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Liquid Waste Program: Risk Reduction and Waste Removal Update

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Department of Energy – Savannah River

Mike Borders

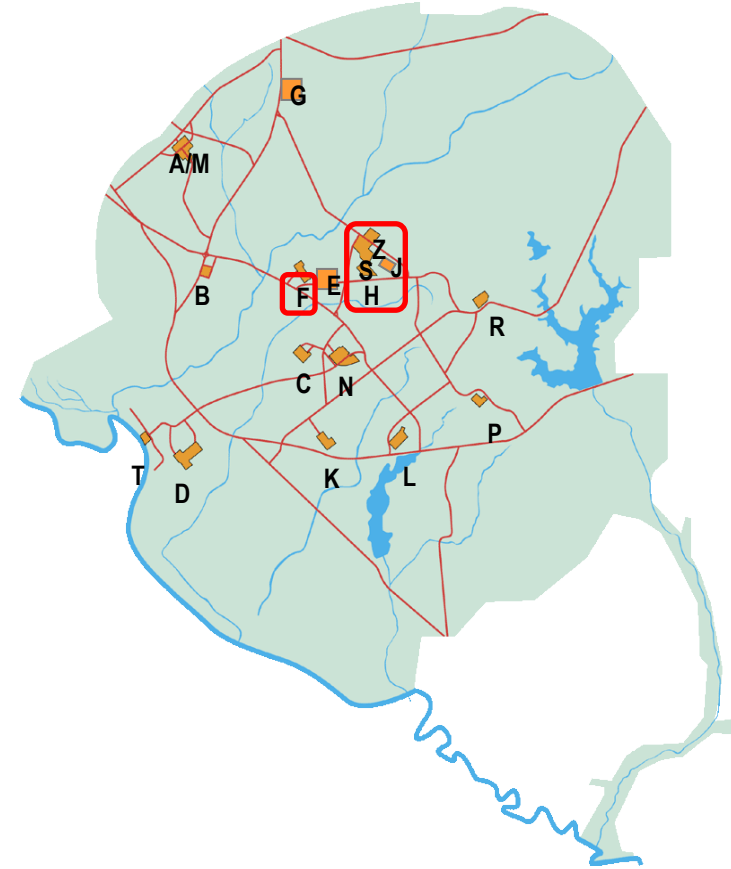
Optimization & Integration Director
Savannah River Mission Completion

Citizens Advisory Board
July 29, 2024



Agenda

- **Purpose of the Presentations**
- **Liquid Waste Mission Overview**
- **Growing the Power As One**
- **Liquid Waste Risk Reduction**
 - High Curie Processing
 - Maximizing Waste Removal
- **Waste Removal Update**
 - Risk Reduction of Old-Style Tanks in the Water Table
 - Delivering our Commitment to our Client & Stakeholders



Purpose of the Presentations

- **Update the CAB on the progress of the Liquid Waste Clean-Up Mission**
 - Liquid Waste Program: Risk Reduction and Waste Removal Update (Joel & Mike)
 - DWPF Continued Optimizations to Support Increased Waste Throughput (Doug & Brittany)
 - SWPF Continued Optimizations to Support Increased Waste Throughput (Steve & Jason)
 - End Stream Delivery: Optimizations & Improvements (Rodney)
 - SRMC Laboratories: Supporting Increased Salt & Sludge Batches (Melissa)
 - SDU Update – Construction & Operation (Brandon & Clarissa)



Defense Waste Processing Facility



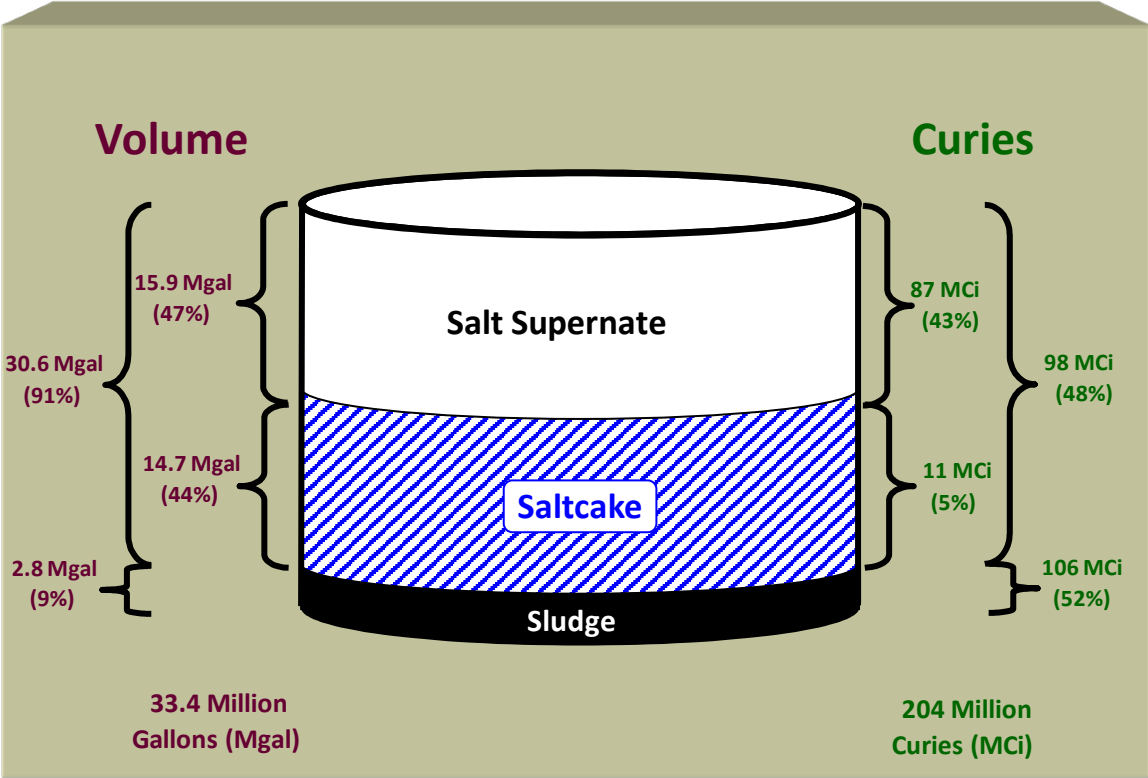
Salt Waste Processing Facility



Saltstone Production Facility & SDUs



Inside the Tanks



Inventory values as of 2024-05-31

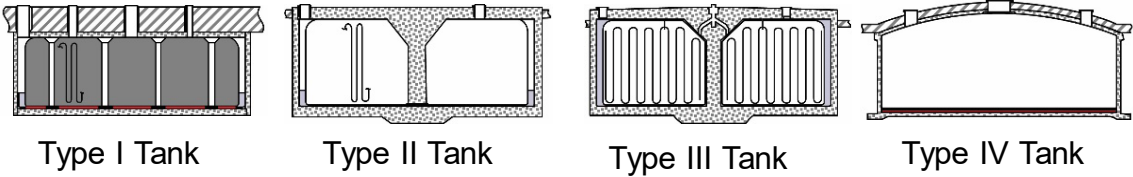
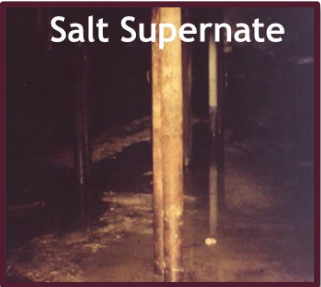


Table salt



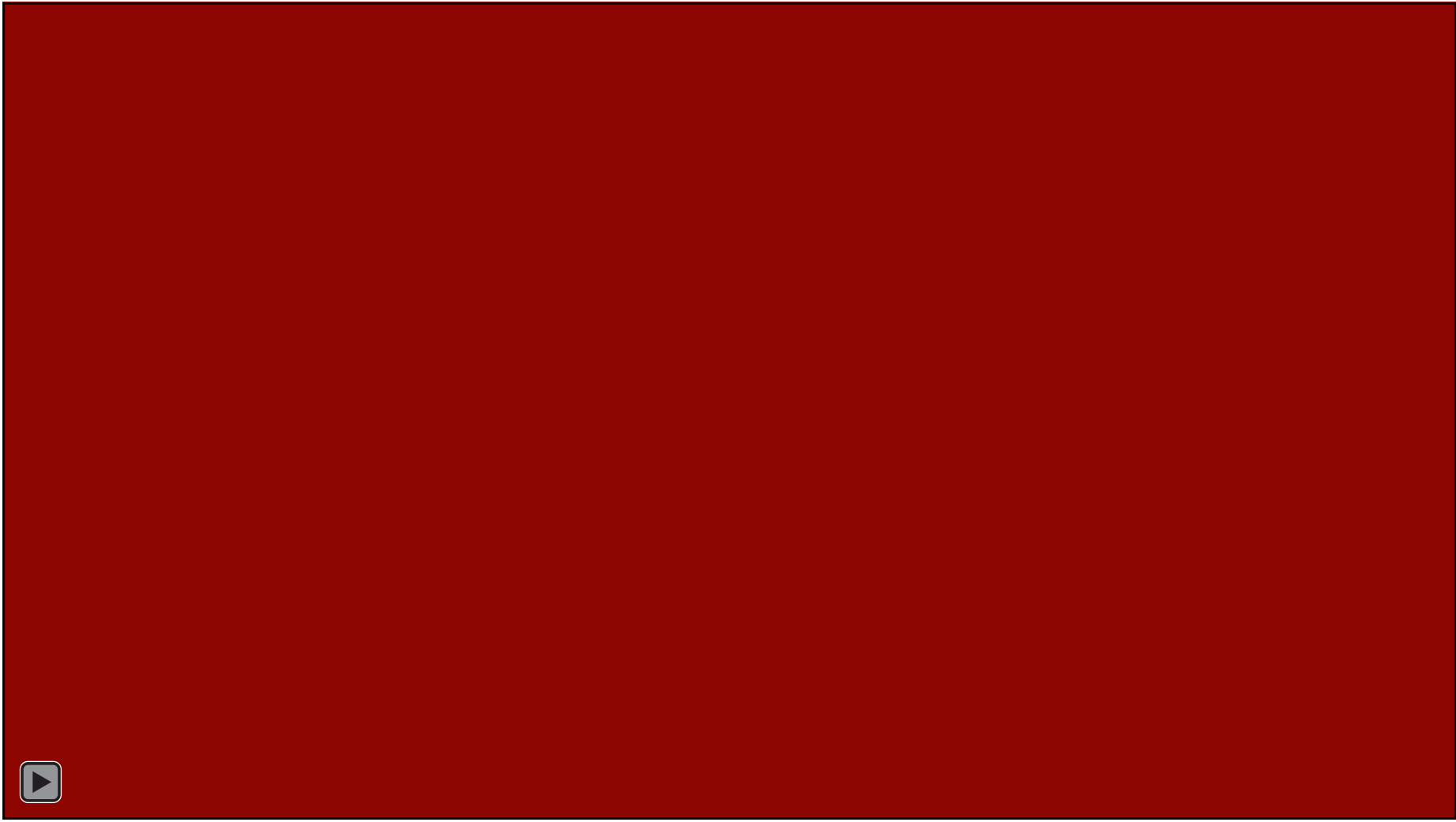
Pancake syrup



Peanut butter



Liquid Waste Program Overview



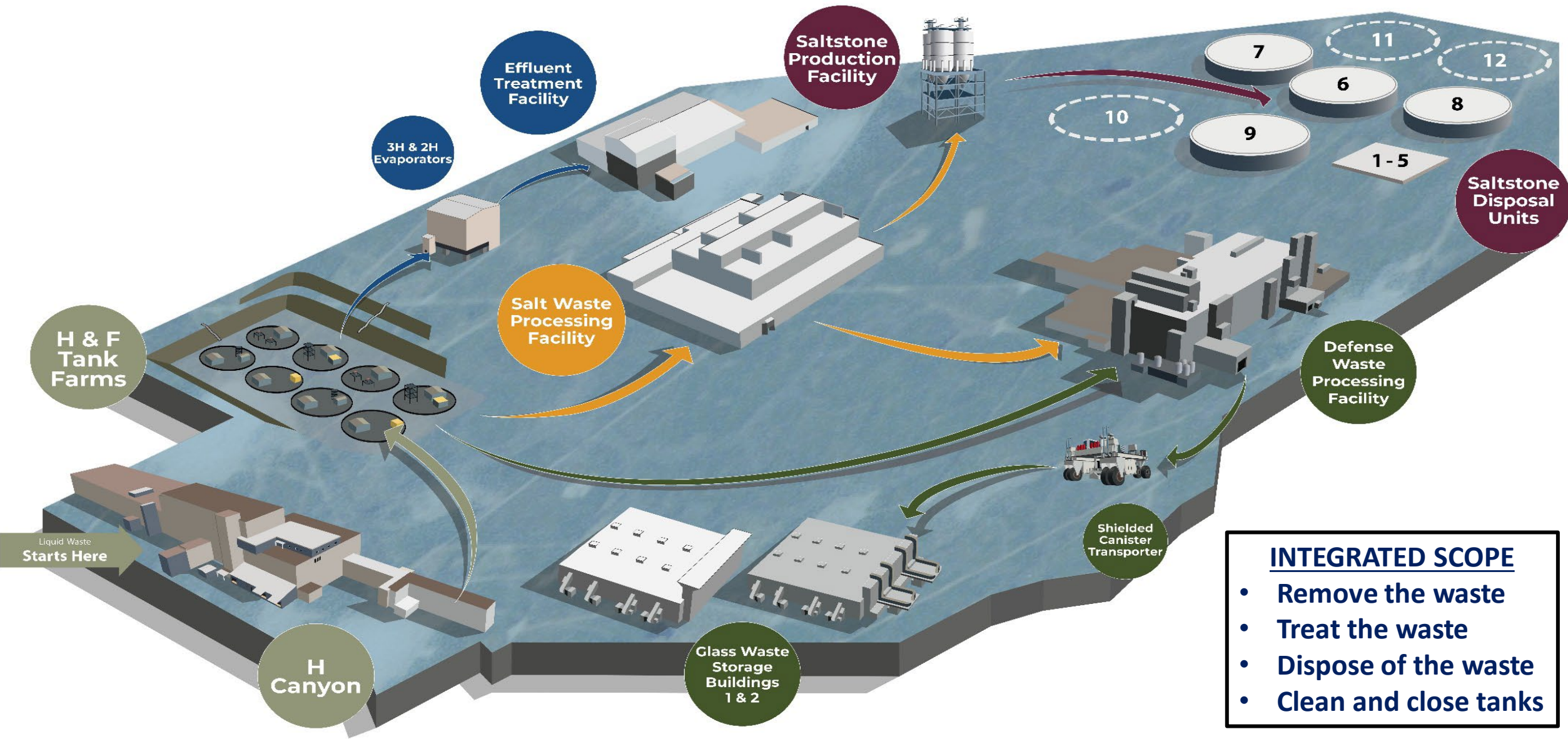
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SRS Liquid Waste Facilities



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One Team: DOE, Stakeholders, SRMC

One Purpose: Accelerating the Environmental Cleanup of High-Level Radioactive Liquid Waste at SRS



Savannah River Mission Completion (SRMC) Focus

S – Safety (Reducing Risk)

- High Curie processing
- Accelerating tanks in the water table

R – Reliability (Plant Reliability)

- Improving plant reliability increasing its availability
- Climb to 9

M – Mutual Respect (Client & Stakeholders)

- Delivering our commitments ahead of schedule to our client and stakeholders
 - *Federal Facility Agreement (FFA)- Preliminary Cease Waste Removal (PCWRs) ahead of schedule*
 - *Saltstone Disposal Unit (SDU) delivery ahead of schedule*

C – Continuous Improvement (Optimizations)

- Optimizations (Climb to 9) – Focus on throughput and availability
- SRMC Laboratories – Optimizations to support increased throughput



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Regulatory Recap – Federal Facility Agreement (FFA)

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 liquid waste program total life cycle.
4. Complete waste removal and subsequent grouting of all waste tanks and ancillary structures with a risk-based priority order: first to tanks in the water table, followed by F Tank Farm tanks, followed by remainder of waste tanks, followed by ancillary structures, recognizing the potential for future emergent conditions or opportunities.

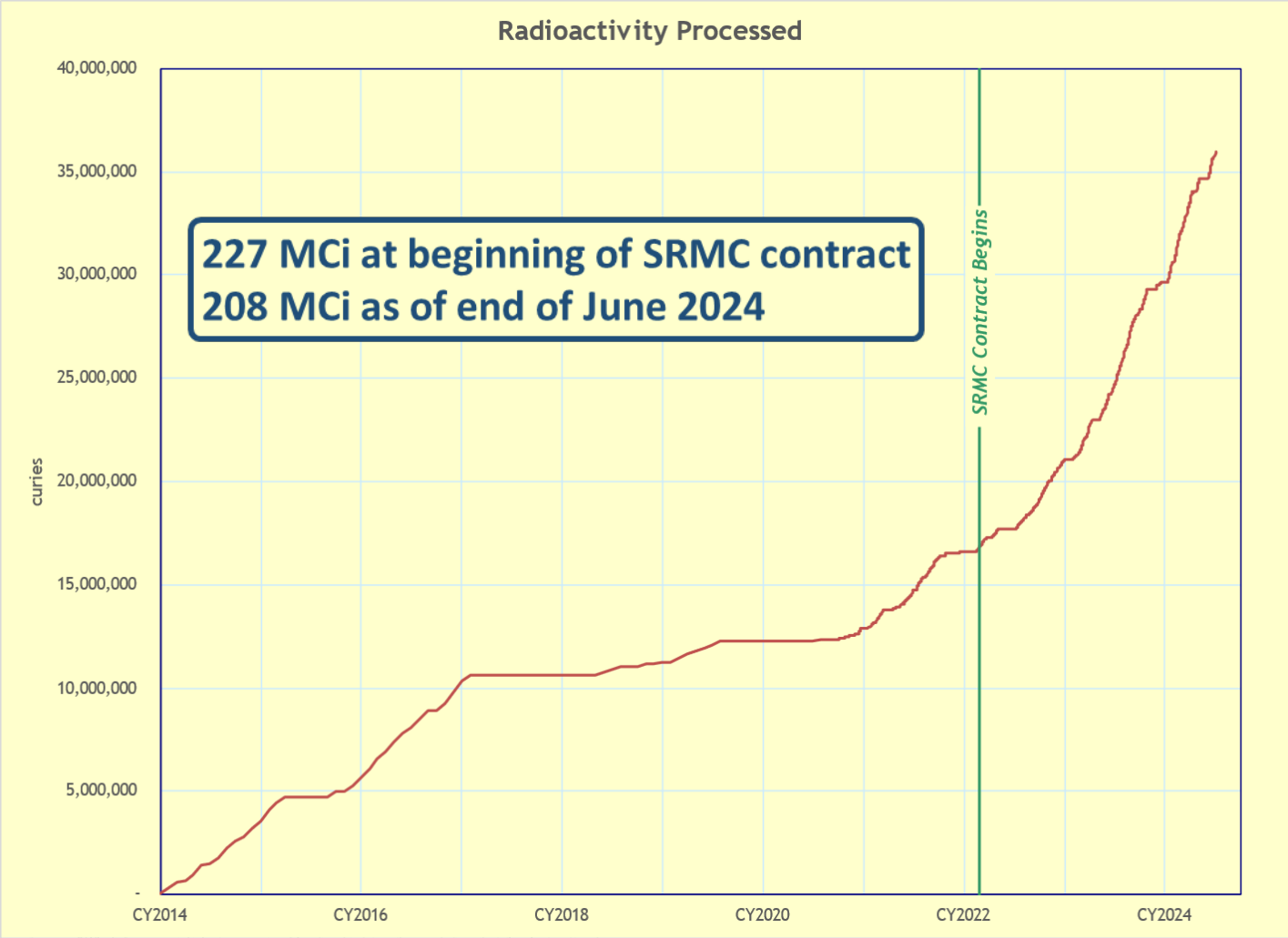
Schedule for Remaining “Old-Style” Tanks

Milestone Date	Preliminary Cease Waste Removal (# of Tanks)	Operational Closure (# of Tanks)
12/31/2023	0	0
12/31/2024	1	0
12/31/2025	3	0
12/31/2026	2	0
12/31/2027	2	0
12/31/2028	0	3
12/31/2029	2	0
12/31/2030	1	2
12/31/2031	0	3
12/31/2032	0	1
12/31/2033	0	2
12/31/2034	1	0
12/31/2035	1	0
12/31/2036	1	1
12/31/2037	2	4
Total	16	16



Delivering our Commitments to Client & Stakeholders

FFA Goal #2 - Reduce operational and environmental risk by aggressively removing curies from the waste tanks



SRMC has processed almost the same amount of curies (Ci) in the first two years of the contract as was done in the previous eight years.

1/1/2014 – 2/26/2022 (~8 years) = 16.8MCi

2/27/2022 – 3/31/2024 (~2 years) = 16.7MCi



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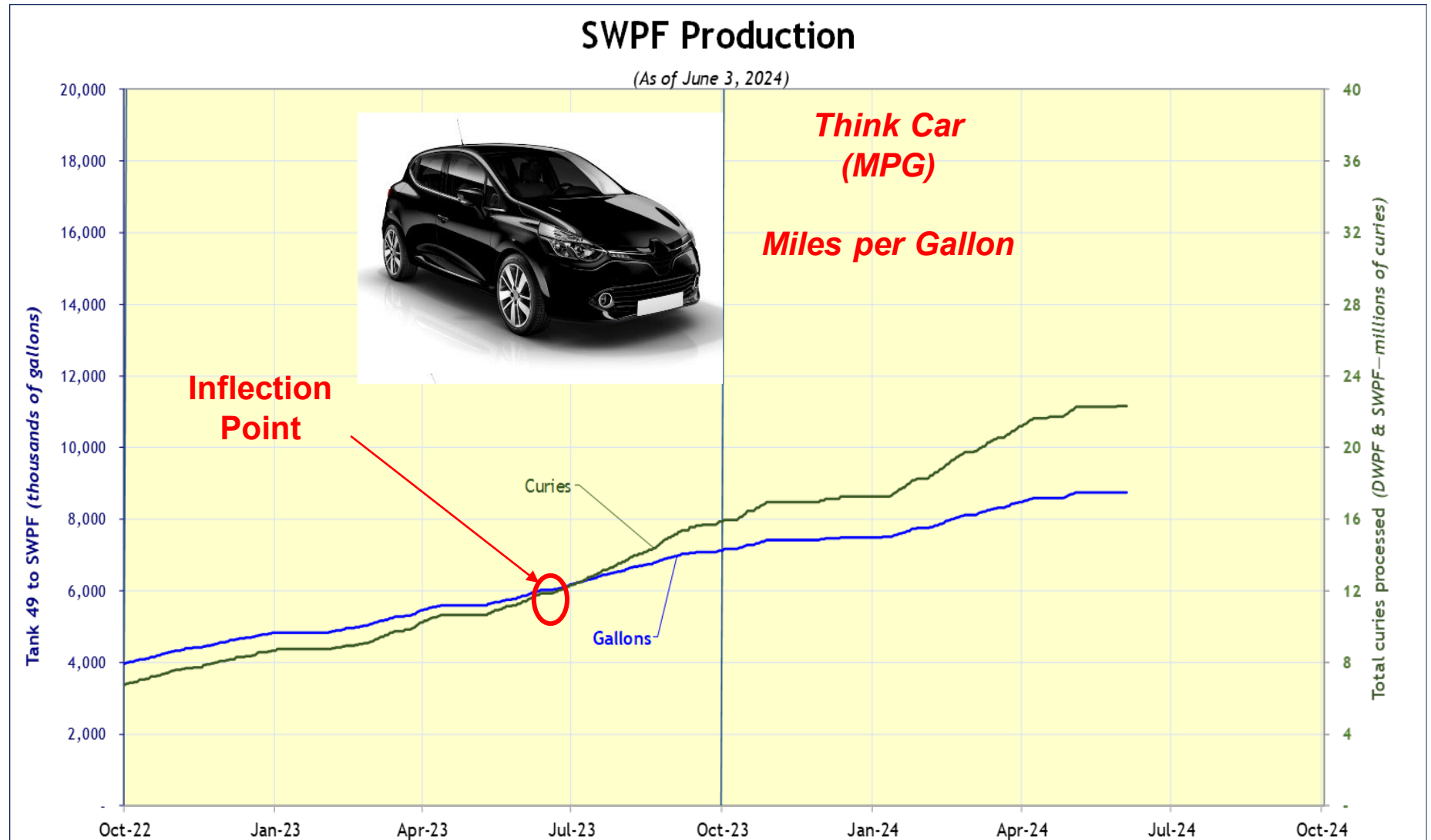
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Reducing Risk – High Curie Processing

- Up to 3x-4x Curies per Gallon
- High Curie Salt Batches through Batch 22 (May 2026)
- 47% of High Curie Batch Compilation Complete



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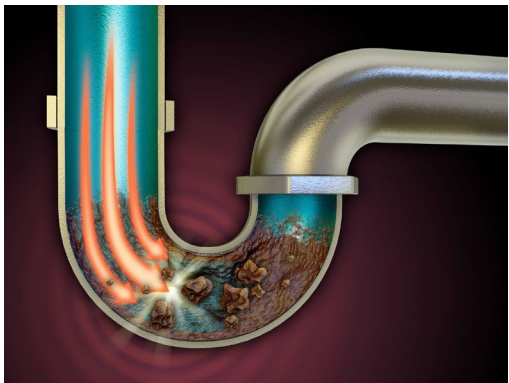
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Maximizing Waste Removal

FFA Goal #3 - Reduce operational and environmental risk by optimizing operations to minimize liquid waste program total life cycle.

Think Plugged Sink Drain

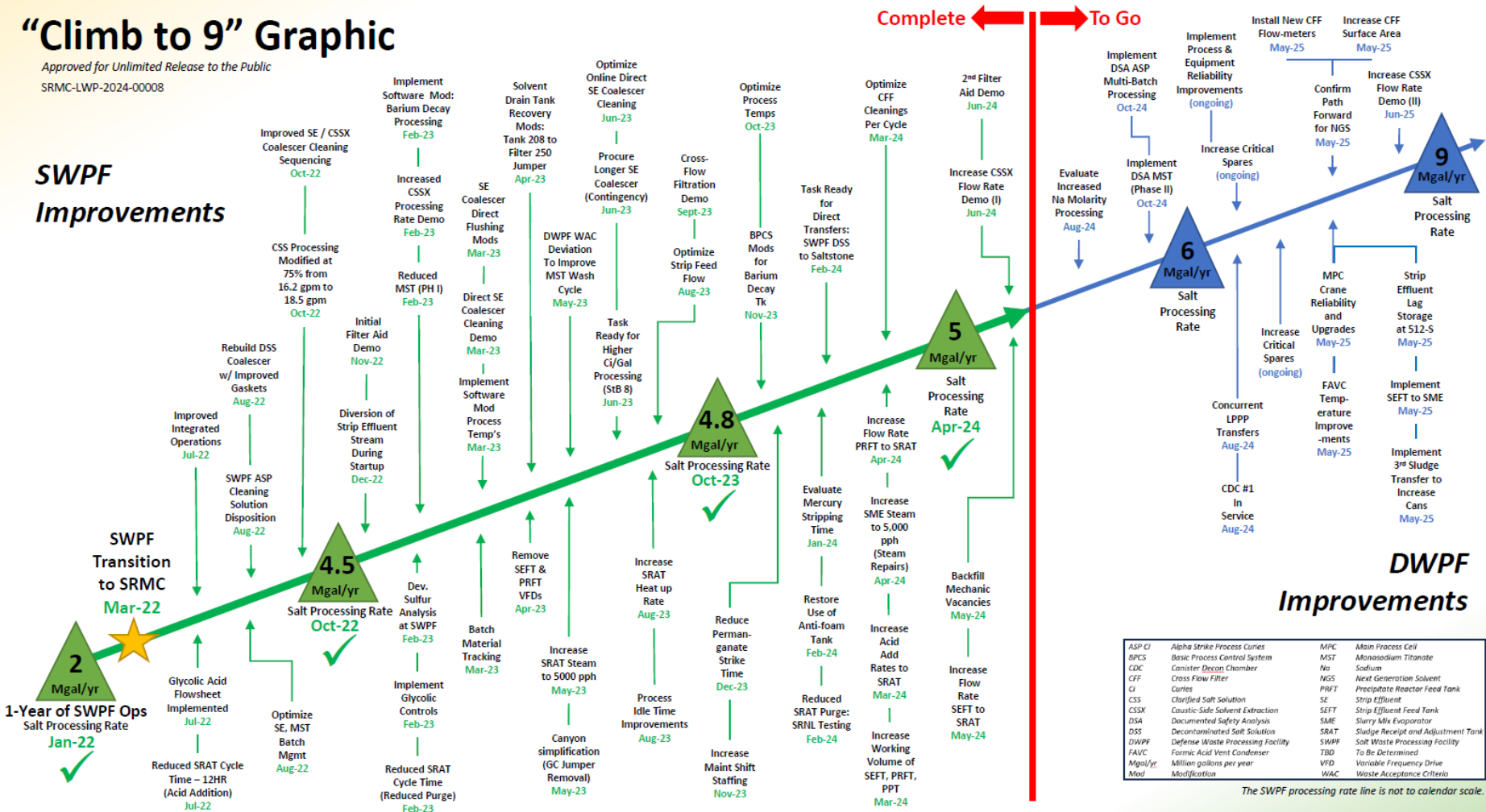
Mine your way through all things that are reducing amount that goes through your drain



“Climb to 9” Graphic

Approved for Unlimited Release to the Public
SRMC-LWP-2024-00008

SWPF Improvements



as of 6/26/2024 3:25 PM

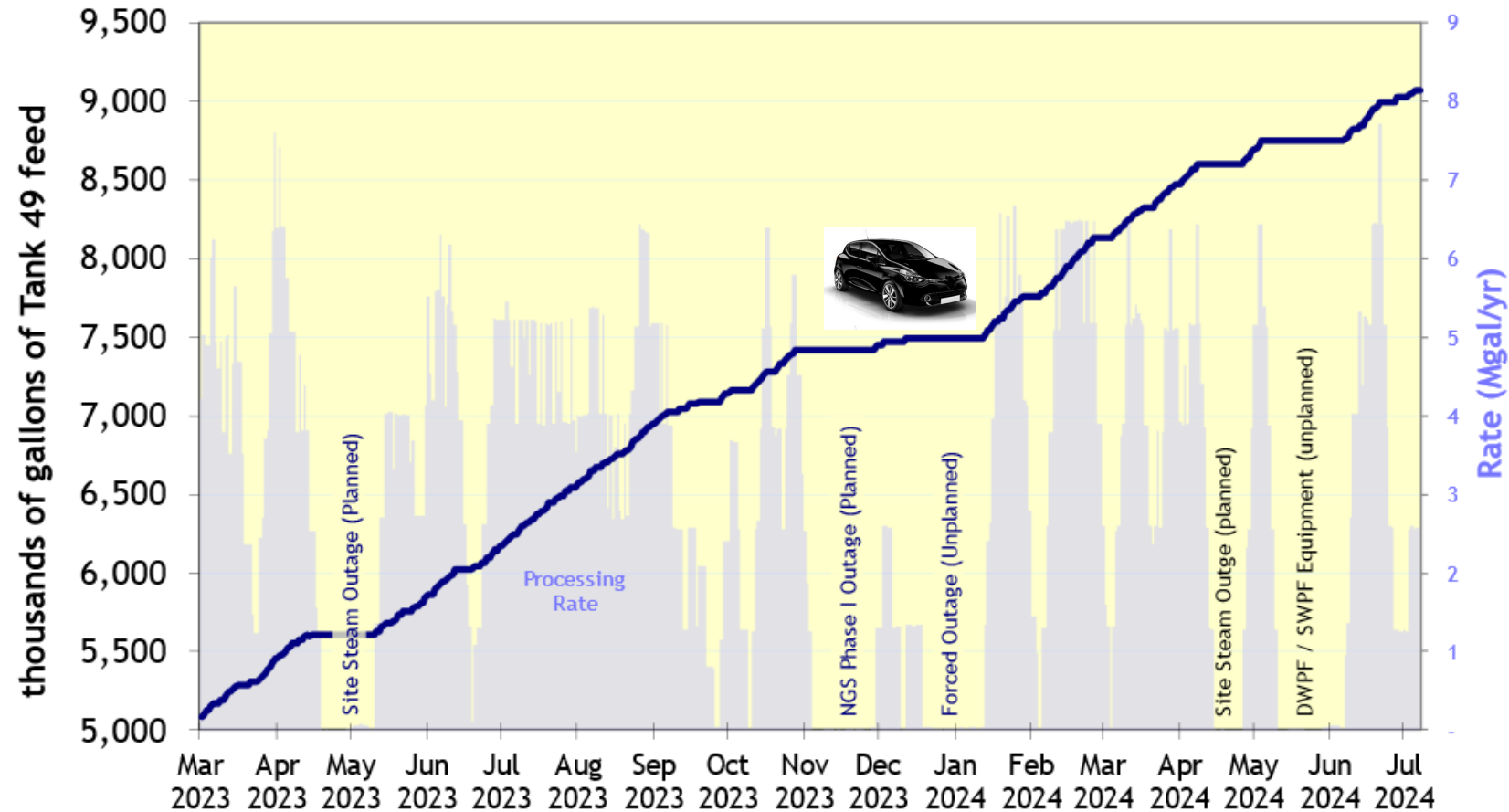
Waste Removal Enables Tank Closures

- Focused on Plant Availability and Throughput



- Think Car Traveling 100 miles in 10 hour window*
- 100 mph (1 hour driving, can be in shop 9 hours)*
 - 10 mph (10 hours driving, can't be in shop)*

SWPF Production



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Waste Retrieval & Tank Closure Update

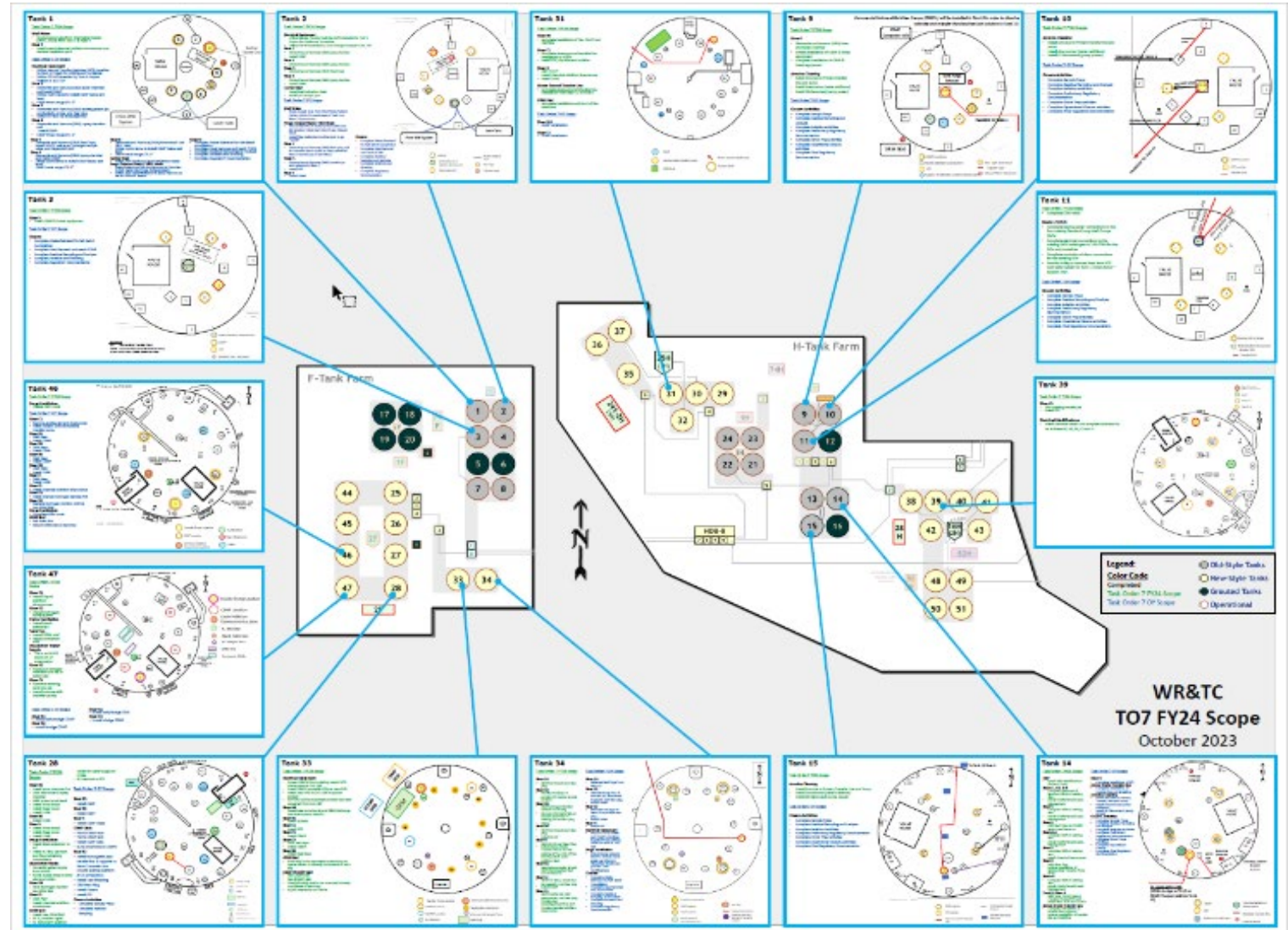
FY24 Scope

■ 14 Tanks Working in the Field

- Salt Dissolution – 7 Tanks
(2, 3, 9, 28, 31, 33, 34)
- Waste Removal: 3 Tanks
(14, 39, 47)
- Heel Removal: 3 Tanks
(4, 11, 15)
- Sampling: 1 Tank
(10)

■ 3 Tanks in Design

- Salt Dissolution: 2 Tanks
(1, 46)
- Waste Removal: 1 Tank
(42)



CSMP: Commercial Submersible Mixing Pump



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Delivering our Commitments to Client & Stakeholders

FFA Goal #4 - Complete waste removal and subsequent grouting of all waste tanks and ancillary structures with a risk-based priority order: first to tanks in the water table, followed by F Tank Farm tanks, followed by remainder of waste tanks, followed by ancillary structures, recognizing the potential for future emergent conditions or opportunities.

FFA Milestone Summary

Calendar Year	Preliminary Cease Waste Removal (# of Tanks)	Operational Closure (# of Tanks)
2023	0	0
2024	Met 1	0
2025	3	0
2026	2	0
2027	2	0
2028	0	3
2029	2	0
2030	1	2
2031	0	3
2032	0	1
2033	0	2
2034	1	0
2035	1	0
2036	1	1
2037	2	4
Total	16	16

Waste Removal & Tank Closure Task Order Plan

Project	FY22	FY23		FY24	FY25		
Tank 9 (H)	Tank 9 Execution (LVMJs)			Tank 9 HR Installation	Tank 9 Annulus Cleaning	Tank 9 Sample Prep / D&R	Tank Sampling
	Tank 9 CSMP Design	Tank 9 CSMP Installation			Tank 9 HR Execution		
			Tank 9 HR Design				
Tank 10 (H)	Tank 10 HR Design		Tank 10 HR Installation	Tank 10 HR Execution	Tank 10 Sample Prep / D&R	Tank 10 Sampling	Tank 10
				Tank 10 Annulus Cleaning			
Tank 11 (H)			Tank 11 HR Design	Tank 11 HR Installation	Tank 11 HR Execution		Tank 11 Sample Prep / D&R
Tank 15 (H)	Tank 15 HR Install		Tank 15 HR Execution			Tank 15 HR Execution	
						Tank 15 Ann. Cleaning	

- ★ PCWR (Preliminary Cease Waste Removal)
- HR – Heel Removal
- CSMP – Commercial Submersible Mixing Pump

Continued Delivery to Client & Stakeholders

Current Baseline

Project	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31					
Tank 1 (F)			Tank 1 Design Input	Tank 1 Waste Removal Design	Tank 1 Waste Removal Installation		Tank 1 Execution (CSMPs)	Tank 1 HR Installation	Tank 1 HR Execution	Tank 1 Sample Prep / D&R	Tank 1 Sampling	Tank 1 Isolation Design	Tank 1 Isolation Field Work	Tank 1 Grout Preps	Tank 1 Grouting
Tank 2 (F)	Tank 2 Waste Removal Design		Tank 2 Waste Removal Installation	Tank 2 HR Design	Tank 2 HR Installation	Tank 2 Execution (CSMPs)	Tank 2 HR Execution	Tank 2 Sample Prep / D&R	Tank 2 Sampling	Tank 2 Isolation Design	Tank 2 Isolation Field Work	Tank 2 Sample Analysis	Tank 2 Grout Design	Tank 2 Grout Preps	Tank 2 Grouting
Tank 3 (F)	Tank 3 Waste Removal Installation		Tank 3 HR Installation	Tank 3 BWR / HR Execution				Tank 3 Sample Prep / D&R	Tank 3 Sampling	Tank 3 Isolation Design	Tank 3 Isolation Field Work	Tank 3 Sample Analysis	Tank 3 Grout Design	Tank 3 Grout Preps	Tank 3 Grouting
Tank 4 (F)			Tank 4 De-Watering Design / Install / Execute	Tank 4 D&R Design	Tank 4 HR Design	Tank 4 HR Installation	Tank 4 HR Execution	Tank 4 Sample Prep / D&R	Tank 4 Sampling	Tank 4 Isolation Design	Tank 4 Isolation Field Work	Tank 4 Sample Analysis	Tank 4 Grout Design	Tank 4 Grout Preps	Tank 4 Grouting
Tank 7 (F)				Tank 7 D&R Design	Tank 7 HR Design	Tank 7 HR Installation	Tank 7 HR Execution	Tank 7 Sample Prep / D&R	Tank 7 Sampling	Tank 7 Isolation Design	Tank 7 Isolation Field Work	Tank 7 Sample Analysis	Tank 7 Grout Design	Tank 7 Grout Preps	Tank 7 Grouting
Tank 8 (F)						Tank 8 D&R Design	Tank 8 HR Design	Tank 8 HR Installation	Tank 8 HR Execution	Tank 8 Sample Prep / D&R				Tank 8 Sampling	Tank 8 Isolation Design

What's Possible

Project	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31			
Tank 1 (F)		Tank 1 Design Input	Tank 1 Waste Removal Design	Tank 1 Waste Removal Installation		Tank 1 Execution (CSMPs)	Tank 1 HR Execution	Tank 1 Sample Prep / D&R	Tank 1 Sampling	Tank 1 Isolation Design	Tank 1 Isolation Field Work	Tank 1 Grout Preps	Tank 1 Grouting
Tank 2 (F)	Tank 2 Waste Removal Design		Tank 2 Waste Removal Installation	Tank 2 HR Design	Tank 2 HR Installation	Tank 2 Execution (CSMPs)	Tank 2 HR Execution	Tank 2 Sample Prep / D&R	Tank 2 Sampling	Tank 2 Isolation Design	Tank 2 Isolation Field Work	Tank 2 Grout Preps	Tank 2 Grouting
Tank 3 (F)	Tank 3 Waste Removal Installation		Tank 3 HR Design	Tank 3 HR Installation	Tank 3 BWR / HR Execution			Tank 3 Sample Prep / D&R	Tank 3 Sampling	Tank 3 Isolation Design	Tank 3 Isolation Field Work	Tank 3 Grout Preps	Tank 3 Grouting
Tank 4 (F)			Tank 4 De-Watering Design / Install / Execute				Tank 4 Sample Prep / D&R	Tank 4 Sampling	Tank 4 Isolation Design	Tank 4 Isolation Field Work	Tank 4 Grout Design	Tank 4 Grout Preps	Tank 4 Grouting
Tank 7 (F)			Tank 7 D&R and HR Design		Tank 7 HR Installation		Tank 7 HR Execution	Tank 7 Sample Prep / D&R	Tank 7 Sampling	Tank 7 Isolation Design	Tank 7 Isolation Field Work	Tank 7 Grout Preps	Tank 7 Grouting
Tank 8 (F)					Tank 8 Coil Flush / Sample / Execute			Tank 8 Sample Prep / D&R	Tank 8 Sampling	Tank 8 Isolation Design	Tank 8 Isolation Field Work	Tank 8 Grout Preps	Tank 8 Grouting



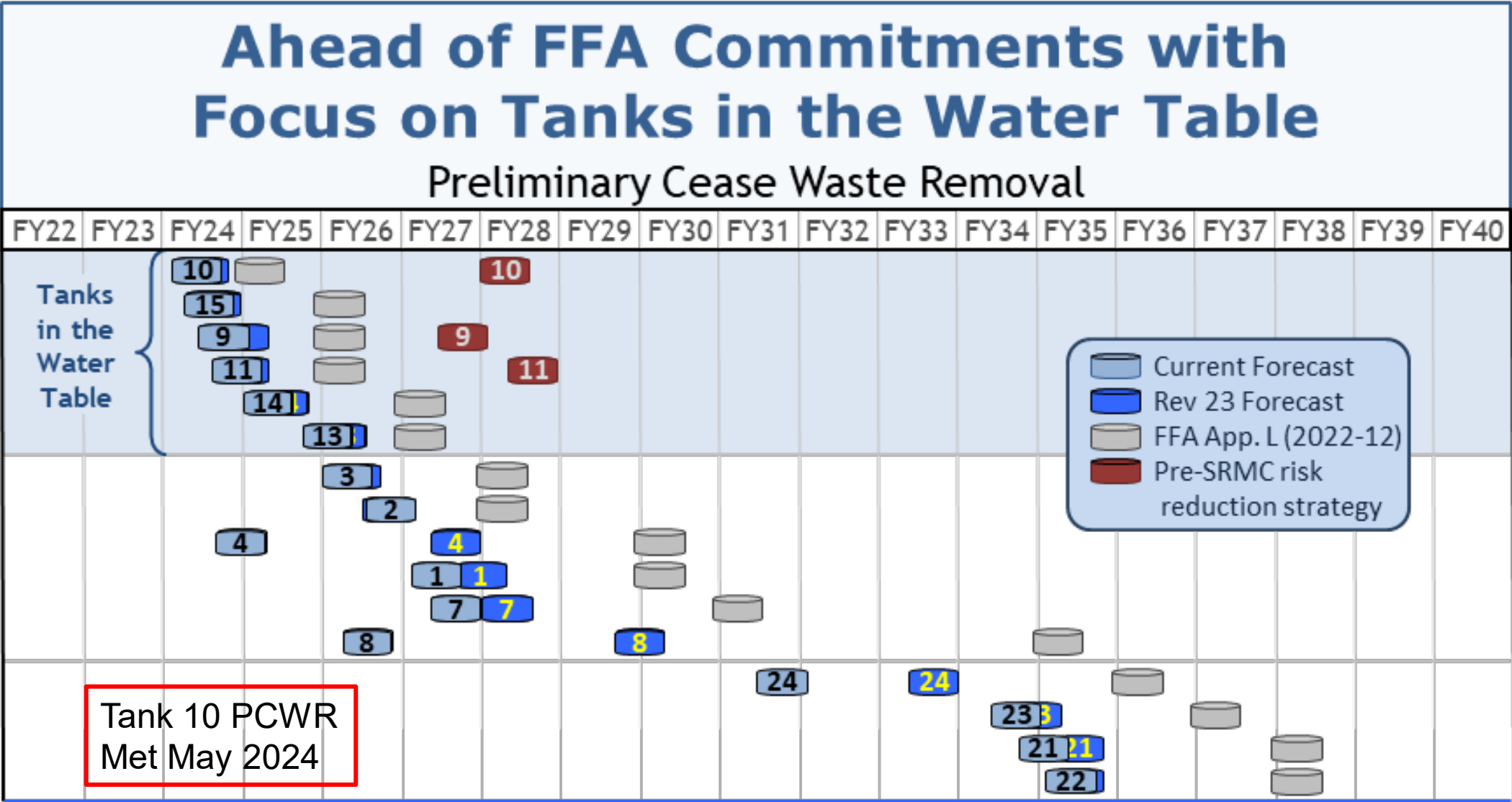
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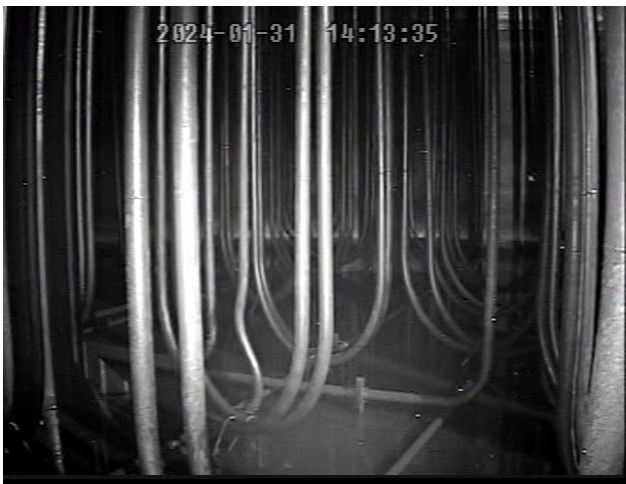
Tank 10 Preliminary Cease Waste Removal Success

Tank Interior Before



**Tank 10
Primary
Tank
Cleaning
Success**

Tank Interior After



Tank 10 Preliminary Cease Waste Removal Success

East Riser Before/After



West Riser Before/After



Tank 10
Annulus
Cleaning
Success



Summary

- **Processing higher curie batches at SWPF continues to accelerate risk reduction**
- **Accelerating waste removal from tanks in the water table continues to accelerate risk reduction**
- **Maximizing waste removal reduces risk & accelerates tank closures**
- **Delivering our commitments to Client & Stakeholders ahead of schedule**



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Questions?



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