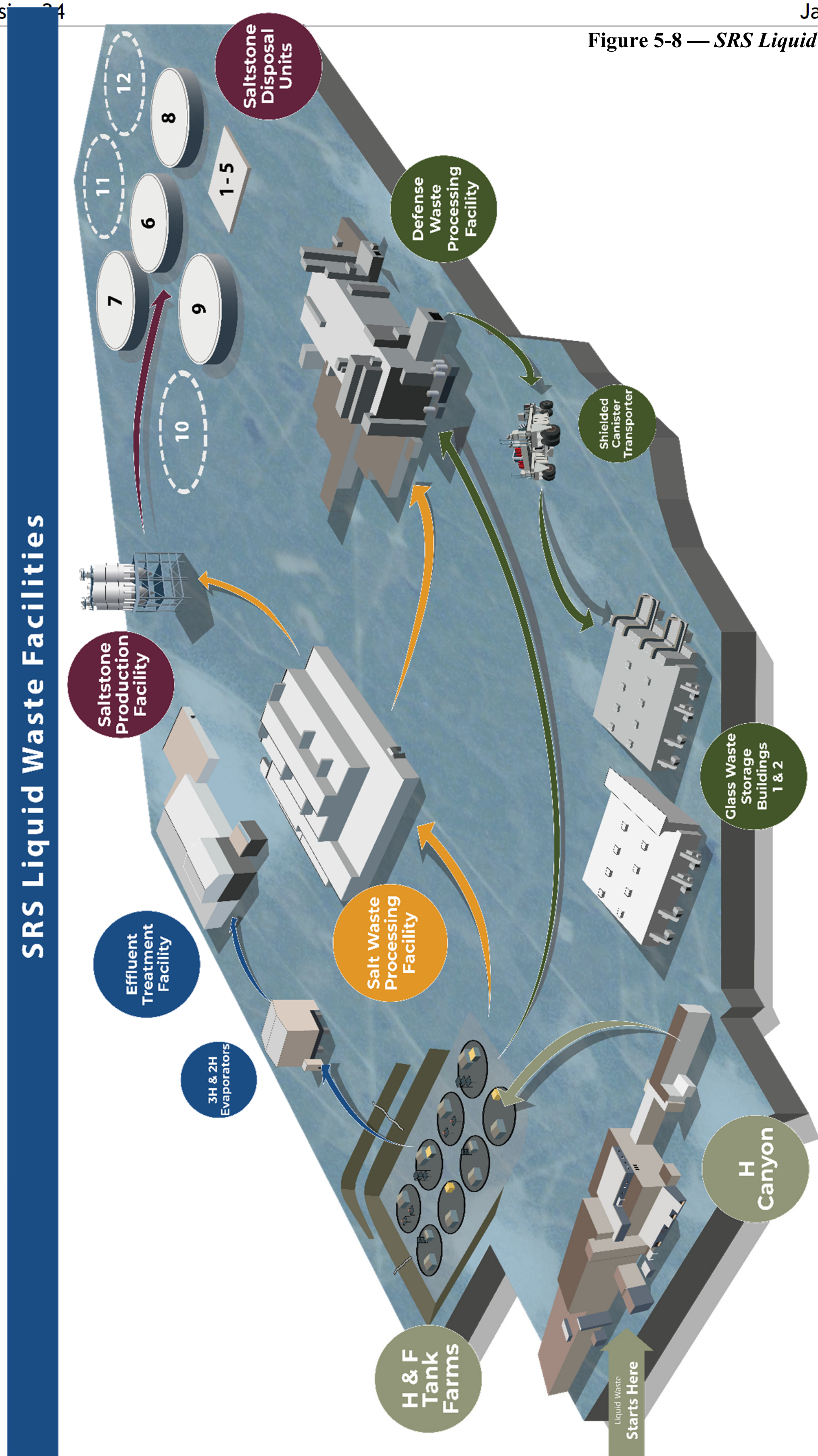


Figure 5-9 — *Drive to 65*

Figure 5-10 — *Liquid Waste Process Overview*

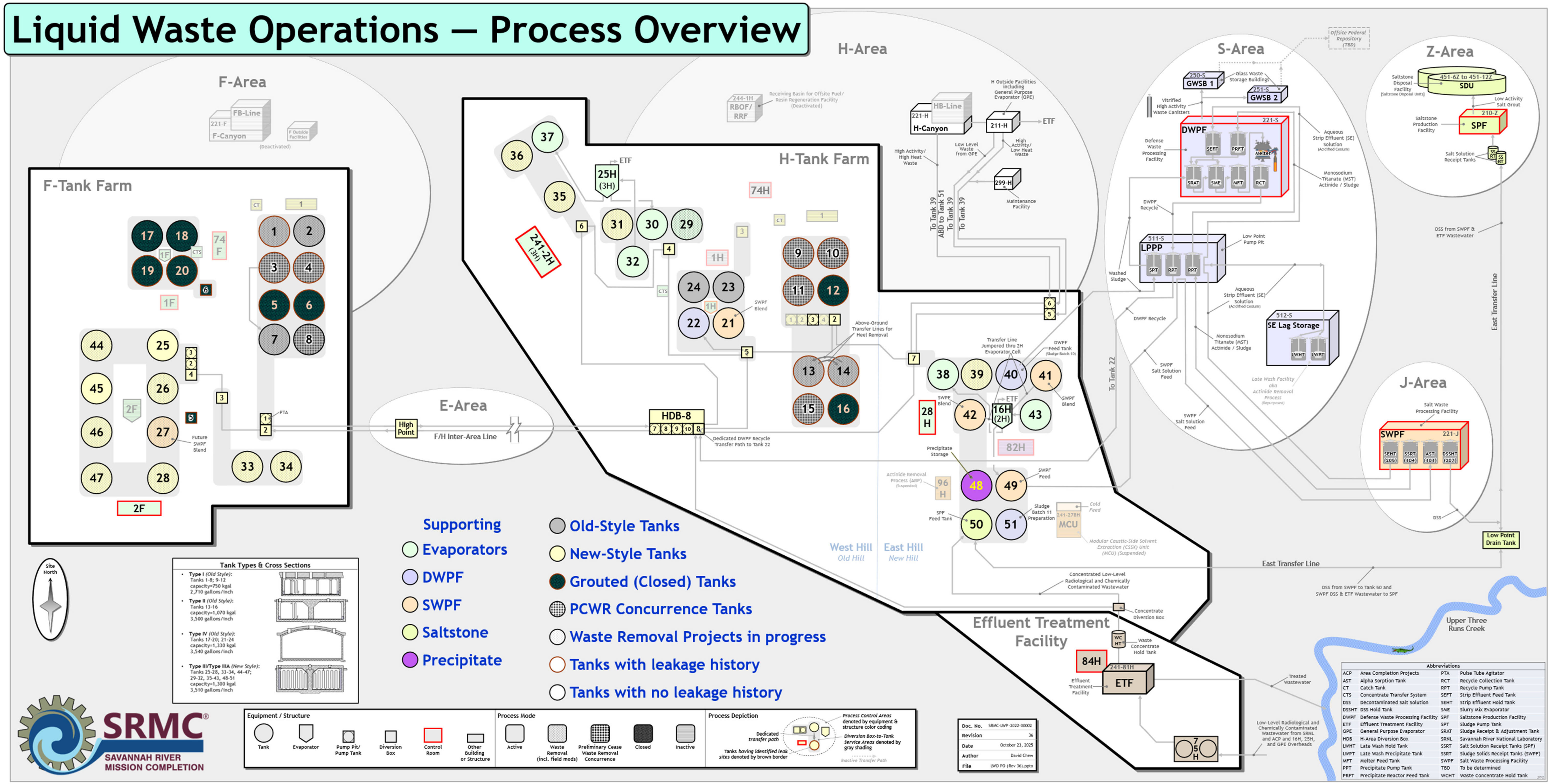
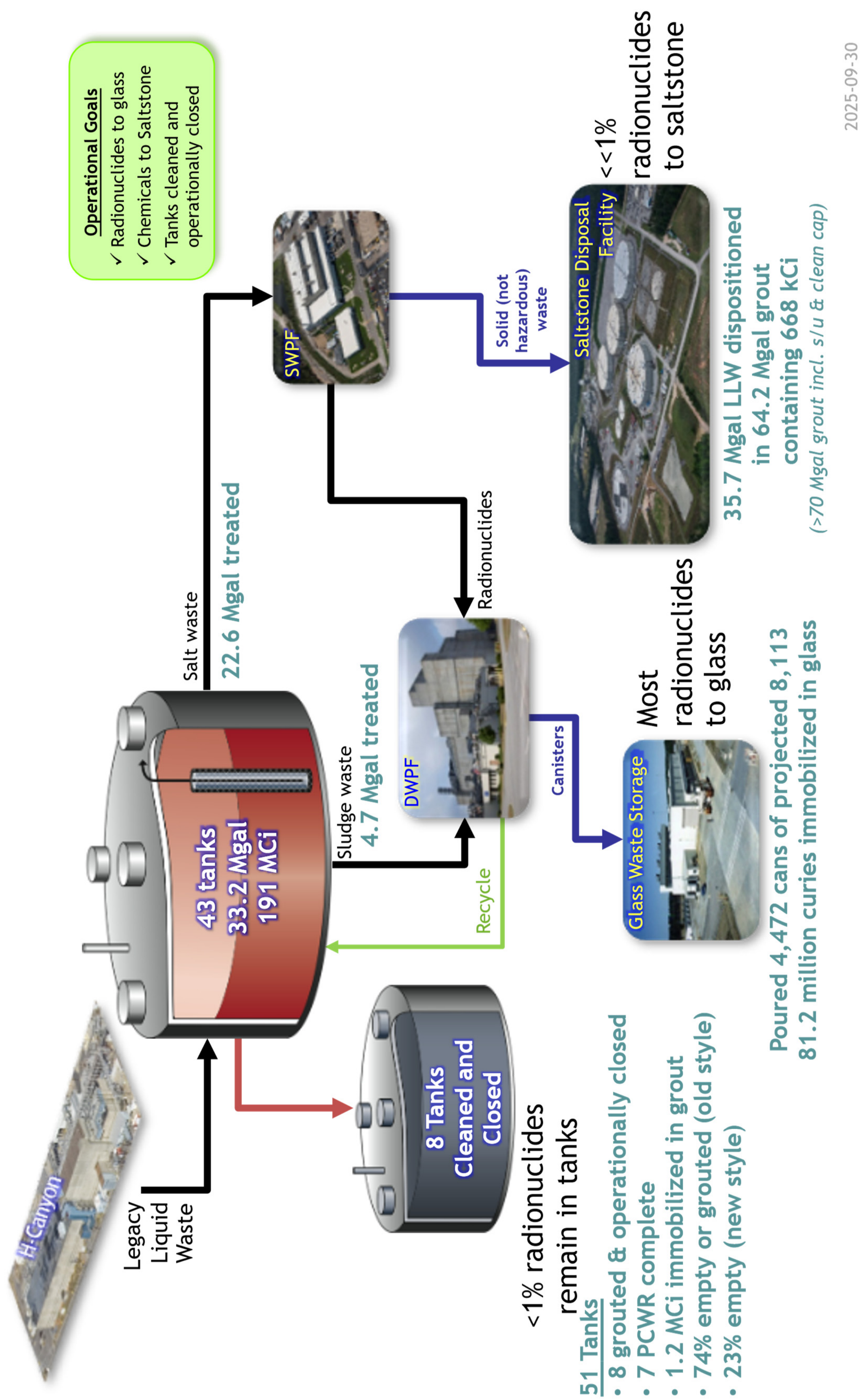


Figure 5-11 — *Liquid Waste Program—Current Status*



Appendix A1 — *Salt Solution Processing (Baseline Case)*

End of	Salt Solution (kgal)					to Tank 50 (kgal)						Tank 50	SDU
Fiscal Year	DDA	ARP/MCU	TCCR	SWPF	Total [a]	DSS	H-Can	Tank 48	Flush MCU	SWPF/DWPF/SPF [b]	ETF	to SPF	Numbers [c]
Total as of	2,800	985			3,785	3,151	682				3,019	3,881	4
FY11		1,064			1,064	1,487	200				64	1,487	4
FY12		705			705	901	19				24	1,252	4 & 2
FY13		1,320			1,320	1,566	24		65		69	2,005	2
FY14		551			551	697	15		12		47	1,167	2 & 5
FY15		753			753	919	12		18		45	828	5
FY16		1,126			1,126	1,382	11		9		42	1,506	5
FY17		397			397	442	5		5		46	500	5
FY18		149			149	171	11		3		19	384	5-6
FY19		404	210		614	657	10		29		46	734	6
FY20			89		89	-0-	0.1		-0-		42	-0-	6
FY21			-0-	2,304	2,304	2,981			9.4		91	3,143	6
FY22			72	1,649	1,720	2,279					60	2,803	3, 6, 7
FY23				3,184	3,184	4,491					17	4,450	3, 6, 7
FY24				2,814	2,814	3,729					22	4,471	6
FY25				1,970	1,970	2,145					35	2,996	6-7
FY26				4,400	4,400	6,249					89	6,338	6-7
FY27				4,761	4,761	6,762					88	6,850	7
FY28				4,682	4,682	6,650					110	6,760	7-8
FY29				4,992	4,992	7,090					88	7,178	8
FY30				7,950	7,950	11,291					88	11,790	8
FY31				7,217	7,217	10,250					110	10,360	8-9
FY32				7,767	7,767	11,031					88	11,119	9-10
FY33				6,593	6,593	9,364					88	9,452	10
FY34				7,075	7,075	10,048	[e]	500			88	10,636	10-11
FY35			[d]	5,336	5,336	7,578		1,500			110	9,188	11
FY36				7,522	7,522	10,683					88	10,771	11-12
FY37				1,561	1,561	2,217					88	2,305	12
FY38				1,532	1,532	2,176					110	2,286	12
FY39				1,416	1,416	2,011				3,000	60	5,071	12
Total	**2,800**	**7,454**	**371**	**84,724**	**95,350**	**130,394**	**989**	**2,000**	**152**	**3,000**	**4,978**	**141,711**	

[a] Salt Solution is a total of salt solution treated via the DDA, ARP/MCU, TCCR, and SWPF processes. Each gallon of salt solution to SWPF

[b] SWPF, DWPF, and SPF Facility flushes are flushed directly to SPF to grout, not via Tank 50.

[c]
- SDU 2 and SDU 5 (being full), SDU 3 , Vault-1, and Vault-4, are no longer planned to receive contaminated grout
- SDU 6 (32.8 Mgal capacity) and SDU 7 through SDU 12 (34.5 Mgal capacity) are single cylindrical cells; SDU 6 can receive ~18.7 Mgal of feed and SDU 7 through SDU 12 can receive ~19.7 Mgal of feed

[d] After the end of SWPF processing via Tank 49 in mid-2035, DWPF recycle is received by SWPF via 511-S, bypassing the Tank Farm.

[e] To forecast grout production, disposition of Tank 48 material is assumed to yield 2 Mgal of DSS for processing in SPF

Note Dates, volumes, and chemical or radiological composition information are planning approximations only.

Appendix B1 — *Canister Storage (Baseline Case)*

End of Fiscal Year	SRS Cans Poured		SRS Cans in GWSB 1 (4,524 capacity)[a]		SRS Cans in GWSB 2 (4,680 capacity)[b]		SRS Cans pending storage [c]
	Yearly	Cum.	Added	Cum.	Added	Cum.	
FY96	*64*	*64*	*64*	*64*			
FY97	*169*	*233*	*169*	*233*			
FY98	*250*	*483*	*250*	*483*			
FY99	*236*	*719*	*236*	*719*			
FY00	*231*	*950*	*231*	*950*			
FY01	*227*	*1,177*	*227*	*1,177*			
FY02	*160*	*1,337*	*160*	*1,337*	*Numbers in italics are actuals through FY25. FY26 and beyond are forecast based on modeling assumptions*		
FY03	*115*	*1,452*	*115*	*1,452*			
FY04	*260*	*1,712*	*260*	*1,712*			
FY05	*257*	*1,969*	*257*	*1,969*			
FY06	*245*	*2,214*	*244*	*2,213*	*1*	*1*	
FY07	*160*	*2,374*	*28*	*2,241*	*132*	*133*	
FY08	*225*	*2,599*		*2,241*	*225*	*358*	
FY09	*196*	*2,795*		*2,241*	*196*	*554*	
FY10	*192*	*2,987*	*3*	*2,244*	*183*	*737*	*Cans in Vit Bldg: 6*
FY11	*264*	*3,251*		*2,244*	*260*	*997*	*Cans in Vit Bldg: 10*
FY12	*277*	*3,528*		*2,244*	*277*	*1,269*	*Cans in Vit Bldg: 15*
FY13	*224*	*3,752*		*2,244*	*224*	*1,493*	*Cans in Vit Bldg: 15*
FY14	*125*	*3,877*		*2,244*	*125*	*1,629*	*Cans in Vit Bldg: 4*
FY15	*93*	*3,970*	*(193)*	*2,051*	*281*	*1,910*	*Cans in Vit Bldg: 9*
FY16	*136*	*4,106*	*(153)*	*1,898*	*291*	*2,201*	*Cans in Vit Bldg: 7*
FY17	*52*	*4,158*	*14*	*1,912*	*34*	*2,235*	*Cans in Vit Bldg: 11*
FY18	*15*	*4,173*		*1,914*	*19*	*2,254*	*Cans in Vit Bldg: 5*
FY19	*34*	*4,207*		*1,914*	*34*	*2,288*	*Cans in Vit Bldg: 5*
FY20	*8*	*4,215*		*1,914*	*4*	*2,292*	*Cans in Vit Bldg: 9*
FY21	*59*	*4,274*	*131*	*2,045*	*(66)*	*2,226*	*Cans in Vit Bldg: 3*
FY22	*45*	*4,319*		*2,045*	*44*	*2,270*	*Cans in Vit Bldg: 4*
FY23	*76*	*4,395*	*7*	*2,668*	*69*	*1,719*	*Cans in Vit Bldg: 8*
FY24	*49*	*4,444*	*38*	*2,706*	*8*	*1,727*	*Cans in Vit Bldg: 11*
FY25	*28*	*4,472*	*24*	*2,730*	*1*	*1,728*	*Cans in Vit Bldg: 14*
FY26	163	4,635	318	3,048	(150)	1,578	
FY27	235	4,870	385	3,433	(150)	1,428	
FY28	264	5,134	264	3,697		1,428	
FY29	178	5,312	178	3,875		1,428	
FY30	244	5,556	244	4,119		1,428	*Remaining Capacity*
FY31	211	5,767	211	4,330		1,428	*3,437*
FY32	260	6,027	172	4,502	88	1,516	*3,177*
FY33	240	6,267		4,502	240	1,756	*2,937*
FY34	262	6,529		4,502	262	2,018	*2,675*
FY35	255	6,784		4,502	255	2,273	*2,420*
FY36	265	7,049		4,502	265	2,538	*2,155*
FY37	282	7,331		4,502	282	2,820	*1,873*
FY38	282	7,613		4,502	282	3,102	*1,591*
FY39	127	7,740		4,502	136	3,238	*1,464*

[a] GWSB 1 filling began in May 1996. From 2016 to March 2024, conversion of the 2,262 standard canister storage locations enabled, via double stacking, each position to hold two cans for a total capacity of 4,524 canisters.

[b] GWSB 2 has 2,340 standard storage locations and filing began in 2006. Beginning in April 2024, conversion of the 2,262 standard canister storage locations to enable each position to hold two cans for a potential capacity of 4,680 canisters. Enough positions are planned to be converted to allow storage of all canisters produced.

[c] At the end of each year, a certain number of cans are not emplaced in the GWSBs, having been retained in the vitrification building. At the end of the program, all canisters will be stored in the GWSBs pending final disposition. The "Remaining Capacity" is the number of additional canisters that could be stored.

Note: These values are estimates based on the best inventory information available at the time and assumptions about future waste inventory and processing.

Appendix C1 — *LW System Plan—Revision 24 Summary (Baseline Case DNA)*

(see attached foldout chart)

Appendix A2 — *Salt Solution Processing (Goal Case)*

End of	Salt Solution (kgal)					to Tank 50 (kgal)						Tank 50	SDU
Fiscal Year	DDA	ARP/MCU	TCCR	SWPF	Total [a]	DSS	H-Can	Tank 48	Flush MCU	SWPF/DWPF/SPF [b]	ETF	to SPF	Numbers [c]
Total as of	2,800	985			3,785	3,151	682				3,019	3,881	4
FY11		1,064			1,064	1,487	200				64	1,487	4
FY12		705			705	901	19				24	1,252	4 & 2
FY13		1,320			1,320	1,566	24		65		69	2,005	2
FY14		551			551	697	15		12		47	1,167	2 & 5
FY15		753			753	919	12		18		45	828	5
FY16		1,126			1,126	1,382	11		9		42	1,506	5
FY17		397			397	442	5		5		46	500	5
FY18		149			149	171	11		3		19	384	5-6
FY19		404	210		614	657	10		29		46	734	6
FY20			89		89	-0-	0.1		-0-		42	-0-	6
FY21			-0-	2,304	2,304	2,981			9.4		91	3,143	6
FY22			72	1,649	1,720	2,279					60	2,803	3, 6, 7
FY23				3,184	3,184	4,491					17	4,450	3, 6, 7
FY24				2,814	2,814	3,729					22	4,471	6
FY25				1,970	1,970	2,145					35	2,996	6-7
FY26				7,343	7,343	10,429					88	10,517	6-7
FY27				7,086	7,086	10,064					88	10,152	7-8
FY28				7,604	7,604	10,799					110	10,909	8
FY29				3,933	3,933	5,586					88	5,674	8
FY30				7,852	7,852	11,152					88	11,650	8-9
FY31				7,643	7,643	10,855					110	10,965	9-10
FY32				6,887	6,887	9,781					88	9,869	10
FY33				7,183	7,183	10,202					88	10,290	10-11
FY34				3,426	3,426	4,866	[e]	500			88	5,454	11
FY35			[d]	5,026	5,026	7,138		1,500			110	8,748	11
FY36				1,486	1,486	2,110					77	2,187	11
FY37					-	-				3,000	-	3,000	11-12
Total	**2,800**	**7,454**	**371**	**77,389**	**88,015**	**119,976**	**989**	**2,000**	**152**	**3,000**	**4,708**	**131,024**	

[a] Salt Solution is a total of salt solution treated via the DDA, ARP/MCU, TCCR, and SWPF processes. Each gallon of salt solution to SWPF

[b] SWPF, DWPF, and SPF Facility flushes are flushed directly to SPF to grout, not via Tank 50.

[c]
- SDU 2 and SDU 5 (being full), SDU 3 , Vault-1, and Vault-4, are no longer planned to receive contaminated grout
- SDU 6 (32.8 Mgal capacity) and SDU 7 through SDU 12 (34.5 Mgal capacity) are single cylindrical cells; SDU 6 can receive ~18.7 Mgal of feed and SDU 7 through SDU 12 can receive ~19.7 Mgal of feed

[d] After the end of SWPF processing via Tank 49 in mid-2034, DWPF recycle is received by SWPF via 511-S, bypassing the Tank Farm.

[e] To forecast grout production, disposition of Tank 48 material is assumed to yield 2 Mgal of DSS for processing in SPF

Note Dates, volumes, and chemical or radiological composition information are planning approximations only.

Appendix B2 — *Canister Storage (Goal Case)*

End of Fiscal Year	SRS Cans Poured		SRS Cans in GWSB 1 (4,524 capacity)[a]		SRS Cans in GWSB 2 (4,680 capacity)[b]		SRS Cans pending storage [c]
	Yearly	Cum.	Added	Cum.	Added	Cum.	
FY96	64	64	64	64			
FY97	169	233	169	233			
FY98	250	483	250	483			
FY99	236	719	236	719			
FY00	231	950	231	950			
FY01	227	1,177	227	1,177			
FY02	160	1,337	160	1,337	*Numbers in italics are actuals through FY25. FY26 and beyond are forecast based on modeling assumptions*		
FY03	115	1,452	115	1,452			
FY04	260	1,712	260	1,712			
FY05	257	1,969	257	1,969			
FY06	245	2,214	244	2,213	1	1	
FY07	160	2,374	28	2,241	132	133	
FY08	225	2,599		2,241	225	358	
FY09	196	2,795		2,241	196	554	
FY10	192	2,987	3	2,244	183	737	Cans in Vit Bldg: 6
FY11	264	3,251		2,244	260	997	Cans in Vit Bldg: 10
FY12	277	3,528		2,244	277	1,269	Cans in Vit Bldg: 15
FY13	224	3,752		2,244	224	1,493	Cans in Vit Bldg: 15
FY14	125	3,877		2,244	125	1,629	Cans in Vit Bldg: 4
FY15	93	3,970	(193)	2,051	281	1,910	Cans in Vit Bldg: 9
FY16	136	4,106	(153)	1,898	291	2,201	Cans in Vit Bldg: 7
FY17	52	4,158	14	1,912	34	2,235	Cans in Vit Bldg: 11
FY18	15	4,173		1,914	19	2,254	Cans in Vit Bldg: 5
FY19	34	4,207		1,914	34	2,288	Cans in Vit Bldg: 5
FY20	8	4,215		1,914	4	2,292	Cans in Vit Bldg: 9
FY21	59	4,274	131	2,045	(66)	2,226	Cans in Vit Bldg: 3
FY22	45	4,319		2,045	44	2,270	Cans in Vit Bldg: 4
FY23	76	4,395	7	2,668	69	1,719	Cans in Vit Bldg: 8
FY24	49	4,444	38	2,706	8	1,727	Cans in Vit Bldg: 11
FY25	28	4,472	24	2,730	1	1,728	Cans in Vit Bldg: 14
FY26	274	4,746	429	3,159	(150)	1,578	
FY27	247	4,993	397	3,556	(150)	1,428	
FY28	312	5,305	312	3,868		1,428	
FY29	166	5,471	166	4,034		1,428	
FY30	292	5,763	292	4,326		1,428	Remaining Capacity
FY31	319	6,082	176	4,502	143	1,571	3,122
FY32	308	6,390		4,502	308	1,879	2,814
FY33	314	6,704		4,502	314	2,193	2,500
FY34	329	7,033		4,502	329	2,522	2,171
FY35	326	7,359		4,502	326	2,848	1,845
FY36	317	7,676		4,502	326	3,174	1,528

[a] GWSB 1 filling began in May 1996. From 2016 to March 2024, conversion of the 2,262 standard canister storage locations enabled, via double stacking, each position to hold two cans for a total capacity of 4,524 canisters.

[b] GWSB 2 has 2,340 standard storage locations and filing began in 2006. Beginning in April 2024, conversion of the 2,262 standard canister storage locations to enable each position to hold two cans for a potential capacity of 4,680 canisters. Enough positions are planned to be converted to allow storage of all canisters produced.

[c] At the end of each year, a certain number of cans are not emplaced in the GWSBs, having been retained in the vitrification building. At the end of the program, all canisters will be stored in the GWSBs pending final disposition. The "Remaining Capacity" is the number of additional canisters that could be stored.

Note: These values are estimates based on the best inventory information available at the time and assumptions about future waste inventory and processing.

Appendix C2 — *LW System Plan—Revision 24 Summary (Goal Case DNA)*

(see attached foldout chart)

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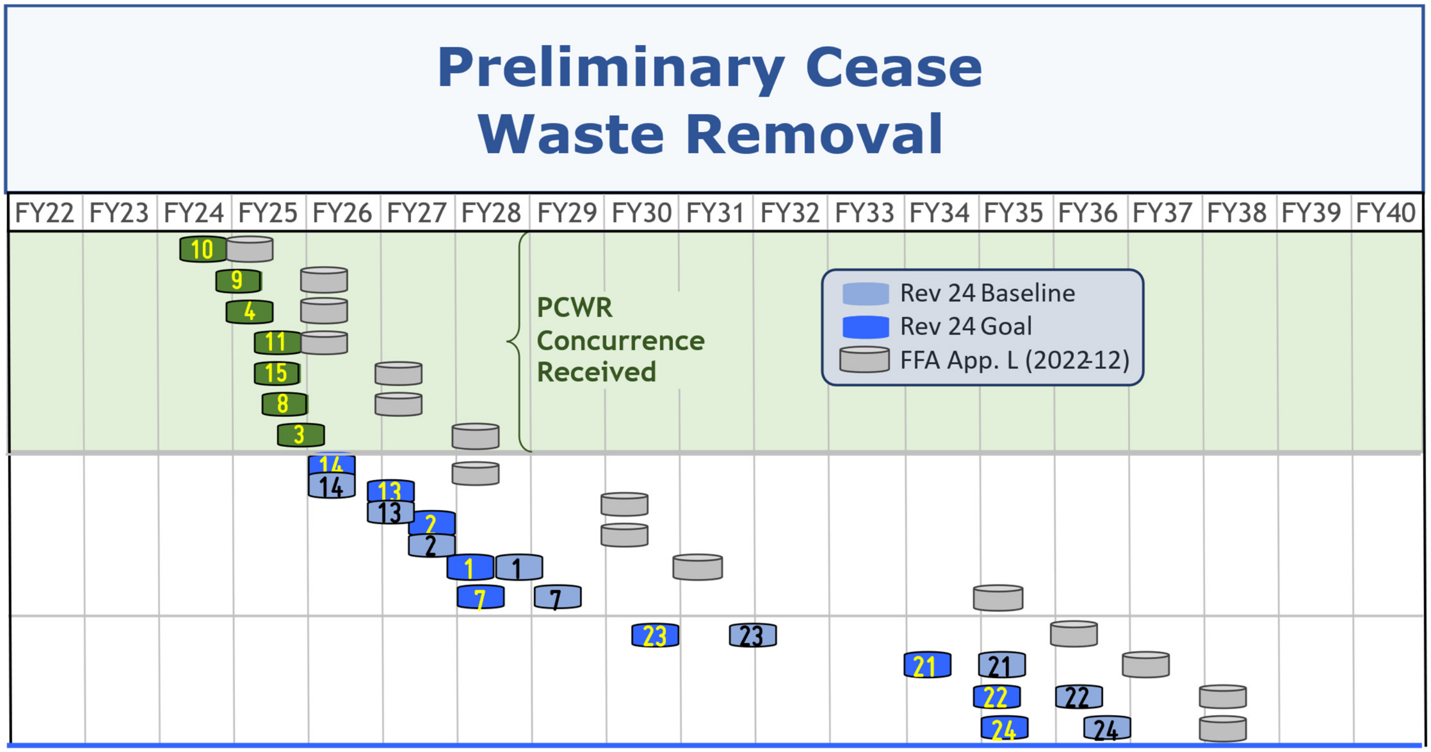
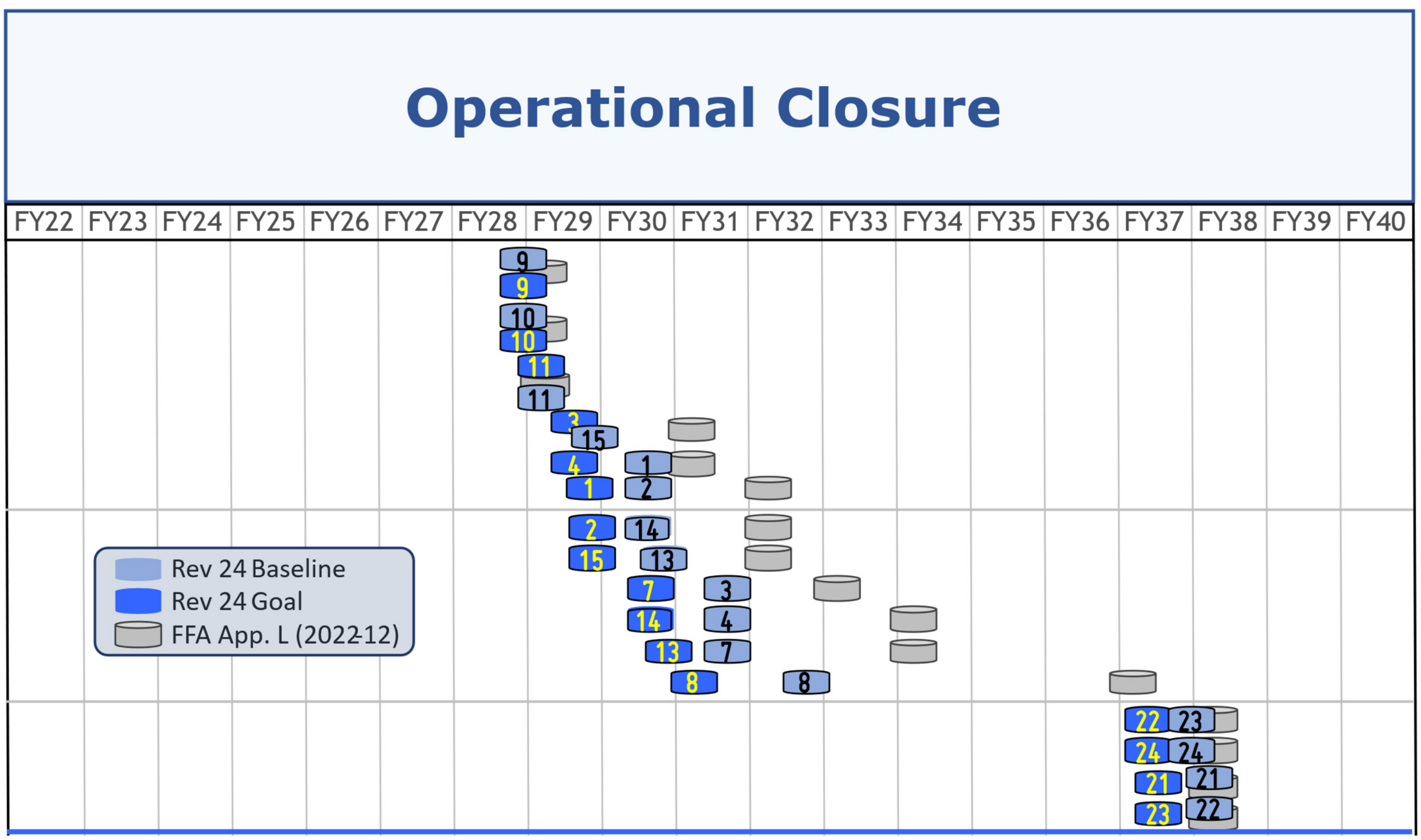
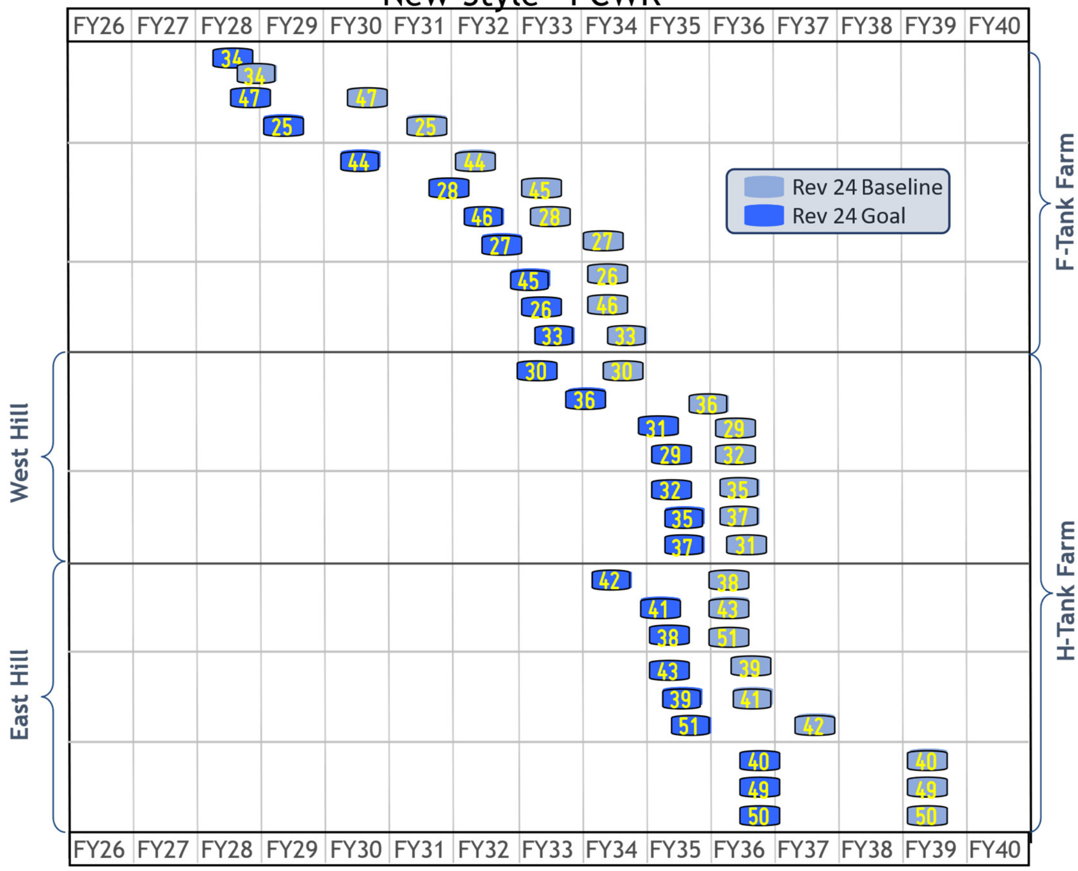
Appendix D — *PCWR & Tank Removal from Service (with respect to the FFA)*



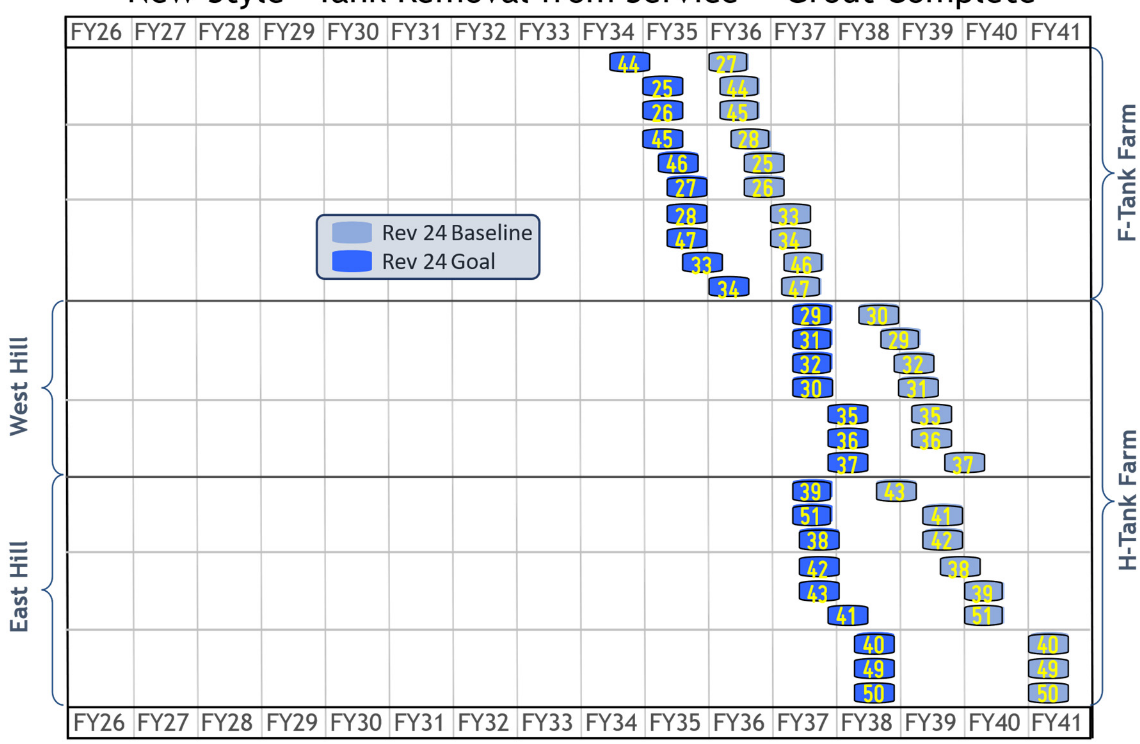


Appendix E — *PCWR & Tank Removal from Service ("New-Style" Tanks)*

"New-Style" PCWR



"New-Style" Tank Removal from Service – Grout Complete



Appendix F — *PCWR & Tank Removal from Service (Date Table)*

	Goal		Baseline	
Tank	**PCWR**	**Operational Closure**	**PCWR**	**Operational Closure**
1F	Dec 2027	Sep 2029	Sep 2028	Jun 2030
2F	Jun 2027	Sep 2029	Jun 2027	Jun 2030
3F	*Sep 2025 (Actual)*	Jun 2029	*Sep 2025 (Actual)*	Jun 2031
4F	*Dec 2024 (Actual)*	Jun 2029	*Dec 2024 (Actual)*	Jun 2031
7F	Feb 2028	Jun 2030	Feb 2029	Jun 2031
8F	*Jun 2025 (Actual)*	Dec 2030	*Jun 2025 (Actual)*	Jun 2032
9H	*Oct 2024 (Actual)*	Sep 2028	*Oct 2024 (Actual)*	Sep 2028
10H	*May 2024 (Actual)*	Sep 2028	*May 2024 (Actual)*	Sep 2028
11H	*May 2025 (Actual)*	Dec 2028	*May 2025 (Actual)*	Dec 2028
13H	Nov 2026	Sep 2030	Nov 2026	Sep 2030
14H	Feb 2026	Jun 2030	Feb 2026	Jun 2030
15H	*May 2025 (Actual)*	Sep 2029	*May 2025 (Actual)*	Sep 2029
21H	Jan 2034	Jun 2037	Dec 2035	Jun 2038
22H	Jan 2035	Apr 2037	Jan 2036	Jun 2038
23H	Aug 2030	Jun 2037	Oct 2031	Mar 2038
24H	Feb 2035	Apr 2037	Jun 2036	Mar 2038
25F	Jan 2029	Dec 2034	Jun 2031	Sep 2036
26F	Feb 2033	Dec 2034	Feb 2034	Sep 2036
27F	Aug 2032	Jun 2035	Jan 2034	Dec 2035
28F	Sep 2031	Jun 2035	Feb 2033	Jun 2036
29H	Dec 2034	Apr 2037	Jan 2036	Oct 2038
30H	Dec 2032	Jun 2037	Jun 2034	Jun 2038
31H	Nov 2034	Apr 2037	Jun 2036	Dec 2038
32H	Jan 2035	Apr 2037	Jan 2036	Nov 2038
33F	Mar 2033	Sep 2035	Jul 2034	Dec 2036
34F	Apr 2028	Dec 2035	Sep 2028	Dec 2036
35H	Feb 2035	Nov 2037	Mar 2036	Mar 2039
36H	Oct 2033	Nov 2037	Oct 2035	Mar 2039
37H	Feb 2035	Nov 2037	Mar 2036	Oct 2039
38H	Jan 2035	Jun 2037	Dec 2035	Sep 2039
39H	Feb 2035	Apr 2037	Jun 2036	Dec 2039
40H	Aug 2036	Dec 2037	Feb 2039	Dec 2040
41H	Dec 2034	Nov 2037	Jun 2036	Jun 2039
42H	Mar 2034	Jun 2037	Jun 2037	Jun 2039
43H	Jan 2035	Jun 2037	Dec 2035	Sep 2038
44F	Jun 2030	Sep 2034	Jan 2032	Mar 2036
45F	Nov 2032	Dec 2034	Jan 2033	Mar 2036
46F	Mar 2032	Mar 2035	Feb 2034	Mar 2037
47F	Aug 2028	Jun 2035	Jul 2030	Mar 2037
49H	Aug 2036	Dec 2037	Feb 2039	Dec 2040
50H	Aug 2036	Dec 2037	Feb 2039	Dec 2040
51H	Jun 2035	Apr 2037	Dec 2035	Dec 2039

Abbreviations

2H	242-16H Evaporator
3H	242-25H Evaporator
ABD	Accelerated Basin Deinventory
aka	also known as
ARP	Actinide Removal Process
ASNF	aluminum spent nuclear fuel
ASP	Alpha Strike Process
AWSM II	All Waste Simulation Model II
BRA	Breathing Air
CDMC	Contact Decontamination Maintenance Cell
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFF	Cross Flow Filters
Ci/gal	Curies per gallon
CGCP	Consolidated General Closure Plan
CM	Closure Module
CSMP	Commercial Submersible Mixing Pumps
CSSX	Caustic Side Solvent Extraction
D&D	Dismantlement and Decommissioning
D&R	disassembly and removal
DAR	Drain, Add, Remove
DCS	Distributed Control System
DDA	Deliquification, Dissolution, and Adjustment
DNA	Distributed Network Algorithm (refer to the C Appendices of the *Plan)*
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DOE-SR	DOE Savannah River Operations Office
DSS	Decontaminated Salt Solution
DWPF	Defense Waste Processing Facility
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESD	End-Stream Delivery
ETF	Effluent Treatment Facility
FCA	Fast Critical Assembly
FFA	Federal Facility Agreement
FESV	Failed Equipment Storage Vault
FTF	F Tank Farm
FY	Fiscal Year
gPROMS	General PROcess Modeling System
GWSB	Glass Waste Storage Building
HLLCP	high liquid level conductivity probes
HLW	high level waste
HM	H Modified (of PUREX)
HTF	H Tank Farm
IPABS	Integrated Planning, Accountability, & Budgeting System
IAL	Inter-Area Line
IW	inhibited water
kgal	thousand gallons
LTAD	Low Temperature Aluminum Dissolution
LLW	Low Level Waste
LVMJ	Low Volume Mixing Jet
LW	Liquid Waste
MCi	million curies
MCU	Modular CSSX Unit
METS	Mechanical Equipment Testing System
Mgal	million gallons
M&O	Maintenance and Operations
MPC	Main Process Cell
MSB	Melter Storage Box
MST	monosodium titanate
MTBF	Mean Time Between Failures
MTTR	Mean Time to Repair
NASNF	Non-Aluminum Spent Nuclear Fuel
NCSA	Nuclear Criticality Safety Assessment
NDAA	Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005
NDAA §3116	Section 3116 – Defense Site Acceleration Completion—of the NDAA
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination Systems
NRC	Nuclear Regulatory Commission
PA	Performance Assessment
PCWR	Preliminary Cease Waste Removal
PEIS	Programmatic Environmental Impact Statement
POM	Program Optimization Model
PM	preventive maintenance
PS	production support
PUREX	Plutonium Uranium Reduction Extraction
RBOF	Receiving Basin for Offsite Fuel
RCRA	Resource Conservation and Recovery Act
ROMP	Risk and Opportunity Management Plan
SB	Sludge Batch
SC	Safety Class
SCD	semi-continuous dissolution
SCDES	South Carolina Department of Environmental Services
SCT	Shielded Canister Transporter
SDF	Saltstone Disposal Facility
SDU	Saltstone Disposal Units
SE	Strip Effluent
SEC	Strip Effluent Coalescer
SEFT	Strip Effluent Feed Tank
SEIS	Supplemental Environmental Impact Statement
SME	Slurry Mix Evaporator
SPF	Saltstone Production Facility
SRAT	Slurry Receipt and Adjustment Tank
SRMC	Savannah River Mission Completion, LLC
SRNS	Savannah River Nuclear Solutions
SRS	Savannah River Site
SS	Safety Significant
SSC	structure, system, or component
SSRT	Salt Solution Receipt Tanks
STP	Site Treatment Plan
SWPF	Salt Waste Processing Facility
TCCR	tank closure cesium removal
TPB	tetraphenylborate
TR&C	task requirements and criteria
UBS	Unit Billed Services
UPS	uninterruptible power supply
VFD	variable frequency drives
WAC	Waste Acceptance Criteria
WCS	Waste Characterization System
WD	Waste Determination
WW	well water
wt%	weight percent

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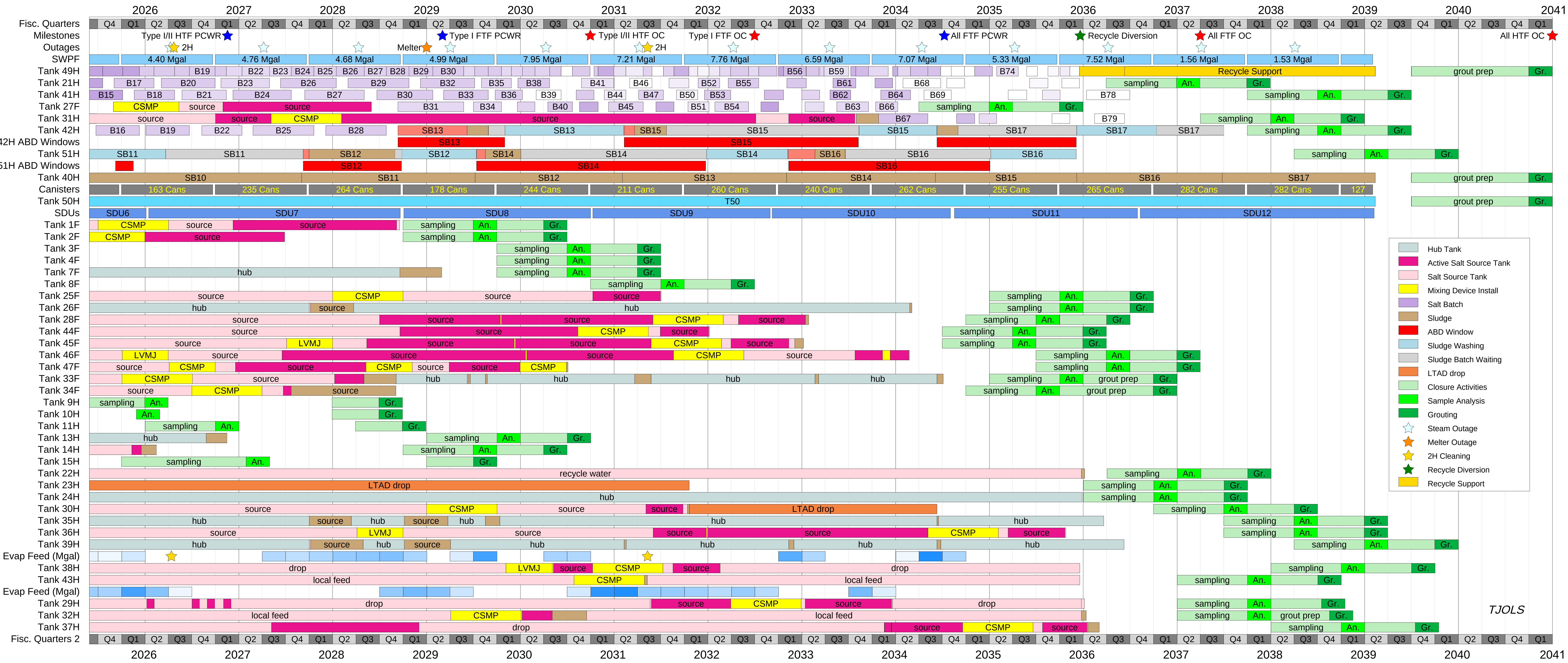
LW System Plan—Rev 24 Baseline Summary

Liquid Waste System Plan
Revision 24

SRMC-LWP-2022-00035
January 2026



Liquid Waste System Plan
Revision 24

LW System Plan—Rev 24 Goal Summary

SRMC-LWP-2022-00035
January 2026