SRMC-CWDA-2025-00056
Revision 0

SRMC SAVANNAH RIVER MISSION COMPLETION®

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Proposal to Cease Waste Removal Activities in Tank 8 and Enter Sampling and Analysis Phase

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Waste Disposal Authority

June 16, 2025

Presentation Outline

- Meeting Objective
- Summary/Recommendations
- Waste Removal History and Results
- Additional Cleaning Considerations
- Path Forward
- Request for Department of Energy (DOE), South Carolina Department of Environmental Services (SCDES), and Environmental Protection Agency (EPA) Concurrence
- Background

Acronyms

CGCP	Consolidated General Closure Plan
DOE	Department of Energy
DWPF	Defense Waste Processing Facility
EPA	Environmental Protection Agency
FFA	Federal Facilities Agreement
FTF	F-Area Tank Farm
HHW	High Heat Waste
LHW	Low Heat Waste
LTAD	Low-Temperature Aluminum Dissolution
LWTRSAPP	Liquid Waste Tank Residuals Sampling and Analysis Program Plan
MCL	Maximum Contaminant Level
SCDHEC	South Carolina Department of Health and Environmental Control[1]
SCDES	South Carolina Department of Environmental Services[1]
SLP	Standard Slurry Pump
SPF	Saltstone Production Facility
SWPF	Salt Waste Processing Facility
TTP	Telescoping Transfer Pump

[1]South Carolina Department of Environmental Services (SCDES) was known as South Carolina Department of Health and Environmental Control (SCDHEC) prior to July 1, 2024. Throughout this presentation figures and text reproduced from existing documents may still reflect SCDHEC nomenclature.

Meeting Objective

Obtain mutual agreement among DOE, SCDES, and EPA to:

1. Suspend waste removal activities in Tank 8; and
2. Enter the Sampling and Analysis phase in Tank 8 consistent with the *Consolidated General Closure Plan for F-Area and H-Area Waste Tank Systems* (CGCP) and *Liquid Waste Tank Residuals Sampling and Analysis Program Plan* (LWTRSAPP)

Tank 8 Primary

Summary

- Over 99% of the waste volume in Tank 8 has been removed
- A qualitative assessment indicates that the CGCP performance objectives will not be challenged
- Additional waste removal in Tank 8 would have minimal impact on estimated doses/performance objectives in the F-Area Tank Farm (FTF) Performance Assessment
- Additional waste removal activities in Tank 8 would have a negative impact on other Liquid Waste risk reduction activities
- A quantitative assessment utilizing final residual waste volumes and results of sampling and analysis will be included in the Closure Module covering Tank 8
- A formal discussion on the “practicability” of additional waste removal will be included in the Closure Module covering Tank 8

Performance Objectives

Based on the characteristics and estimated volume of the waste remaining in Tank 8, performance objectives are expected to be met.

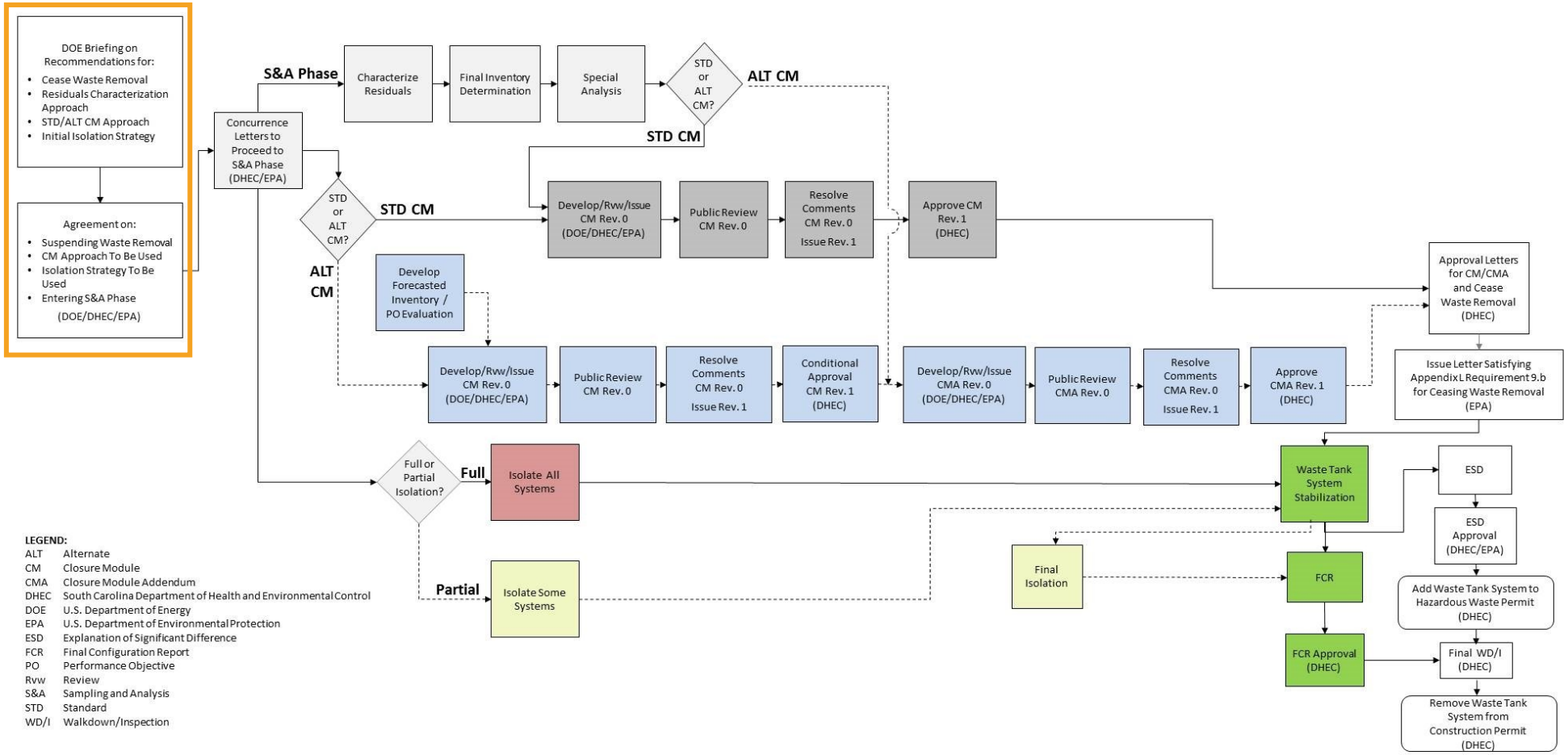
- **Anticipate that concentration values in the groundwater for FTF will be below the Maximum Contaminant Level (MCL) values for all the non-radiological inorganic constituents listed in Table 9.2-1 of the CGCP**
- **Anticipate that concentration values in the groundwater for FTF will be below the MCL values for radionuclides consistent with the State Primary Drinking Water Regulations including:**
  - *4 mrem/yr dose for beta- and gamma-emitting nuclides*
  - *15 picocuries per liter (pCi/L) for alpha-emitting nuclides (including Ra-226 but excluding radon and uranium)*
  - *5 pCi/L for radium (Ra-226 plus Ra-228)*
  - *30 micrograms per liter (µg/L) of uranium*

Radiation Dose Perspective

- **Anticipate that the peak dose from Tank 8 alone will be <3 mrem/year during both the 1,000-year and 10,000-year periods after FTF closure***
- **To put this radiological dose into perspective**
  - *Per NCRP-160, the average annual dose to a person in the United States is approximately 620 mrem primarily from:*
    - Approximately 310 mrem from naturally occurring background
    - Approximately 300 mrem from medical procedures

* Based on a preliminary estimate of the volume. Final inventories and dose impacts will be included in the Closure Module.

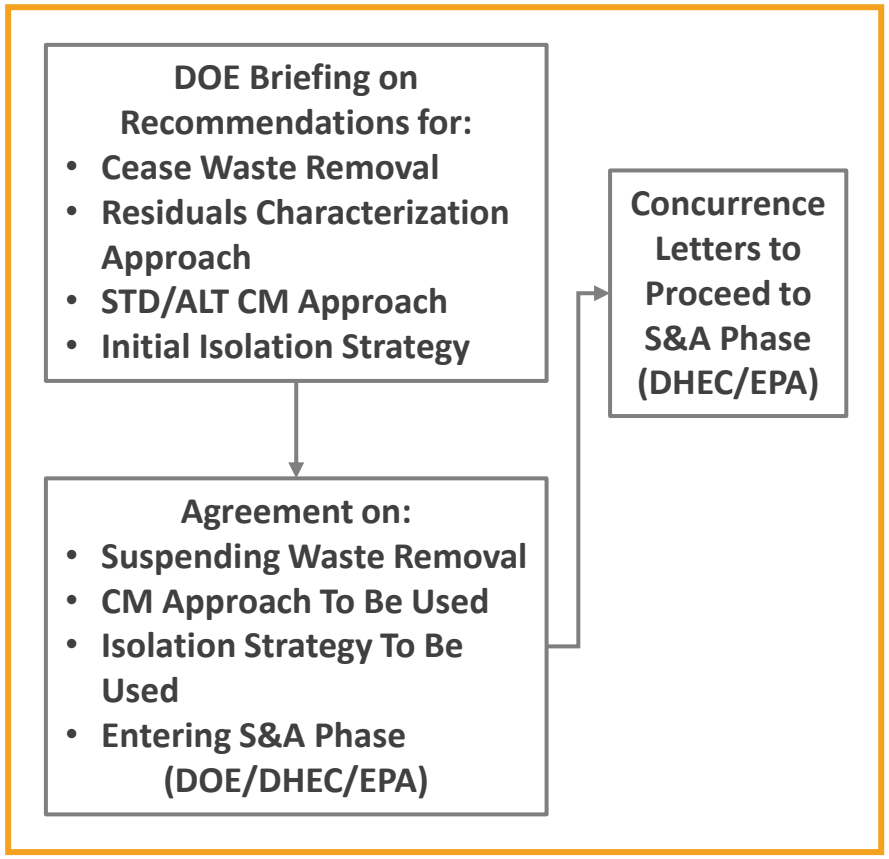
Pathway to Closure



Closure Module Approval and Waste Tank System Removal from Service Process (CGCP Figure 11.4-1)

[SRR-CWDA-2017-00015]

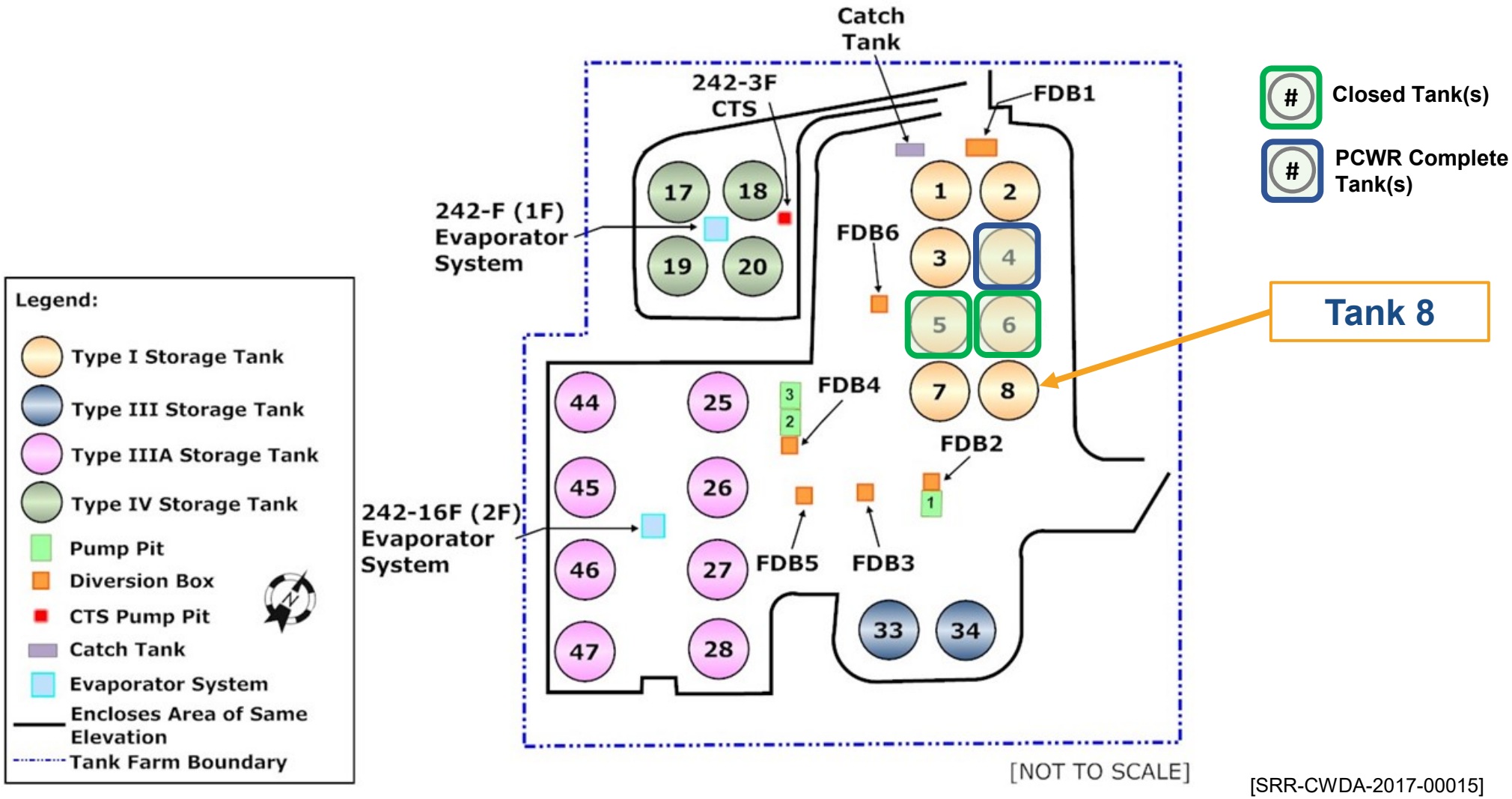
Recommendations



[SRR-CWDA-2017-00015]

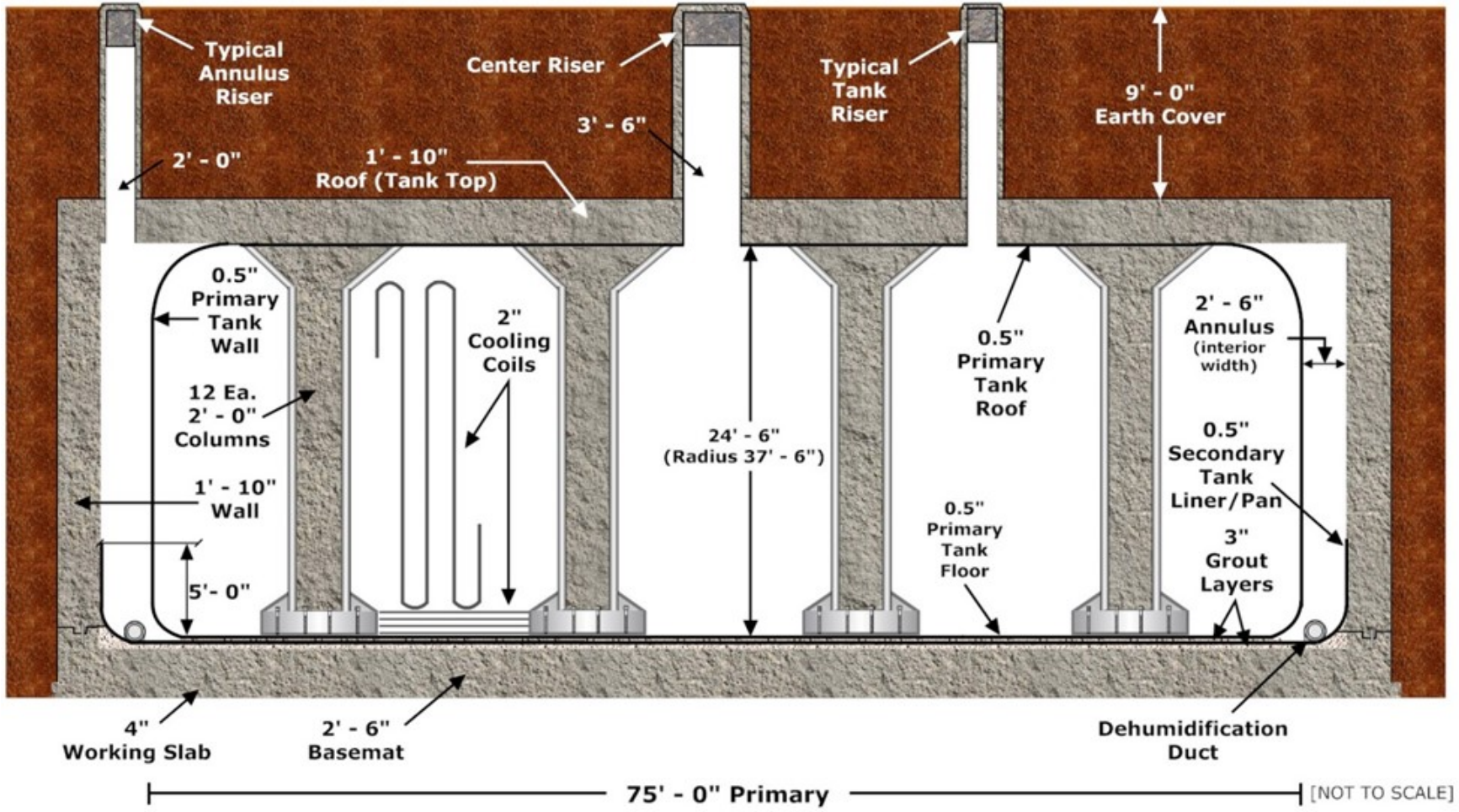
1. **Suspending waste removal activities and enter the Sampling and Analysis phase**
   - *Sampling and Analysis to be performed per the LWTRSAPP*
2. **DOE will draft a Closure Module using the *Standard Closure Module* Approach**
3. **The Closure Module will include appropriate isolation and stabilization provisions using the *Partial Isolation* approach**

F-Tank Farm Layout



[SRR-CWDA-2017-00015]

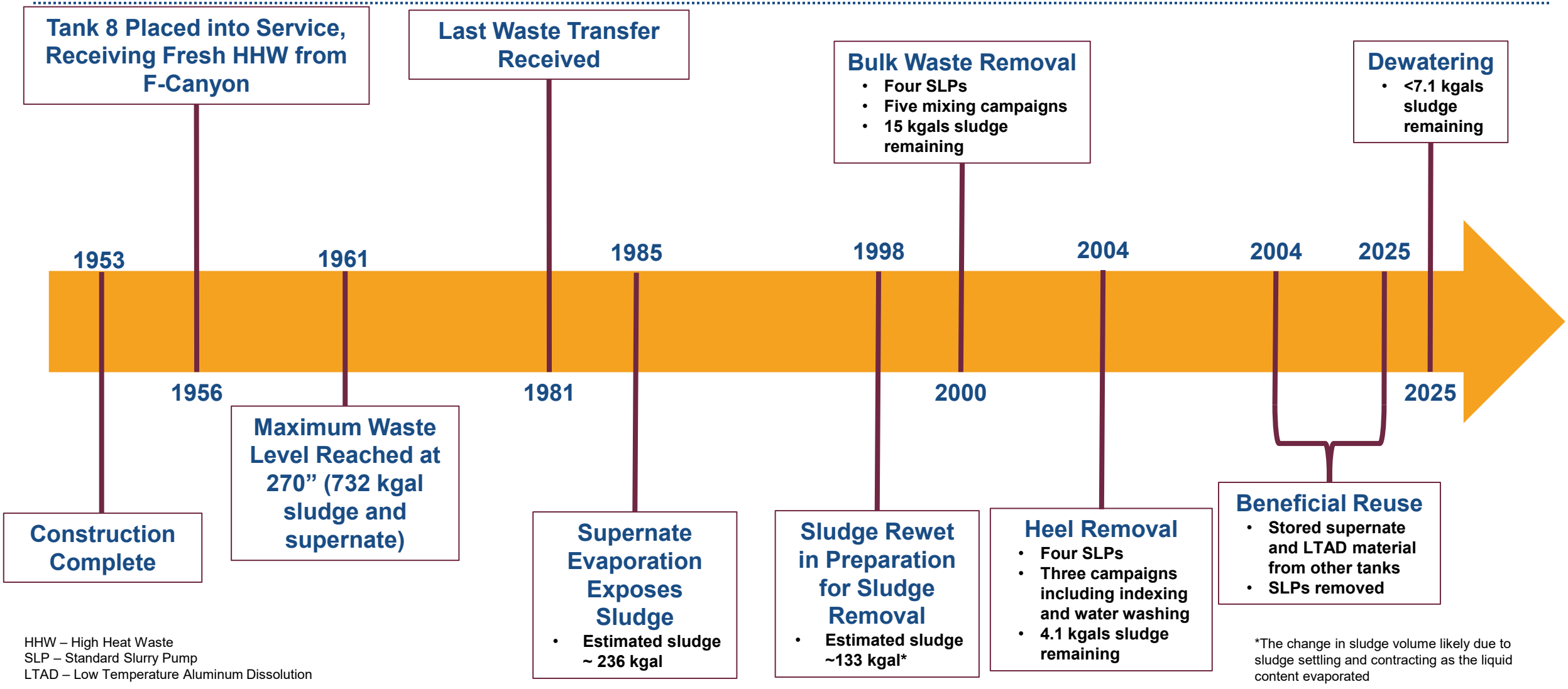
Typical Type I Tank



Nominal working capacity: 750,000 gallons
For a Type I Tank, 1" of waste equals 2,710 gallons

[SRR-CWDA-2017-00015]

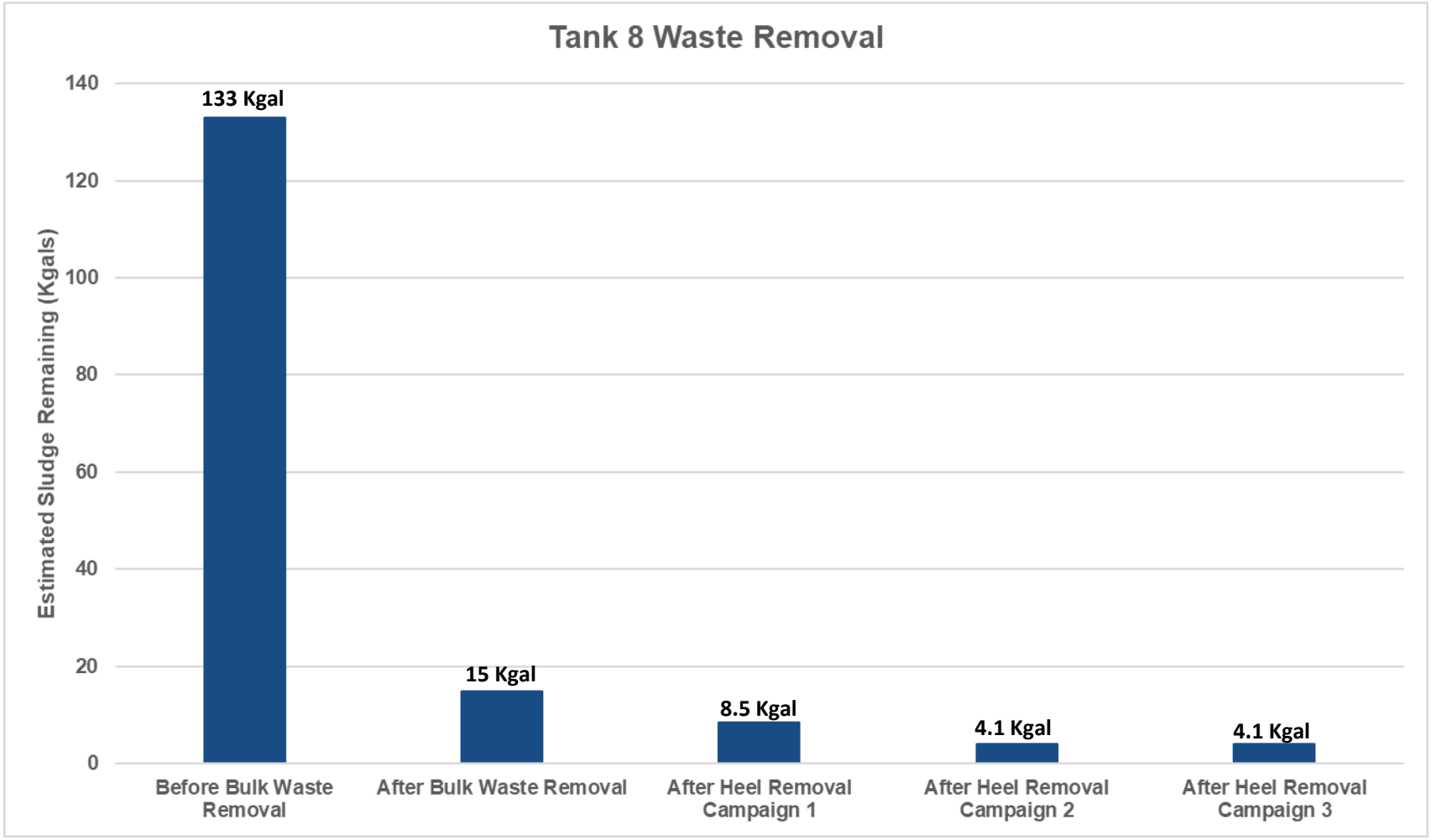
Tank 8 Historical Timeline



HHW – High Heat Waste
SLP – Standard Slurry Pump
LTAD – Low Temperature Aluminum Dissolution

*The change in sludge volume likely due to sludge settling and contracting as the liquid content evaporated

Sludge Removal Summary



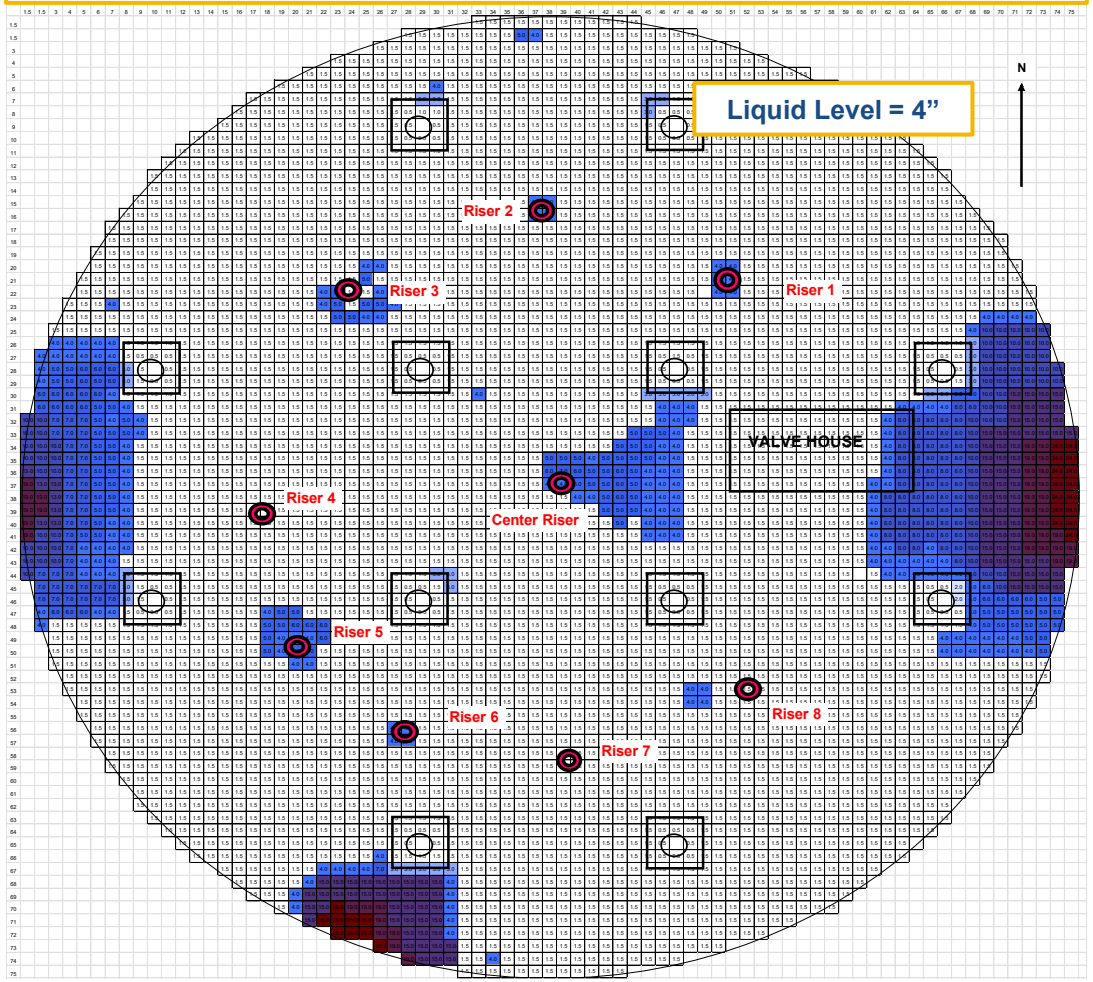
[U-CLC-F-00010. U-ESR-F-00009, U-ESR-F-00027, X-CLC-F-00233]

Dewatering

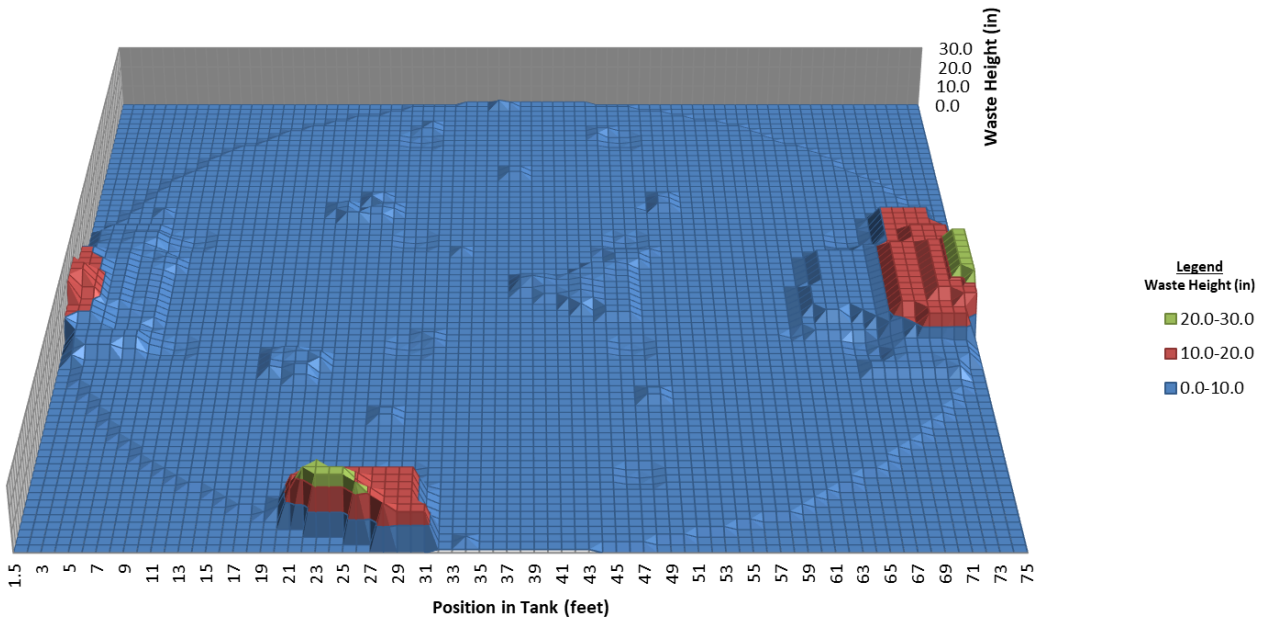
- Following heel removal in 2004, Tank 8 was beneficially reused to store supernate or aluminum-rich decant material from waste removal activities carried out in other tanks within the Liquid Waste System
- Calculations and sludge soundings during this time indicate the possibility of additional solids accumulation
- Following heel removal campaigns, two failed Standard Slurry Pumps (SLPs) were removed for disposition, while the two operational SLPs were transferred to Tank 7
- In March 2025 the Telescoping Transfer Pump (TTP) located in Riser 6 was lowered to 2 inches from the bottom of the tank
- On April 17, 2025 supernate began being transferred from Tank 8 to Tank 34, bringing the liquid level to ~ 4 inches
- Mapping of remaining solids carried out using both footage from regular camera inspections as the liquid level decreased as well as an inspection using a drone after the conclusion of the transfer

Current Status of Tank 8 Primary Tank

Residual Solids Map Plan View



Residual Solids 3-D Model (height exaggerated to show detail)



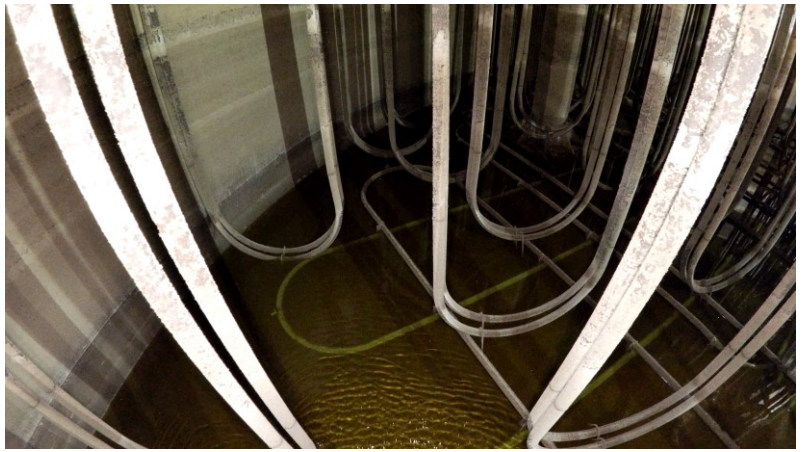
Remaining Solids < 7,100 gallons

[U-ESR-F-00130]

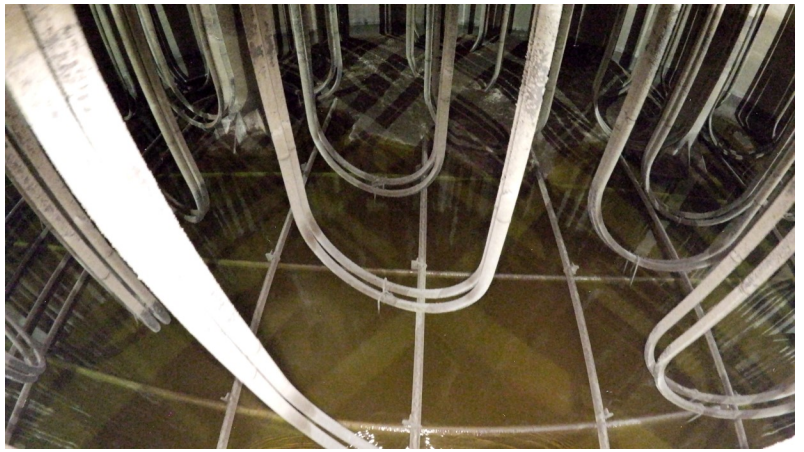
Current Status of Tank 8

North

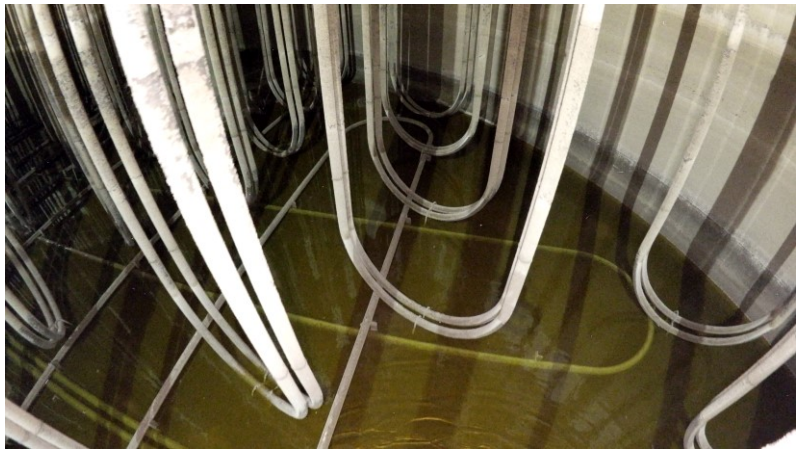
Northeast



East

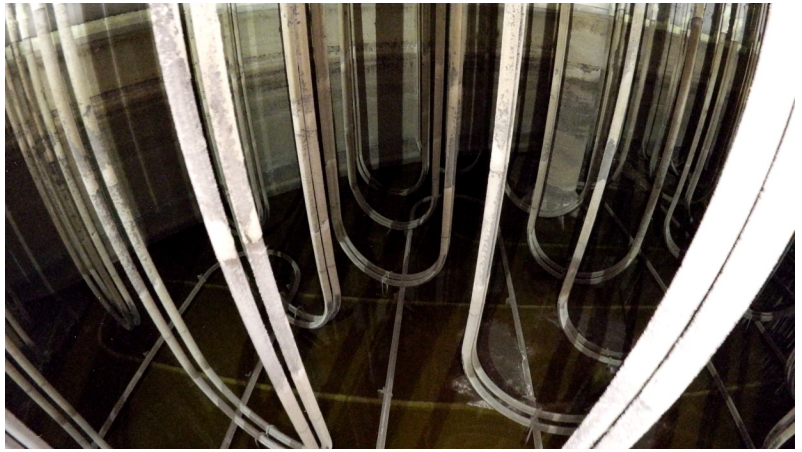


Southeast



South

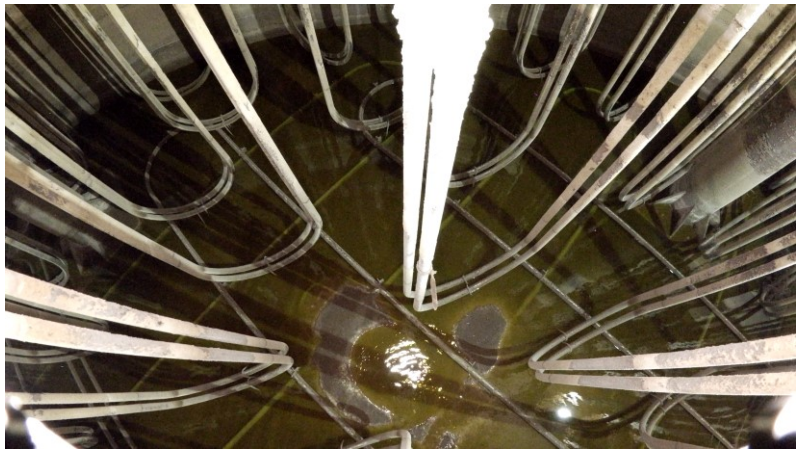
Southwest



Current Status of Tank 8

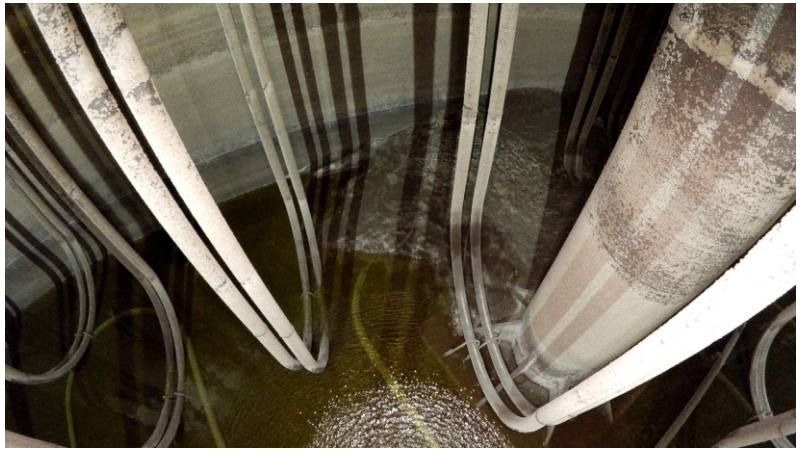
West

Northwest



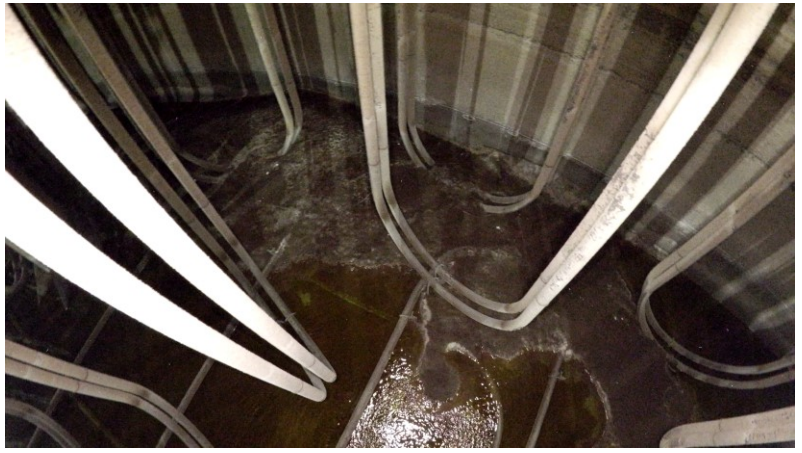
Center

South Mound



East Mound

West Mound



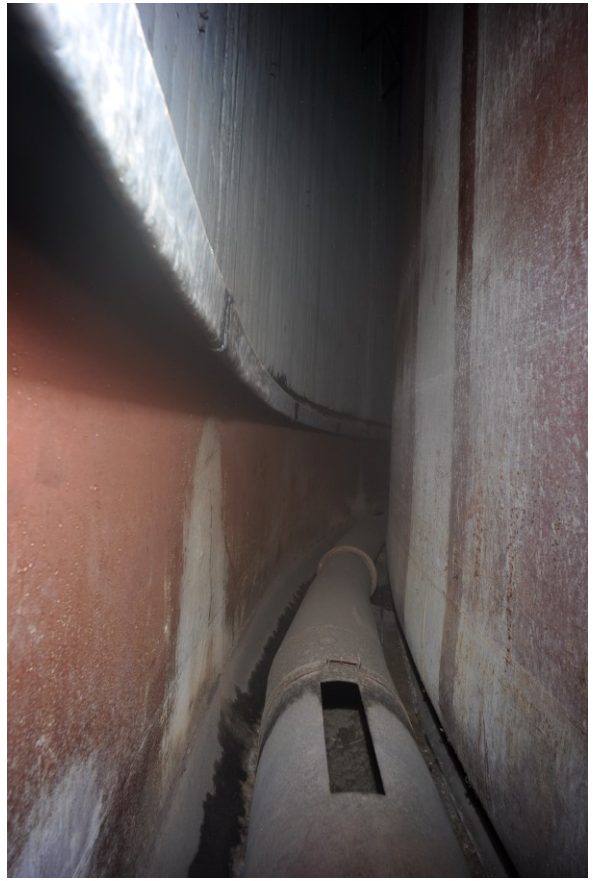
Tank 8 Annulus Condition

- **Through November of 2023**
  - *No leak sites have been documented and no waste is visible on the annulus floor*
  - *Four annulus risers, North, South, East, and West, are available for inspection and provide a 25% inspection capability*

[SRMC-STI-2024-00076]

Tank 8 Annulus Condition

South Looking West



South Looking East

West Looking North

West Looking South

Tank 8 Annulus Condition

East Looking South

East Looking North

North Looking West

North Looking East

Overall Cleaning Results

Maximum Waste Volume (gal)	732,000
Maximum Sludge Volume (gal)	236,000
Total Solids Remaining (gal)	<7,100[1]
Total Waste Remaining (gal)	<7,100[2]

[1] Based on a preliminary estimate of the solids remaining in the primary. Final volume determination will be included in the Closure Module.
[2] Based on a preliminary estimate of the primary plus annulus. Final volume determination will be included in the Closure Module.

Total Percent Waste Removed Greater than 99%

Additional Removal Options

- **Mechanical Cleaning**
  - *Further waste removal campaigns will require installation of new mixing devices and supporting equipment*
    - Estimated cost ~$7M
  - *Additional waste removal would divert resources (i.e., funding and personnel) from other Liquid Waste System risk reduction activities*
    - Funding and resources could be used to accelerate waste removal on other FTF tanks
  - *Each waste removal campaign requires approximately 150K gallons of water be added to allow for mixing pump operation, creating additional new waste*
    - *Additional new waste must be handled within the Liquid Waste System which is already challenged by available tank space to support Salt Batch compilation/qualification and Sludge Batch compilation/qualification necessary to feed Salt Waste Processing Facility (SWPF) and the Defense Waste Processing Facility (DWPF), respectively*
    - *Additional new waste must be processed through SWPF then subsequently DWPF or the Saltstone Production Facility (SPF), resulting in additional costs and impacts (i.e., extension) to the Liquid Waste System life-cycle*
  - *Level of additional waste removal uncertain, but even removing the majority of the remaining material, if possible, would have a minimal impact on final performance objective concentrations and doses*

Additional Removal Options

- **Chemical Cleaning**
  - *Chemical cleaning will require installation of new mixing devices and supporting equipment*
    - Estimated cost ~$7M
  - *Any waste removal would divert resources (i.e., funding and personnel) from other Liquid Waste System risk reduction activities*
    - Funding and resources could be used to accelerate waste removal on other FTF tanks
  - *Any chemical cleaning campaign would require approximately 150k gallons of water/chemicals be added to Tank 8 to allow for mixing pump operation, creating additional new waste*
    - Additional new waste must be handled within the Liquid Waste System which is already challenged by available tank space to support Salt Batch compilation/qualification and Sludge Batch compilation/qualification necessary to feed SWPF and DWPF, respectively
    - Additional new waste must be processed through SWPF then subsequently DWPF or SPF, resulting in additional costs and impacts (i.e., extension) to the Liquid Waste System life-cycle
  - *Level of additional waste removal uncertain, but even removing the majority of the remaining material, if possible, would have a minimal impact on final performance objective concentrations and doses*
    - Low-Temperature Aluminum Dissolution (LTAD) anticipated to have a minimal impact due to low Aluminum content in Tank 8 sludge and limited additional solids accumulation during beneficial reuse period
    - Bulk Oxalic Acid Cleaning would have additional adverse impact of introduction of additional oxalates into the system

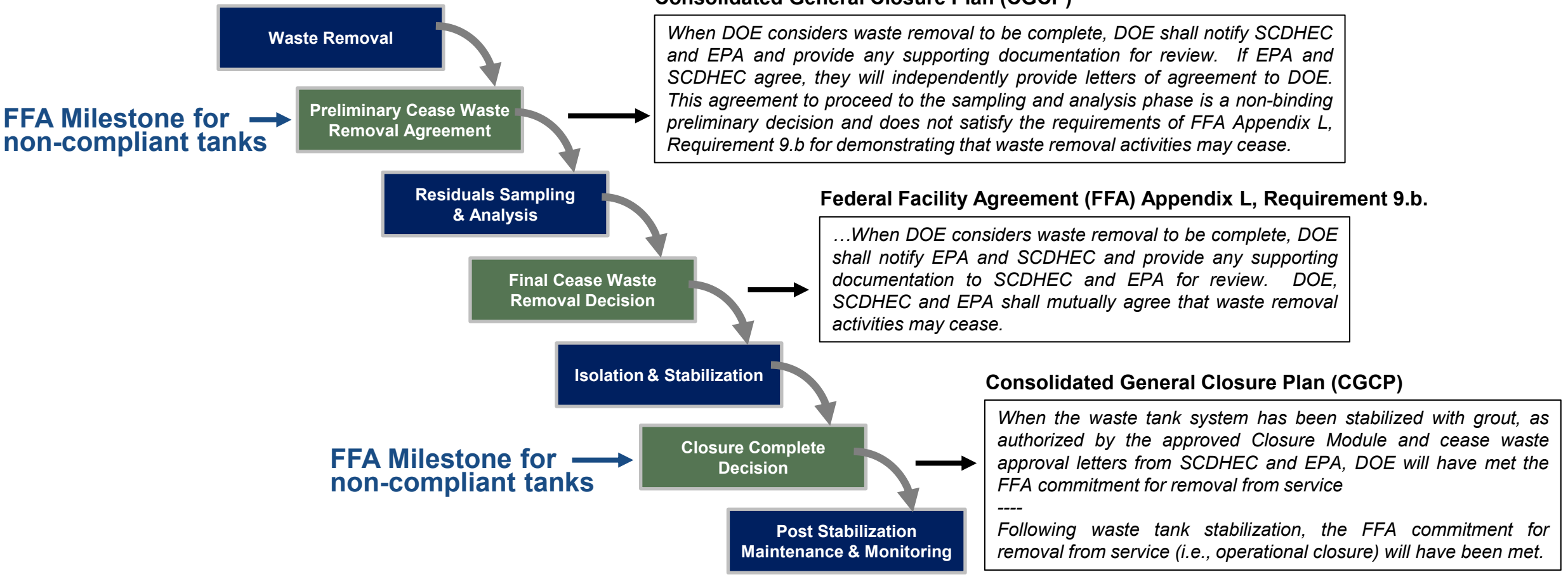
Additional Removal Options

- **Vacuum Technology**
  - *Proven Mantis technology that was utilized in Tanks 18 and 19 cannot be deployed due to in-tank obstructions*
  - *Alternate technology utilizing a smaller robotic platform with vacuum capability would require considerable development*
    - Very limited applicability at the time due to mobility around and over in-tank obstacles and associated tether management
    - Any water added to support removal, if required, would result in new waste and have same impact as previously described for additional mixing campaigns and chemical cleaning
    - Development/deployment of a new vacuum technology would divert resources (i.e., funding and personnel) from other Liquid Waste System risk reduction activities
  - *Level of additional waste removal uncertain, but even removing the majority of the remaining material, if possible, would have a minimal impact on final performance objective concentrations and doses*

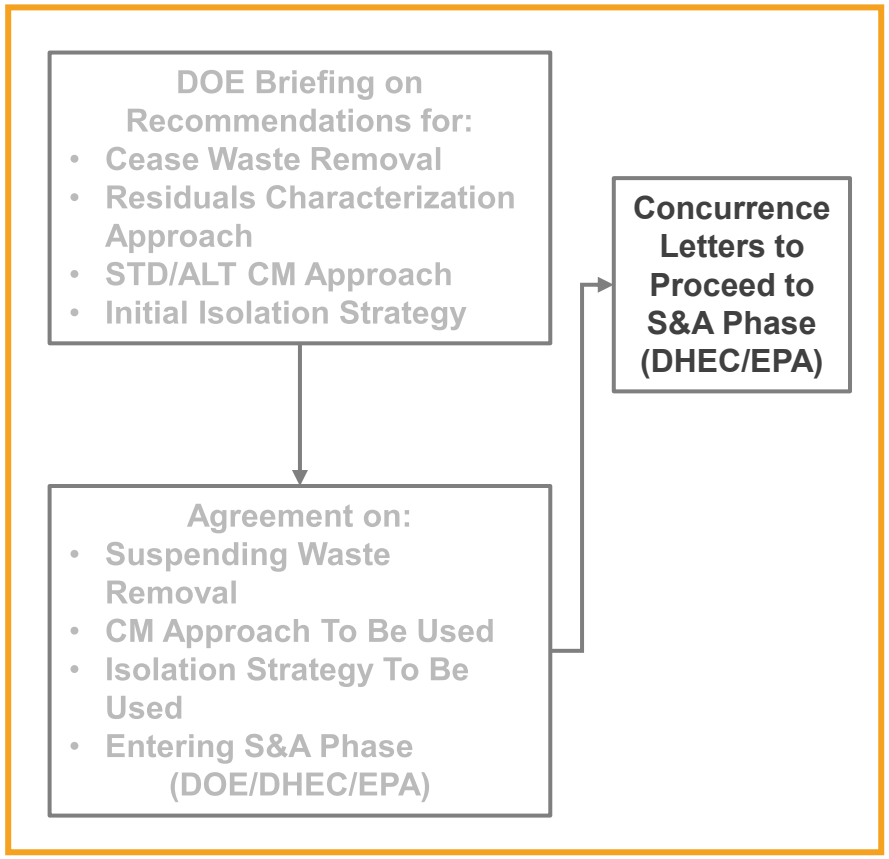
Additional Removal Options

- **Additional annulus waste removal**
  - *Based on results from annulus inspections, Tank 8 has no known accumulated waste on the annulus floor. Water addition/removal campaigns would have no impact on overall doses associated with Tank 8 while adding additional waste into the Liquid Waste system*

Tank Closure Process



Requested Action



[SRR-CWDA-2017-00015]

The three agencies agree that, based upon the described qualitative assessment, there is reasonable assurance that it is appropriate to suspend waste removal activities and enter the Sampling and Analysis phase of the operational closure process for Tank 8.

Next Steps

- **DOE will forward a letter to SCDES and EPA formally requesting concurrence to proceed to the Sampling and Analysis phase in Tank 8**
  - *This presentation will be attached as a primary reference*
  - *The requested action is a non-binding preliminary decision based on the qualitative information available at this time and presented today*
- **DOE and the Liquid Waste Contractor will proceed in developing the regulatory documentation necessary to operationally close Tank 8**
  - *DOE will coordinate with SCDES and EPA to establish a schedule for the development, review and approval of the Closure Module consistent with the approach described in the CGCP*

Common Goals and Values*

Values

1. Maintain transparency with open communication between regulators, DOE and the contractor on program process, and significant emerging issues.
2. Ensure DOE's strategy and plans are subject to stakeholder engagement and input, including SCDHEC permitting processes, and 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

1. Reduce risk to the environment by removing waste and closing tanks with a foal of completion of the liquid waste program by 2037.
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.

**From Federal Facility Agreement (FFA) 2022 High Level Waste Tank Milestones Agreement* [WSRC-OS-94-42]

Summary for Closed/PCWR Complete Tanks

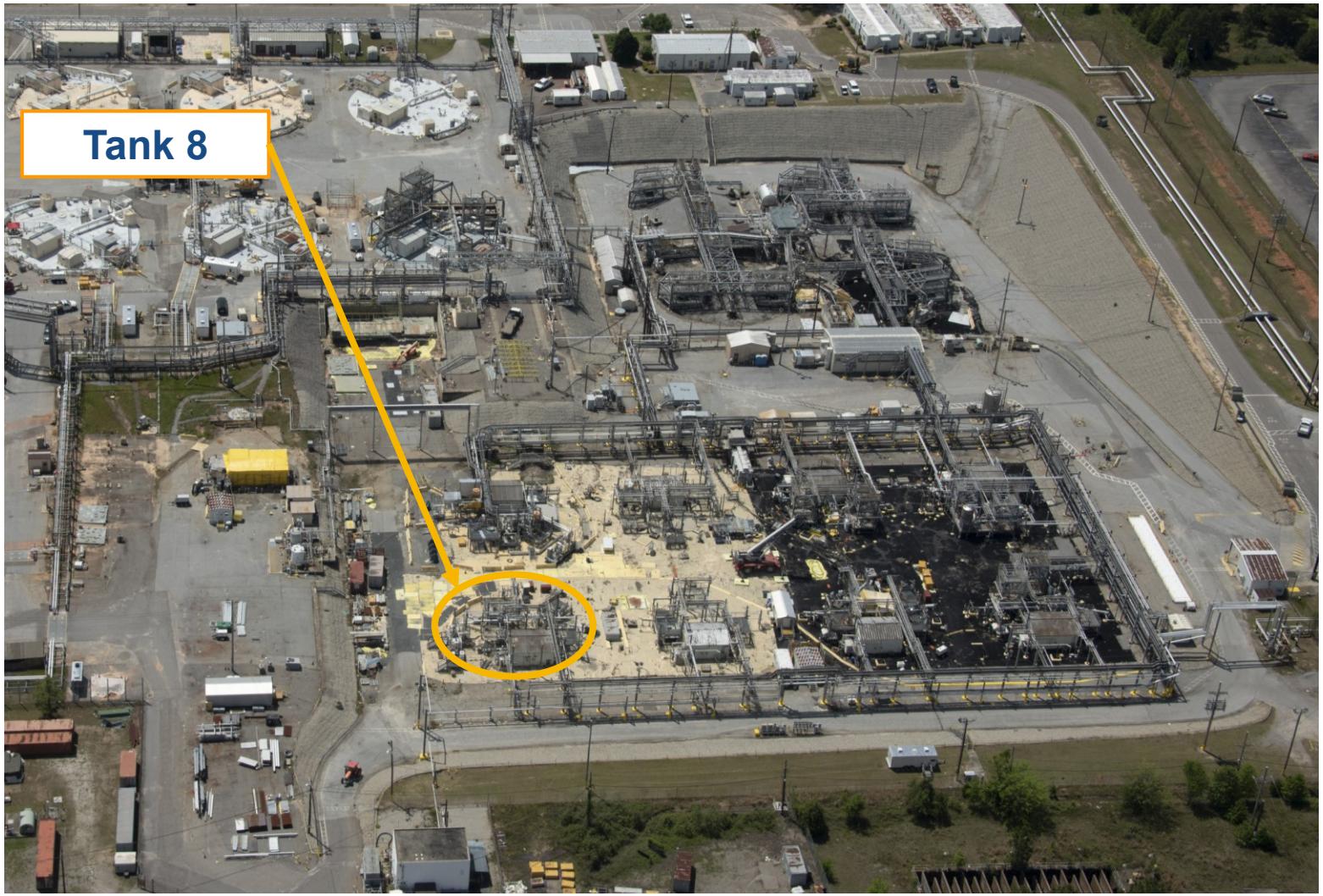
Waste Tank	PCWR Date	Operational Closure Date	Max. Dose within 10,000 years[1] (mrem/yr)	Primary Tank Residual Solids Volume[2] (%)	Primary Tank Residual Solids Volume (Gallons)	Annulus Residual Volume (Gallons)	Annulus Cleaning
4[3]	12/2024	-	<5	<1	<6,000	Negligible	No - negligible
5	11/2010	12/2013	3	0.26	1,900	<15	No – negligible
6	11/2010	12/2013	3	0.41	3,000	<50	Yes ~ 100 gal
9[3]	10/2024	-	<3	<1	<7,500	Negligible	Yes
10[3]	5/2024	-	<2	<0.40	<3,000	<400	Yes
11[3]	5/2025	-	<4	<1	<8,000	Negligible	No - negligible
12	1/2014	4/2016	6	0.20	1,500	30	No – negligible
15[3]	5/2025	-	<6	<1	<6,000	1,800	Yes
16	4/2013	9/2015	2	0.21	356	1,910	No – not practical
17	N/A	12/1997	3	0.18	2,400	N/A	N/A
18	10/2009	9/2012	3	0.30	3,900	N/A	N/A
19	10/2009	9/2012	3	0.15	2,000	N/A	N/A
20	N/A	7/1997	3	0.08	1,000	N/A	N/A

[1] Dose for closed FTF tanks represents maximum all sources dose utilizing actual inventories for Tanks 5, 6, and 17 – 20. Dose for other tanks represents maximum contribution from individual tanks. [SRR-CWDA-2012-00106, SRR-CWDA-2015-00073, SRR-CWDA-2014-00106]
[2] Based on historic maximum waste volume for each tank. [DOE/SRS-WD-2012-001, DOE/SRS-WD-2014-001]
[3] Values based on preliminary information, sampling and analysis has not been performed

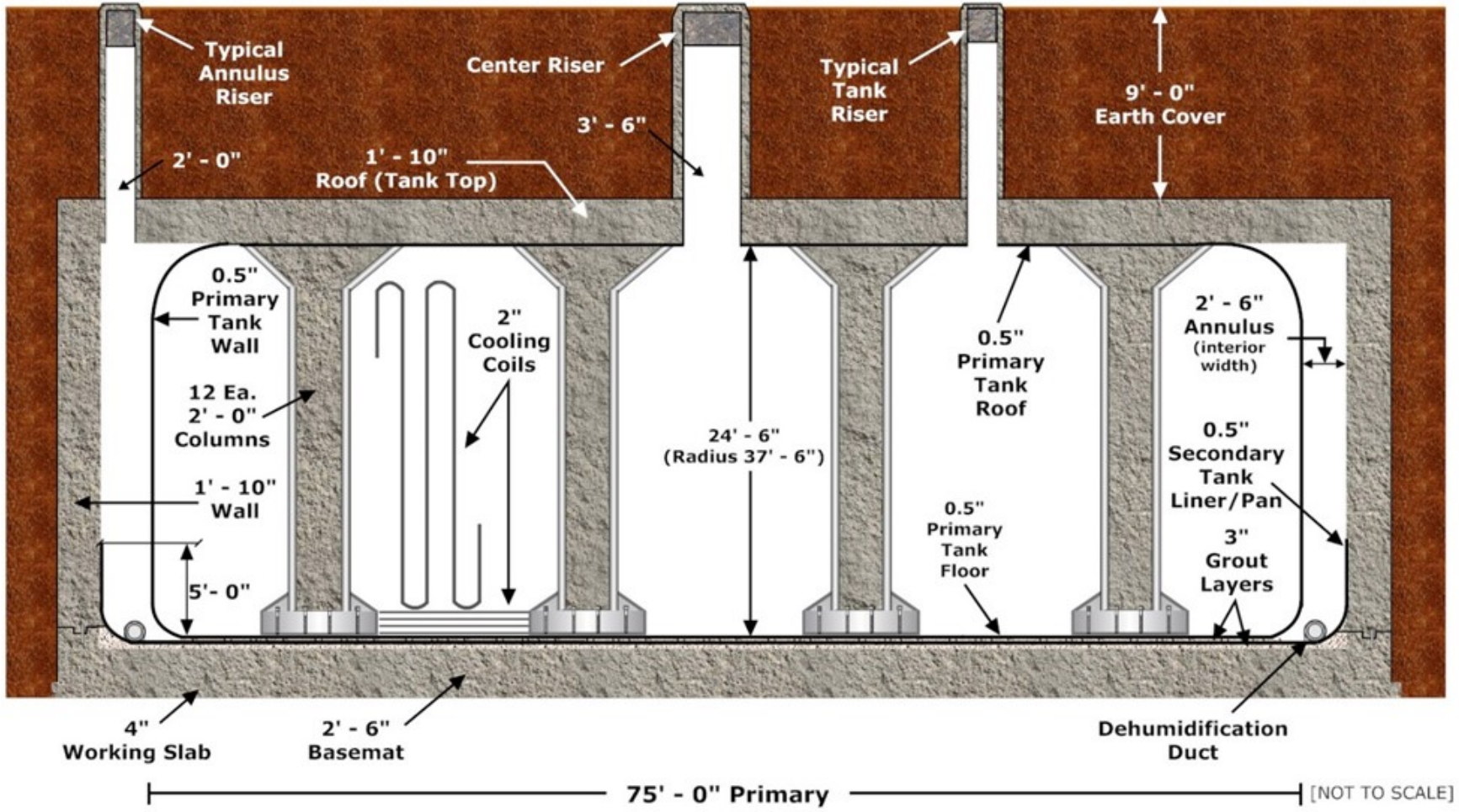
Tank 8

Background Information

Tank 8 Within F-Tank Farm



Typical Type I Tank



Nominal working capacity: 750,000 gallons
For a Type I Tank, 1" of waste equals 2,710 gallons

[SRR-CWDA-2017-00015]

Typical Type I Tank

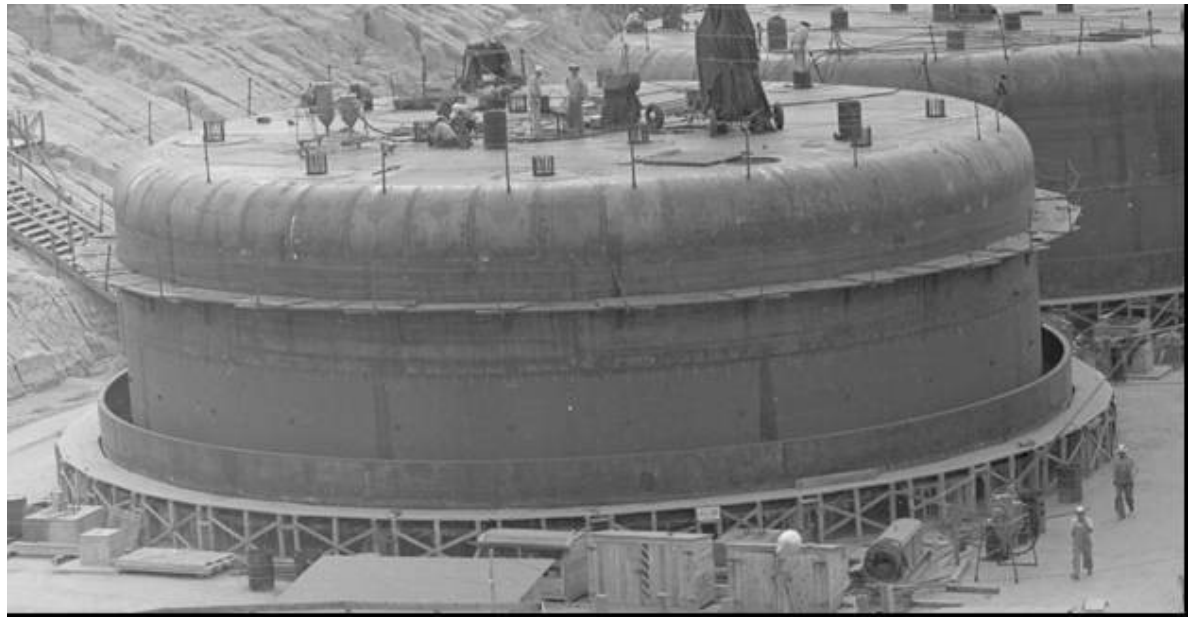
- Carbon steel primary tank and secondary liner (annular pan) all contained in a concrete vault
- Nominal tank capacity: 750,000 gallons
- For a Type I Tank, 1” of waste equals 2,710 gallons
- Primary tank diameter: 75 feet
- Primary tank height: 24.5 feet
- Annular pan diameter: 80 feet
  - *2-foot 6-inch annular space surrounding primary*
- Annular pan height: 5 feet
- 12 interior support columns
  - *2-foot diameter*
- 34 vertical cooling coils supported by rods welded to the roof and floor
- 2 horizontal cooling coil runs supported above the floor
- 9-feet of earth above tank top

[SRR-CWDA-2017-00015]

FTF Type I Tank Construction

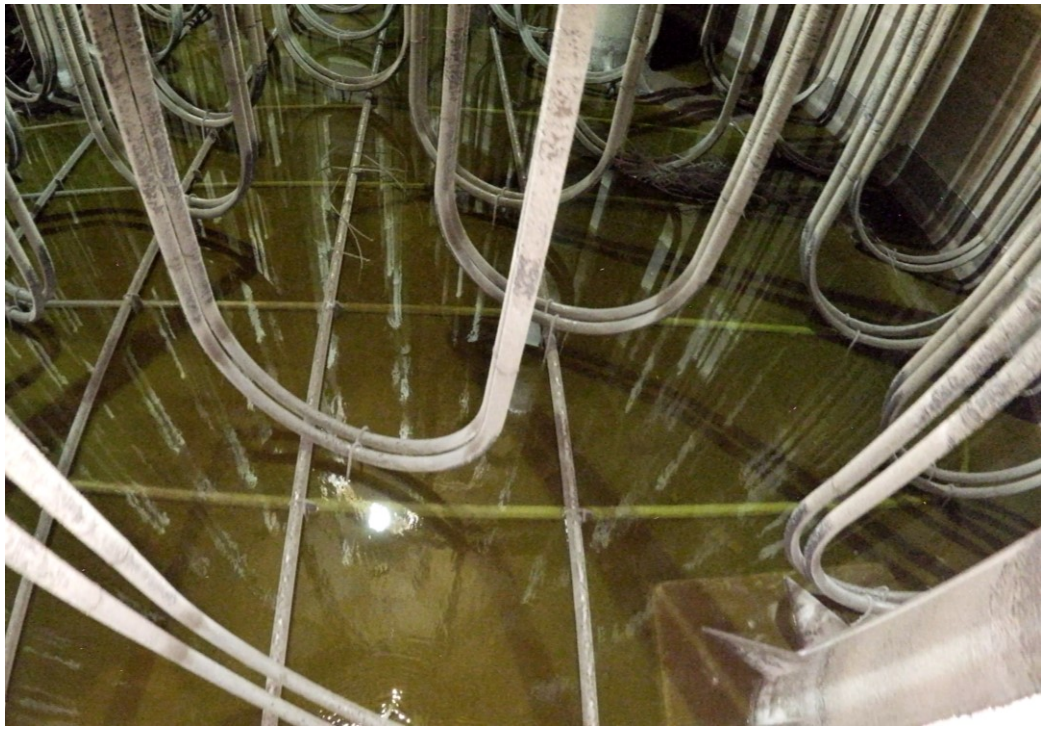
Type I Tank – Early Stage of Steel Liner Construction

Type I Tank – Late Stage of Steel Liner Construction



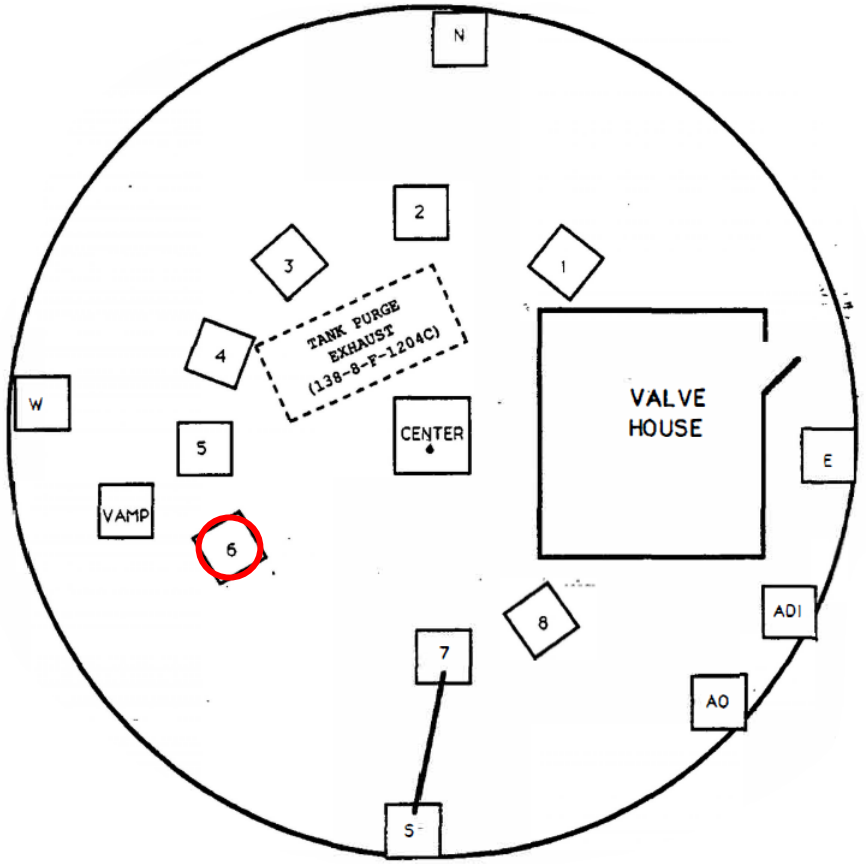
Typical Type I Tank Challenges

- **Challenges include:**
  - *Limited access ports (risers)*
  - *Twelve 2-foot diameter roof support columns*
  - *Approximately 22,800 linear feet of 2-inch diameter vertical and horizontal cooling coils*
  - *"Field-to-fit" horizontal cooling coil "fences"*
- **Tanks were not designed with waste removal in mind**



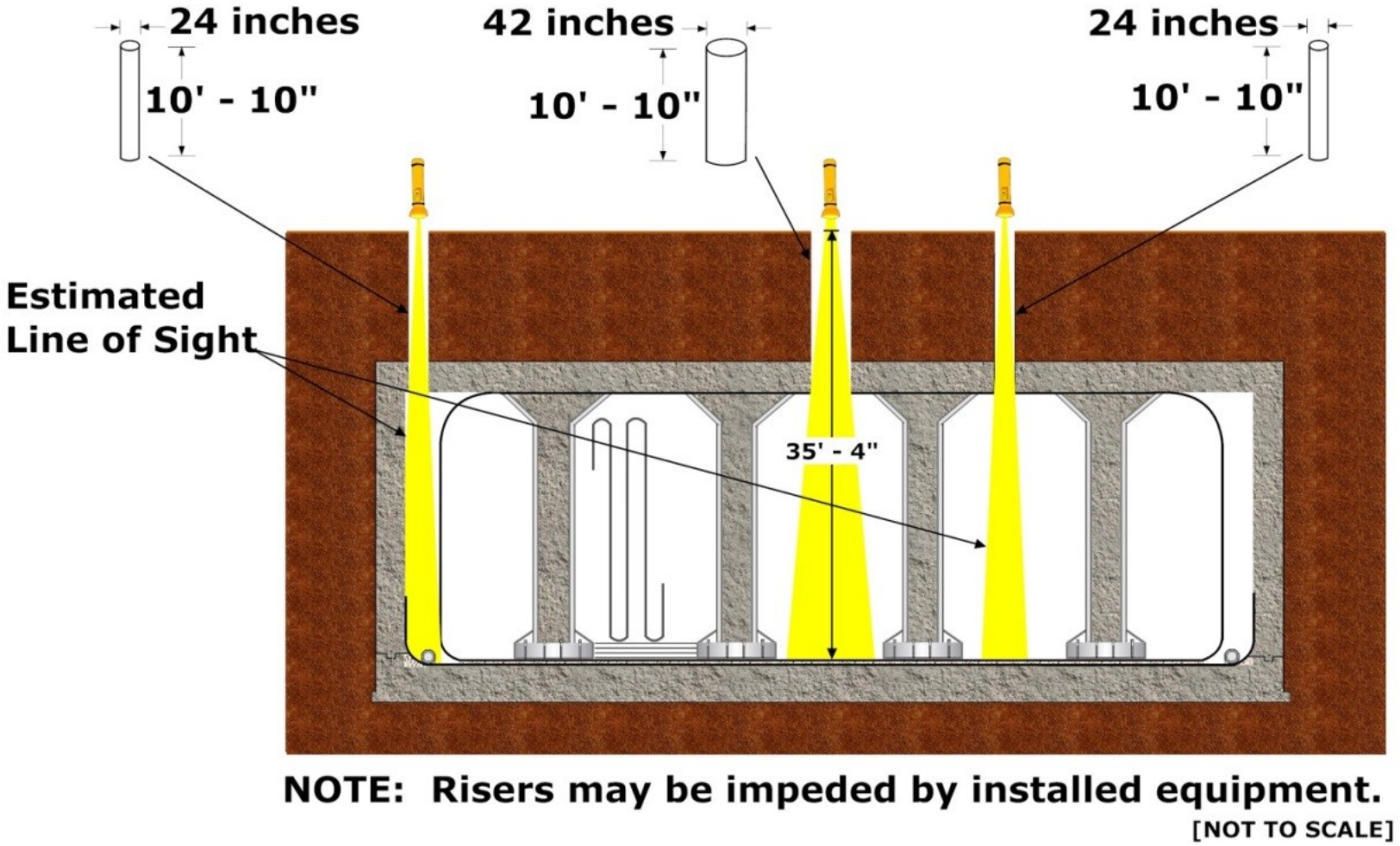
Type I Tank Riser Limitations

- **Primary access**
  - *Eight 24-inch risers*
  - *One 42-inch riser*
- **Annulus access**
  - *Four 24-inch risers*
- **Limited riser entrances hinder**
  - *Pump placement*
  - *Cleaning operations*
  - *Camera viewing*
  - *Sampling options*



Telescoping Transfer Pump (TTP)

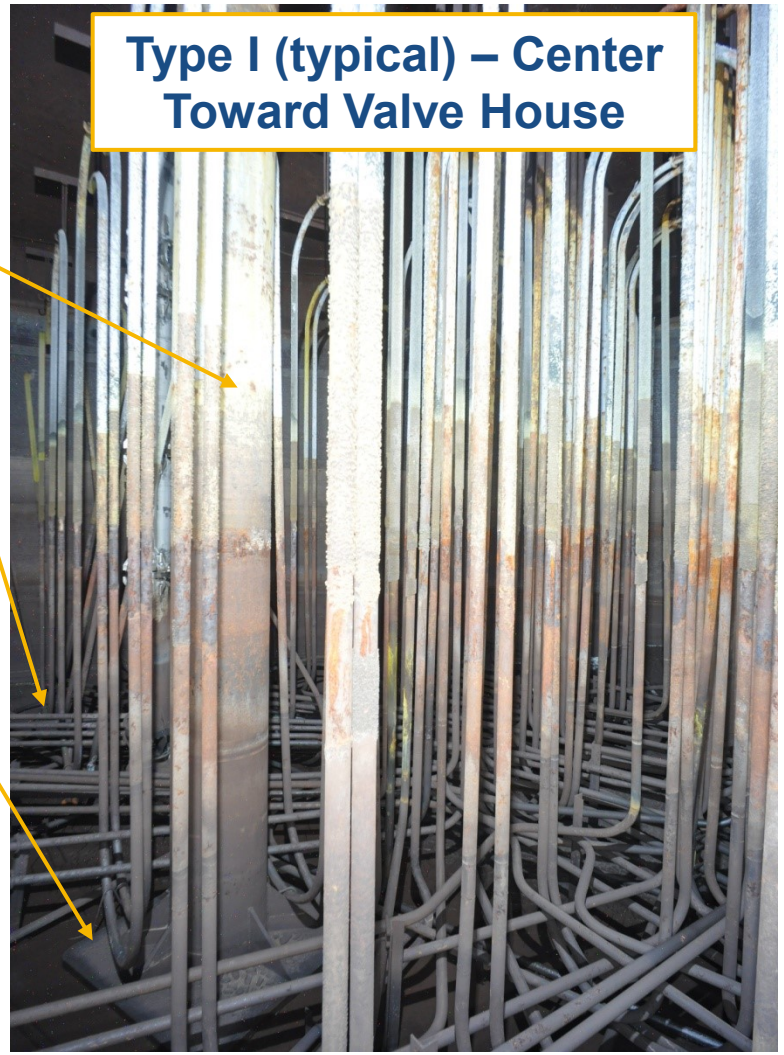
Type I Riser Limitations



[SRR-CWDA-2017-00015]

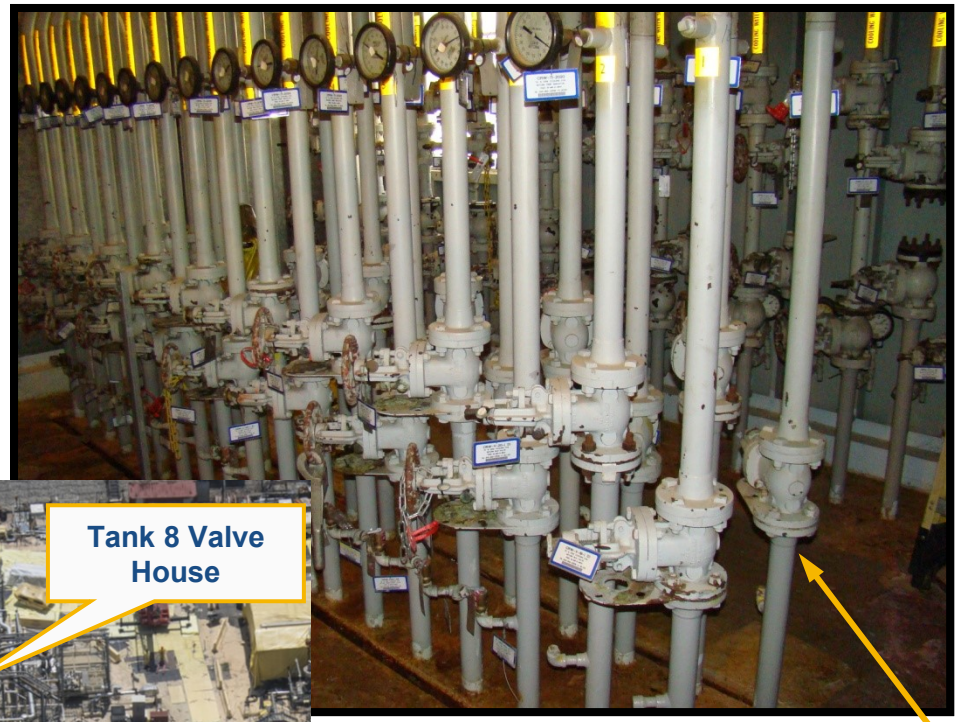
Type I Tank Columns and Cooling Coils

- **Twelve support columns**
  - *Carbon steel and filled with concrete*
  - *2-foot diameter*
  - *4.5-foot x 4.5-foot x 4.5-inch steel base plate*
- **Type I tanks contain approximately 22,800 linear feet of 2-inch diameter cooling coils**
- **Horizontal coils were installed "field-to-fit"**
- **Columns and cooling coils together impact installation and/or operation of waste removal related equipment**
  - *Effective cleaning radius of pumps*
  - *Full installation of pumps*
  - *Sampling device deployment*



Type I Tank Cooling Coil Valve House

Valve House Interior

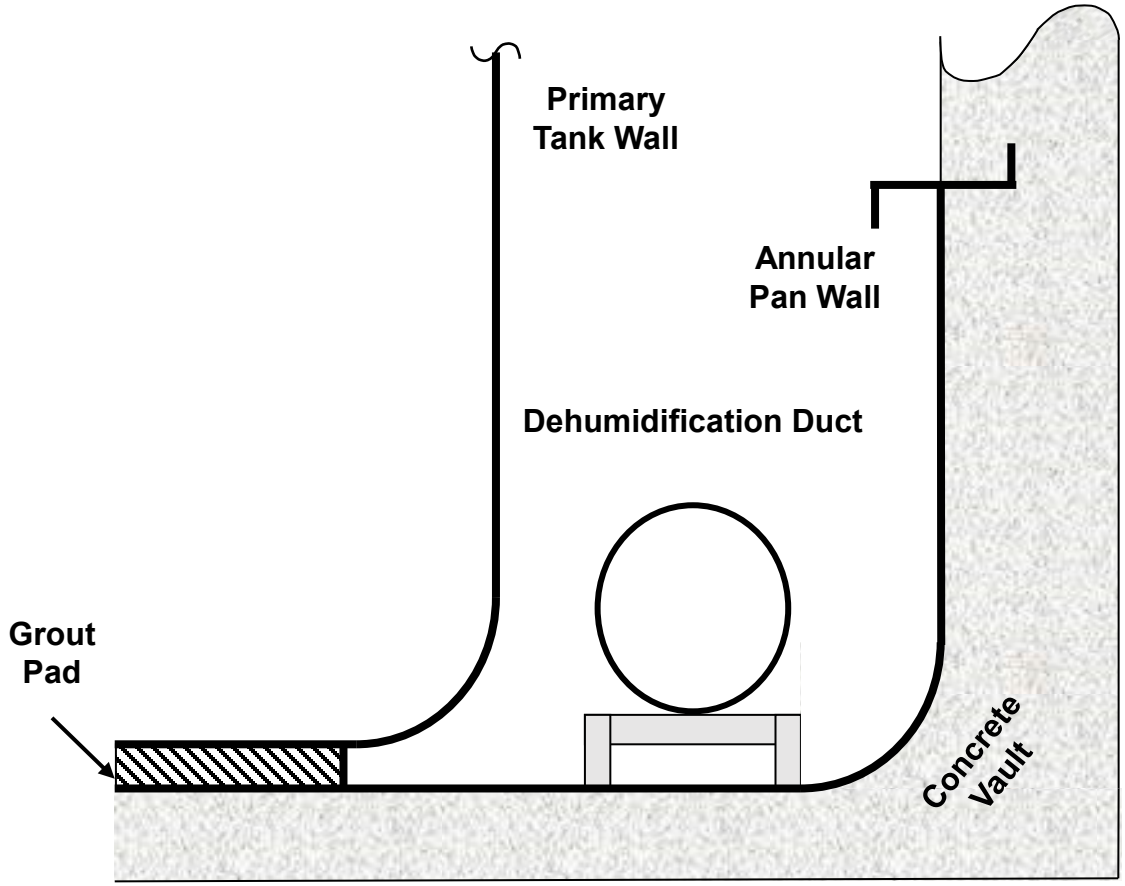


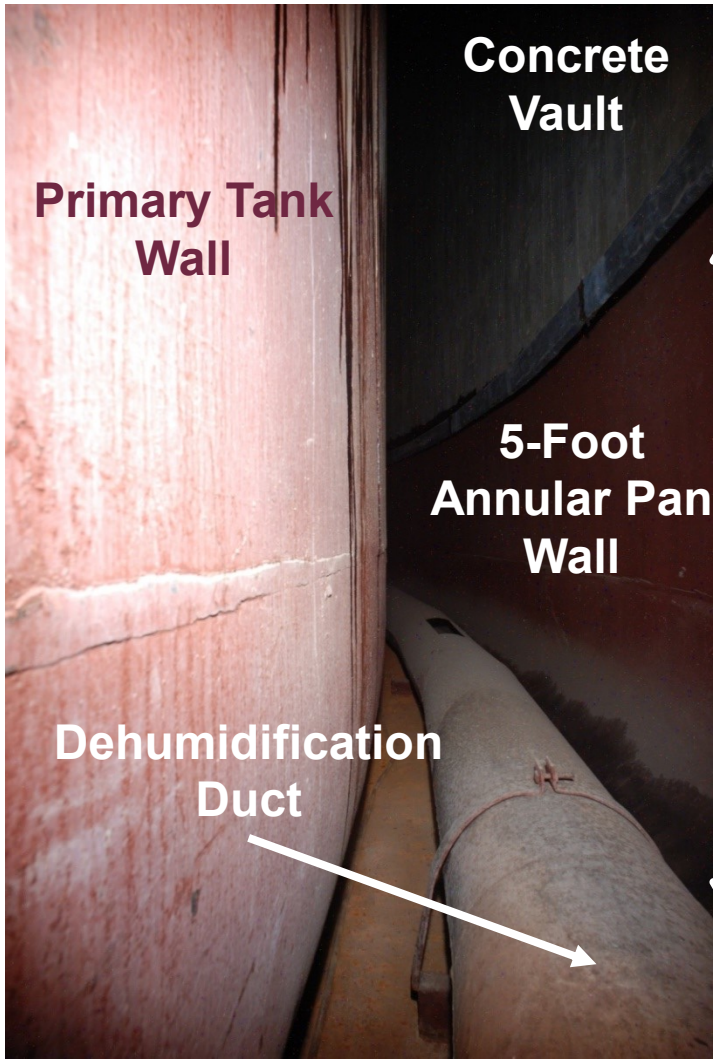
View From Inside Tank (Under the Valve House)

Cooling coil lines entering and exiting waste tank

Type I Tank Annular Region

5-foot high, 80-foot diameter annular pan provides secondary containment





Tank 8 Operational History

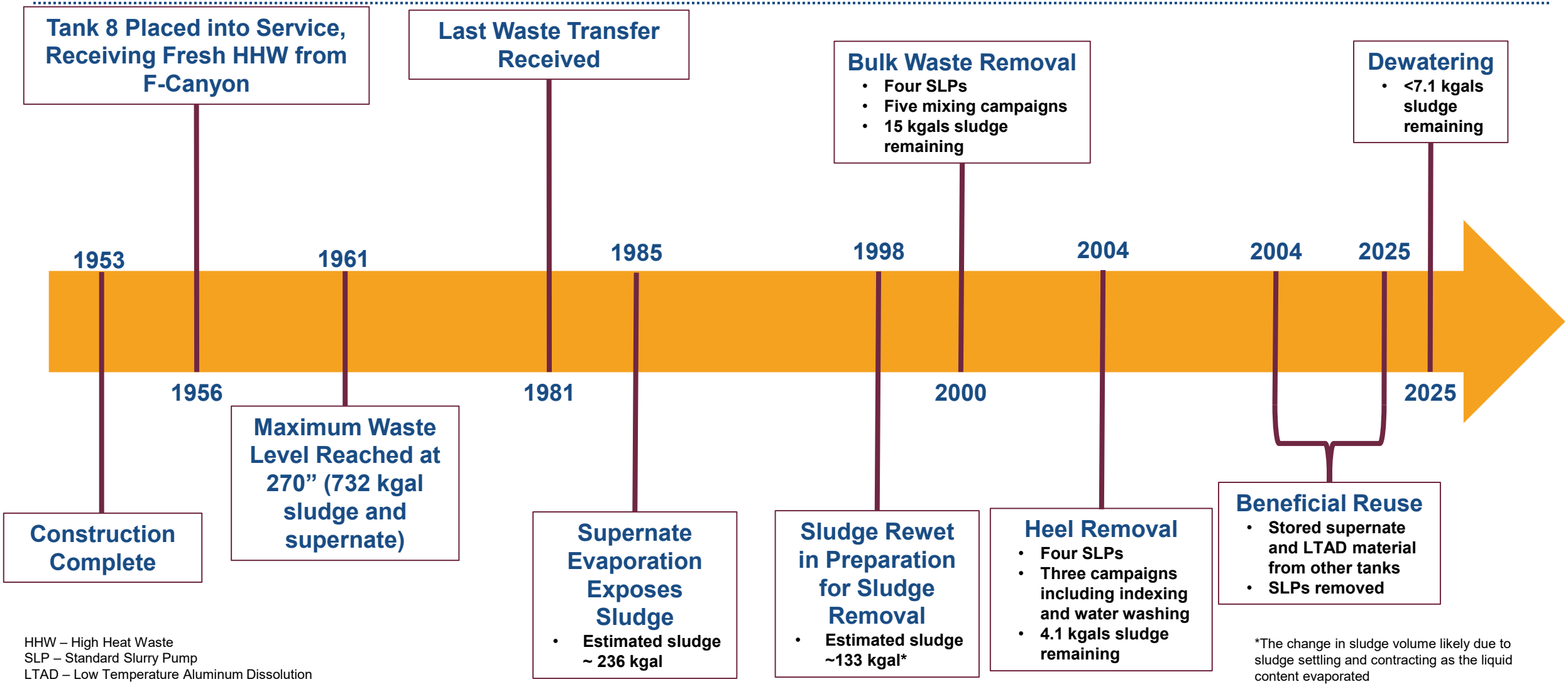
- **Construction completed in 1953**
- **Placed into service in 1956 receiving fresh waste from F-Canyon through 1980**
  - *In total, 5.35 million gallons were received*
  - *Also received 700,000 gallons of waste from laboratory operations*
- **Maximum historical waste level in 1961**
  - *270" or ~732,000 gallons*

Time Period	Waste Type Received
1956-1959	LHW[1] from F-Canyon
1960-1961	HHW[2] from F-Canyon
1968-1969	Laboratory Waste
1970-1974	HHW[2] from F-Canyon
1977-1980	LHW[1] from F-Canyon

[1] Low Heat Waste.
[2] High Heat Waste.

[DOE/SRS-WD-2012-001, WSRC-TR-96-00325]

Tank 8 Historical Timeline



HHW – High Heat Waste
SLP – Standard Slurry Pump
LTAD – Low Temperature Aluminum Dissolution

*The change in sludge volume likely due to sludge settling and contracting as the liquid content evaporated

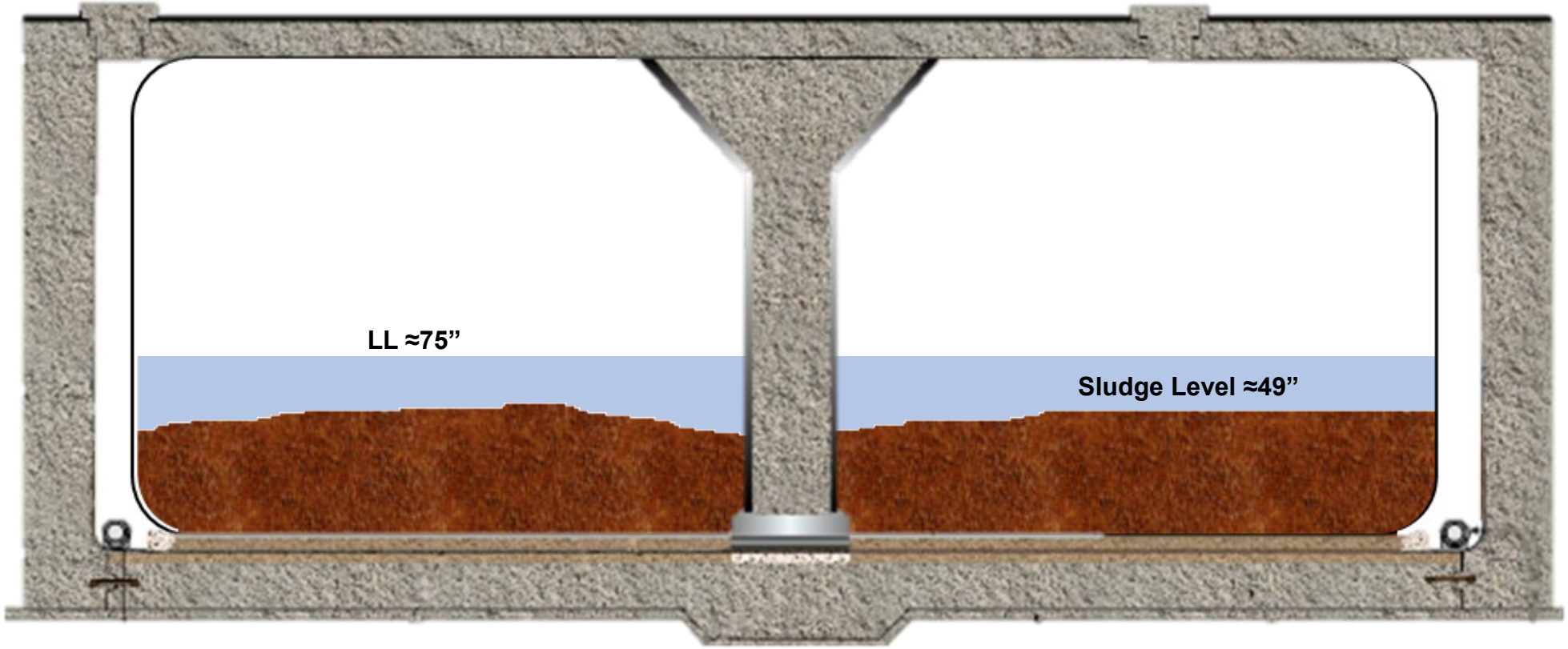
Waste Removal History – Starting Condition

- **After fresh waste receipts concluded in 1981, the waste was left in the tank**
  - *Supernate layer above the sludge evaporated and began exposing the sludge in 1985*
    - The sludge depth was estimated at 87” or ~236,000 gallons
  - *Supernate continued to evaporate, leaving behind residual salt on top of the settled sludge which condensed as it dehydrated*
    - In 1995, sludge depth was estimated at 60” or ~164,000 gallons
    - Observations suggested that the sludge surface had hardened as it dried
- **In 1998, inhibited water was added to Tank 8 to rewet the sludge surface before the start of waste removal operations**
  - *Rehydration led to a further decrease in sludge volume and sludge depth was estimated at 49” or ~133,000 gallons*

[U-ESR-F-00009, WSRC-TR-96-00325, WSRC-TR-98-00069]

Bulk Waste Removal

Tank 8 Before the Start of Bulk Waste Removal (2000)



[U-ESR-F-00009]

Bulk Waste Removal

- **Four SLPs were installed in Risers 1, 3, 5, and 8**
- **TTP installed in Riser 6**
- **Bulk Waste Removal occurred as five mixing campaigns all utilizing the same mixing media**
  - *The four slurry pumps were lowered after each mixing campaign to mine their way through the settled sludge while also controlling the release of hydrogen gas trapped in the sludge*

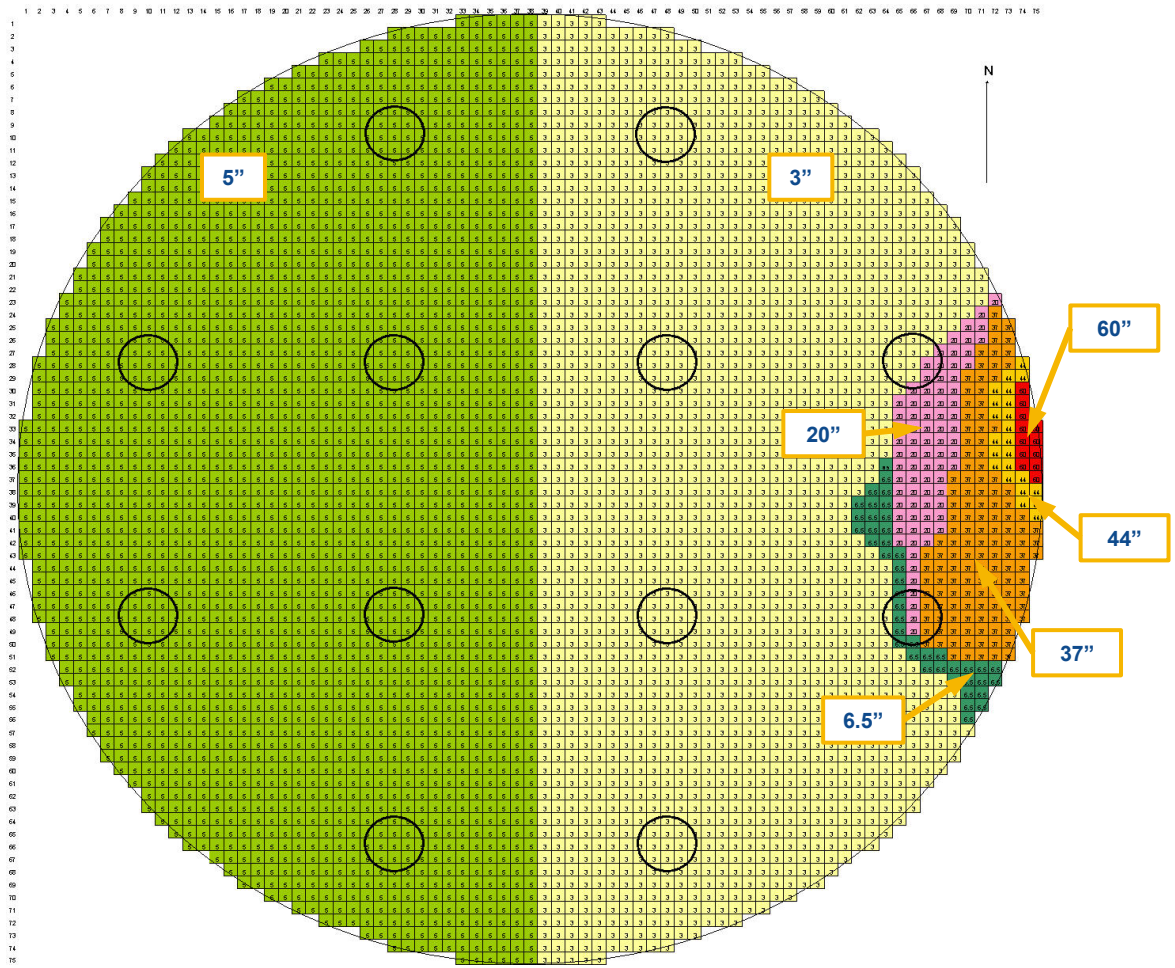
Slurry Pump Height (Inches from Bottom of Tank)	Date	Initial Sludge Height Using Riser 4 Reel Tape (Inches)
50	5/17/2000 – 6/4/2000	43
40	6/8/2000 – 6/18/2000	36
30	7/2/2000 – 7/11/2000	22
20	7/18/2000 – 8/2/2000	10.4[a]
10	8/6/2000 – 8/11/2000[b]	<4.68[c]

[a] Due to a technical malfunction, the reel tape in Riser 4 was only operational above 10.4” and the sludge height was assumed to be at this level.
[b] While the initial pump run concluded on 8/11/2000, bi-weekly pump runs were carried out until the transfer to Tank 40 could be completed in November of 2000.
[c] The thermocouple at 4.68” from the tank bottom in Riser 4 tracked with the readings from the 21.5” thermocouple, indicating that sludge had been mobilized at this depth. [U-ESR-F-00009]

Bulk Waste Removal

- **Samples taken after the mixing campaign with pumps at 20 inches indicated a wt% insoluble solids of 19%**
- **After the final mixing campaign, well water was added to dilute the sludge slurry to 11 wt% insoluble solids**
  - *Brought the liquid level in the tank to 134”*
- **Transfer of sludge slurry to Tank 40 took place in November of 2000**
- **Video inspection and mapping estimated a remaining sludge volume of 15,000 gallons**

Residual Sludge Map After Bulk Waste Removal



[U-ESR-F-00009, U-ESR-F-00027, WSRC-RP-2000-00900, WSRC-RP-2000-00962, X-CLC-F-00233]

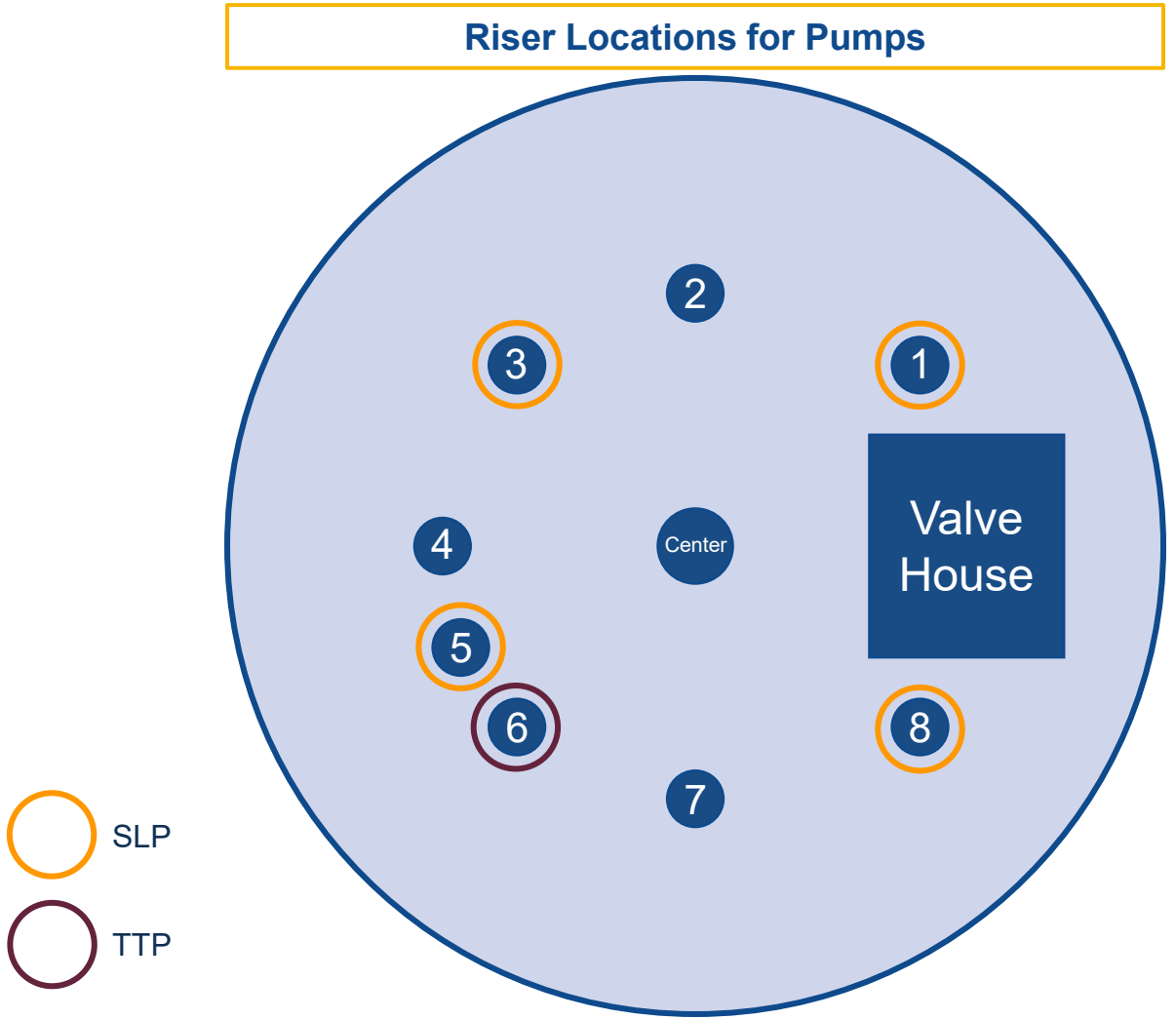
Tank 6 Leak Site Support

- In 2001, a leak site was identified in Tank 6 which was storing DWPF recycle waste
- Tank 8 was selected as a receipt tank for supernate to reduce the liquid level in Tank 6 below the newly discovered leak site
- Between two batches ~120,000 gallons of supernate was transferred from Tank 6 to Tank 8
- From May 2001 to June 2003 no other transfers into or out of Tank 8 were made
- In July 2003, ~65,000 gallons of supernate was transferred to Tank 33

[U-ESR-F-00046]

Start of Heel Removal

- **Heel Removal began in 2004**
  - *Used existing SLPs and followed a pump operation sequence recommended based on Computational Fluid Dynamic (CFD) modeling to target the mound on the eastern side of the tank below the valve house*
  - *Tank 8 TTP lowered to 2" from the tank bottom to allow as much visualization of the residual material as possible during transfers*



[U-ESR-F-00027]

Heel Removal Campaign 1

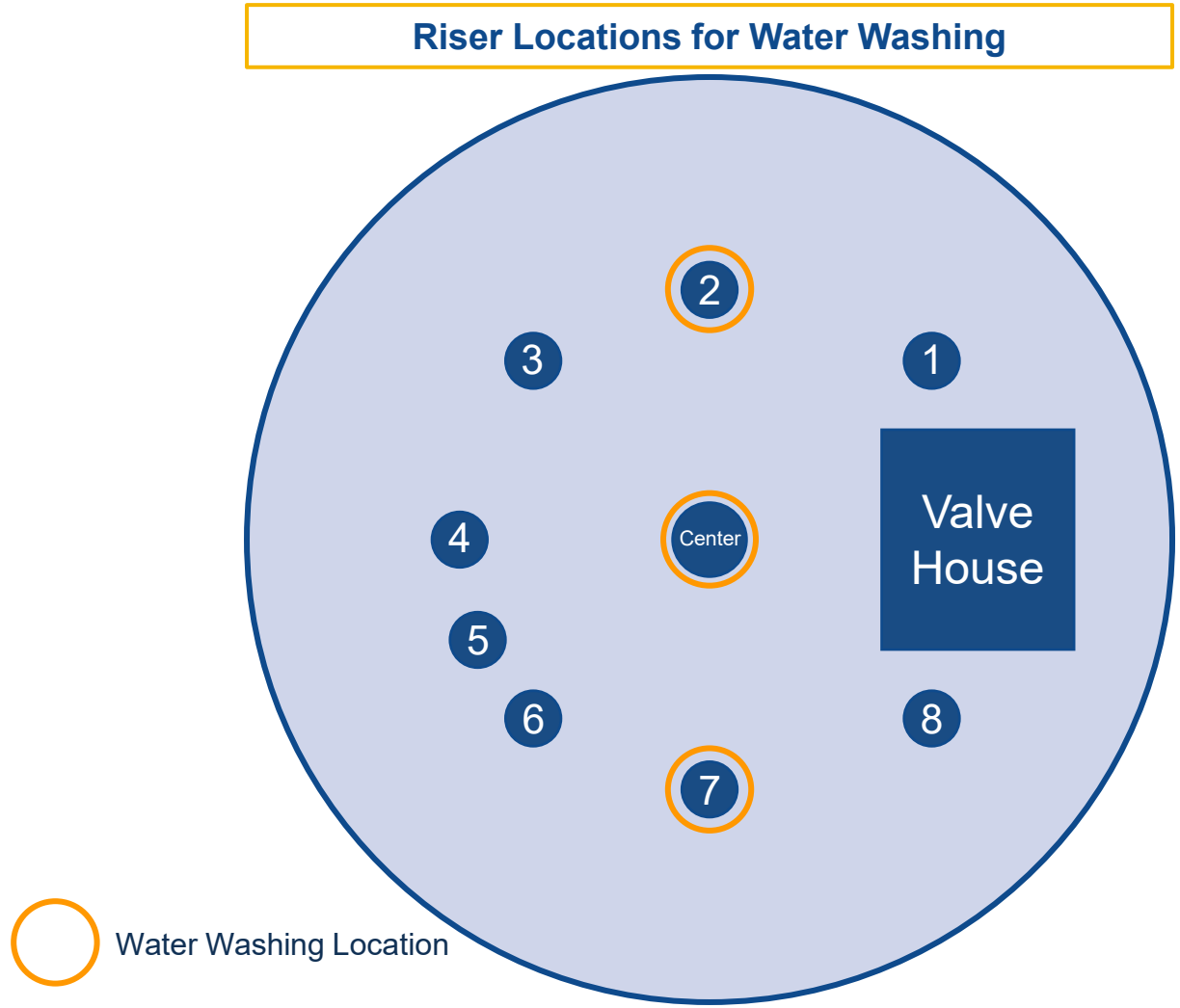
- **Combined supernate of Tanks 7 and 8 was used as the mixing media to reduce the amount of water added to the Liquid Waste System**
  - *Tank 8 began with a liquid level of 43" or ~117,000 gallons sludge and supernate combined*
  - *Supernate from Tank 7 totaling ~70,000 gallons was transferred into Tank 8, bringing the liquid level to 66"*
- **Four SLPs were operated following an indexing strategy aimed at the valve house mound. After indexing phase, all SLPs were operated for 12 hours in the full forward rotation to ensure suspension of settled sludge**
- **A video inspection performed during the transfer from Tank 8 to Tank 7 indicated two new mounds had formed to the south and west, with about 8,500 gallons of sludge estimated remaining**

Step	Pump	Index	Duration (hours)
A	Riser 8	38°	96
B	Riser 1	43°	96
	Riser 3	22°	
C	Riser 5	16°	96
	Riser 8	27°	
D	Riser 1	54°	96
	Riser 5	16°	
	Riser 8	27°	
E	Riser 1	65°	96
	Riser 3	22°	
	Riser 5	27°	
	Riser 8	27°	
F	Riser 1	Rotating	12
	Riser 3	Rotating	
	Riser 5	Rotating	
	Riser 8	Rotating	

[U-ESR-F-00027]

Water Washing Campaign

- A water wash of the tank focused on the tank walls was carried out between Heel Removal Campaigns 1 and 2
- A water washing tool was selected after engineering evaluation and field mockup to ensure water would reach the tank walls
- Spray washing occurred using well water in Risers 2 and 7 as well as the Center Riser
- Added 3,000 gallons of water to the tank



[U-ESR-F-00027]

Heel Removal Campaign 2

- **Tank 8 liquid level brought back up to 66”**
  - *Water addition to 35”*
  - *Decanted supernate from Tank 7 was transferred into Tank 8, bringing the liquid level to 66”*
- **Four SLPs were operated following the same indexing strategy as Campaign 1. However, after indexing phase, all SLPs were operated for 96 hours in the full forward rotation to ensure suspension of settled sludge**
- **A video inspection performed during the transfer from Tank 8 to Tank 7 indicated about 4,100 gallons of sludge estimated remaining**

Step	Pump	Index	Duration (hours)
A	Riser 8	38°	96
B	Riser 1	43°	96
	Riser 3	22°	
C	Riser 5	16°	96
	Riser 8	27°	
D	Riser 1	54°	96
	Riser 5	16°	
	Riser 8	27°	
E	Riser 1[a]	65°	96
	Riser 3	22°	
	Riser 5	27°	
	Riser 8	27°	
F	Riser 1	Rotating	96
	Riser 3	Rotating	
	Riser 5	Rotating	
	Riser 8	Rotating	

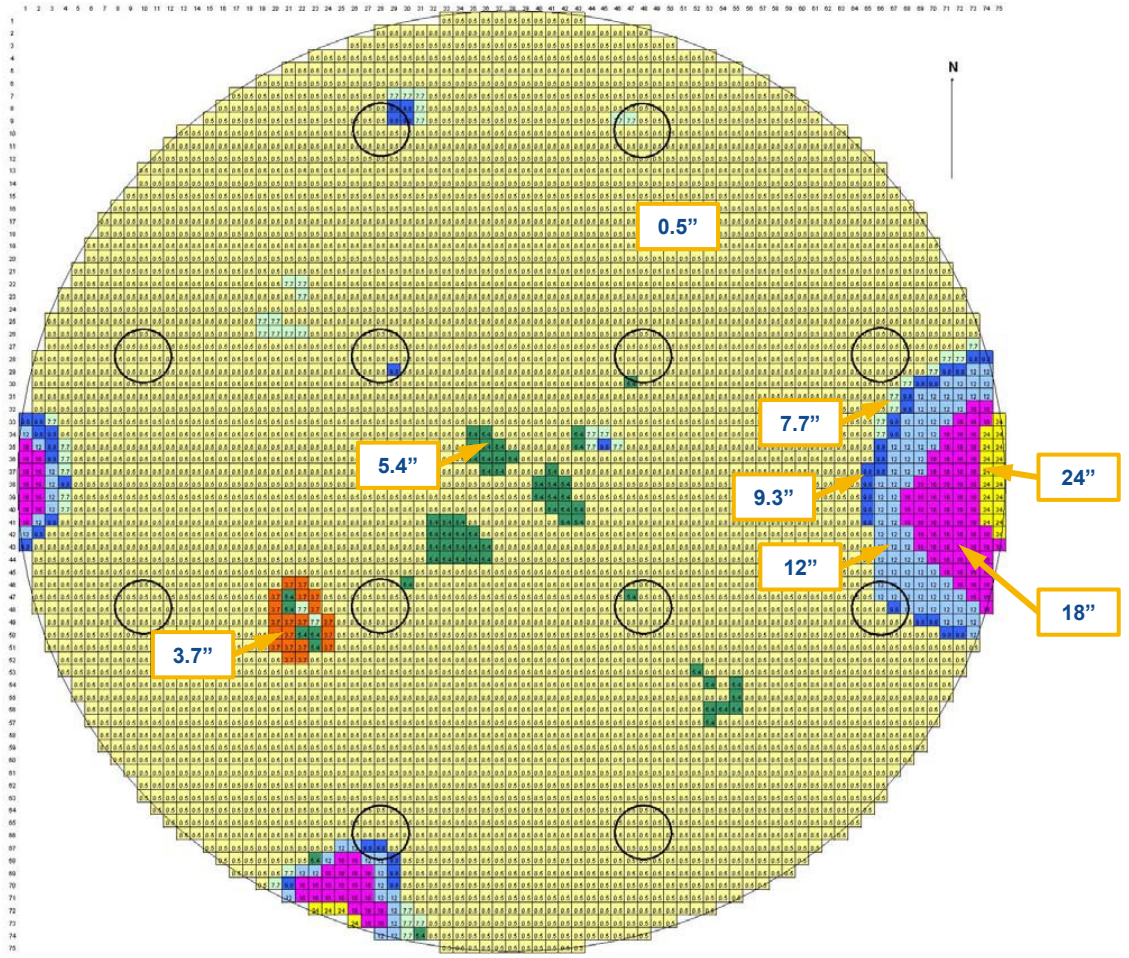
[a] Riser 1 SLP shutdown due to low bearing water pressure after 24 hours

[U-ESR-F-00027]

Heel Removal Campaign 3

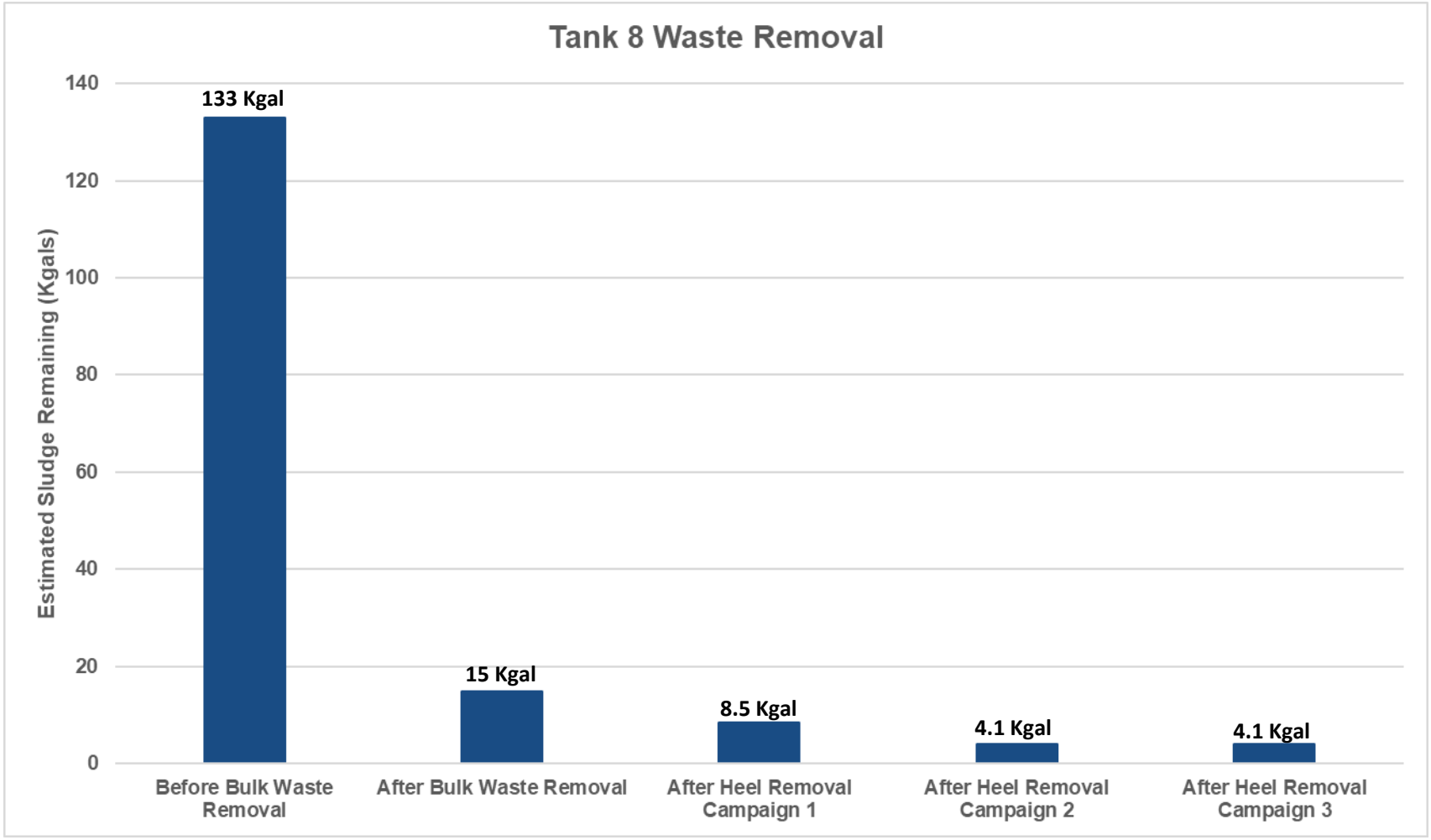
- Tank 8 liquid level brought back up to 71” using decanted supernate from Tank 7
- To start Campaign 3, three SLPs in Riser 1, Riser 3, and Riser 8 were started in full forward rotation. The Riser 5 SLP was started later due to issues with the bearing water pressure
- After 24 hours the Tank 8 to Tank 7 transfer started with all four SLPs operating until the liquid level mandated pump operation be suspended
- A video inspection performed during the transfer from Tank 8 to Tank 7 indicated the sludge volume remaining had not changed from 4,100 gallons

Residual Sludge Map After Heel Removal



[U-ESR-F-00027]

Sludge Removal Results



[U-CLC-F-00010. U-ESR-F-00009, U-ESR-F-00027, X-CLC-F-00233]

Beneficial Reuse

- **Following heel removal in 2004, Tank 8 was used several times in support of other waste removal activities:**
  - *In 2006, Tank 8 received material from Tank 5 waste removal activities via Tank 7, allowing Tank 6 to begin Bulk Waste Removal activities*
  - *In 2007, a burkeite layer in Tank 4 was dissolved and some of the supernate was transferred to Tank 8 for temporary storage. The stored supernate was eventually transferred back to Tank 4 after the completion of burkeite dissolution*
  - *From 2008 to 2009, Tank 8 received supernate to support heel removal and chemical cleaning in Tanks 5 and 6 as well as mechanical cleaning in Tank 18*
  - *The accumulated supernate was transferred out in July 2009, leaving an estimated 10,000 gallons of supernate and the sludge heel*

[U-ESR-F-00046]

Aluminum-Rich Decant Storage

- In August and September of 2009, ~430,000 gallons of aluminum-rich decant material was transferred from Tank 51 to Tank 8
- Since 2009 Tank 8 continued to serve as the storage tank of aluminum-rich supernate created by LTAD activities carried out in other tanks within the Liquid Waste System
- Calculations and sludge soundings during this time indicate the possibility of additional solids accumulation
- Wafer measurements taken in September of 2023 gave a sludge level of 5.5” at the Center Riser
- Estimated approximately 15.11 inches of insoluble Aluminum solids may have accumulated in the tank (calculated, not measured)
- Two failed SLPs have been removed for disposition, while the two operational SLPs were transferred to Tank 7

[SW11.1-WTE-7.2, U-ESR-F-00046, WCS Online]

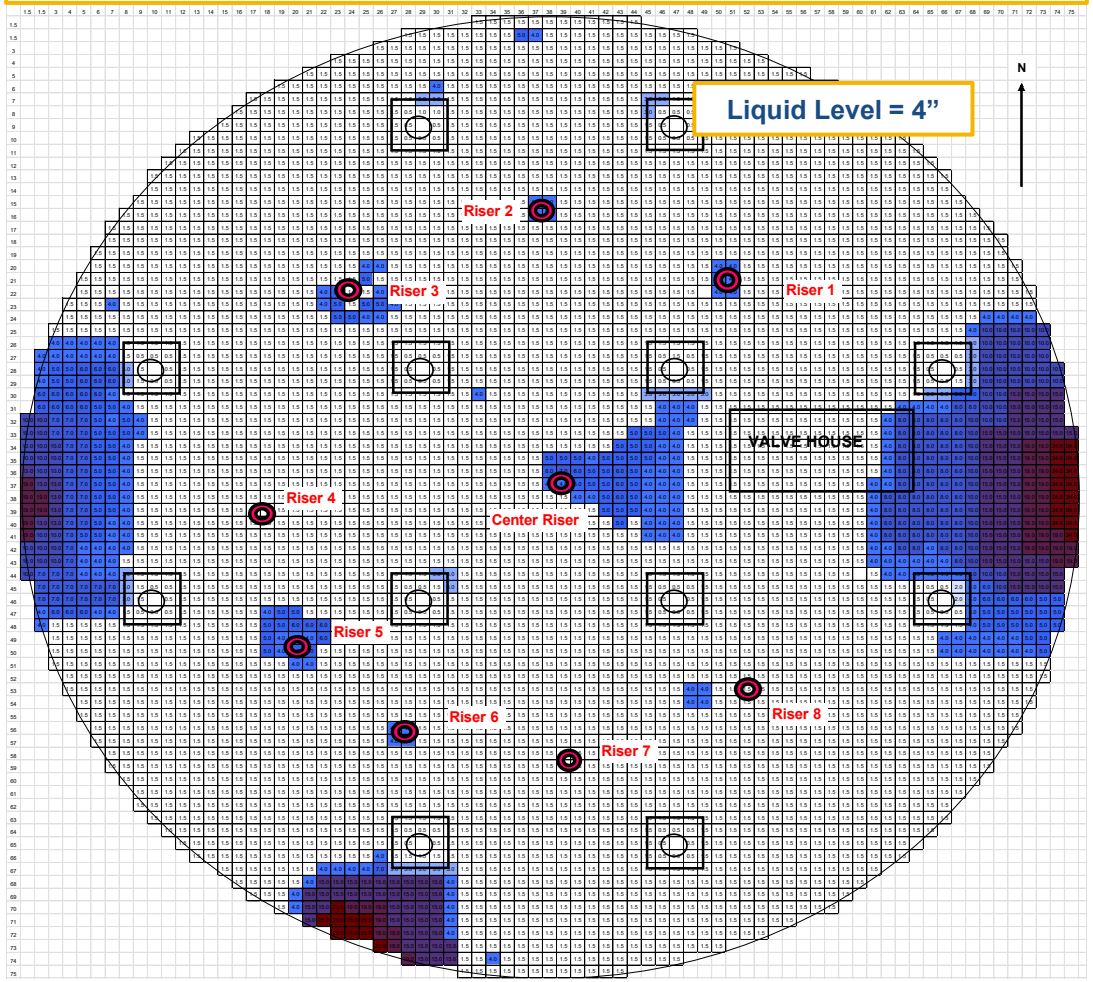
Dewatering

- In March 2025 the TTP located in Riser 6 was lowered to 2 inches from the bottom of the tank
- On April 17, 2025 supernate began being transferred from Tank 8 to Tank 34
- In total ~312,000 gallons were transferred out
- As the liquid level decreased, regular camera inspections were performed to map remaining solids
- Transfer stopped with ~4 inches of liquid remaining in the tank
- An additional inspection was carried out with a drone to refine the solids map

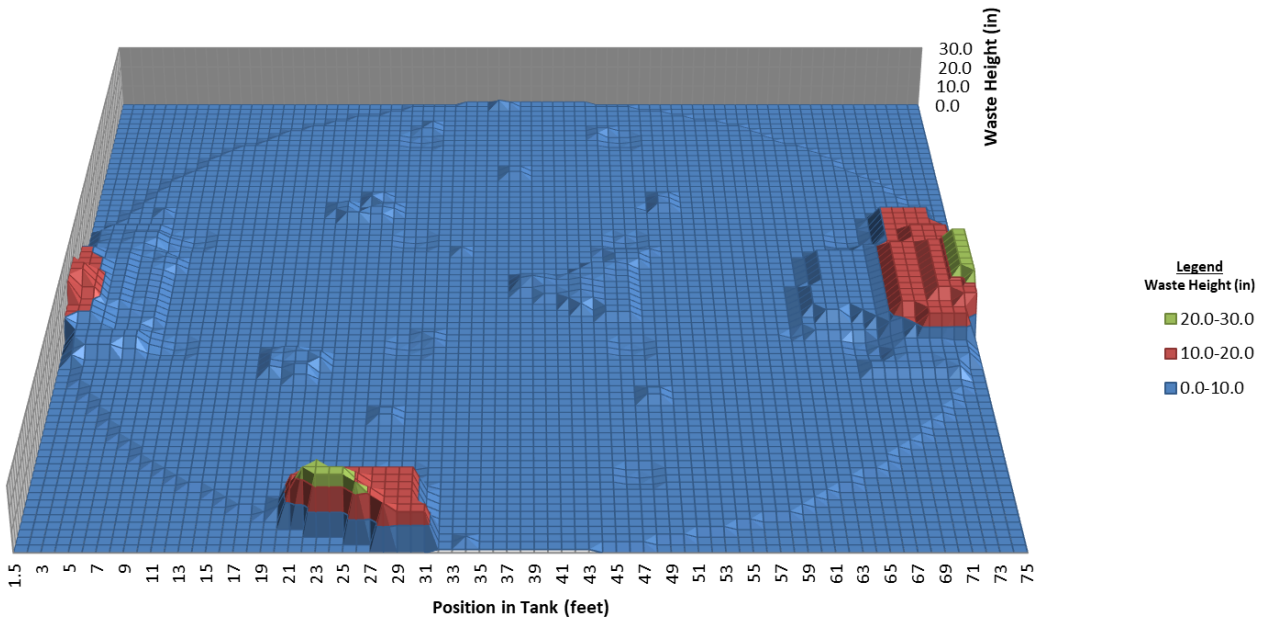
[SW11.1-WTE-7.2]

Current Status of Tank 8 Primary Tank

Residual Solids Map Plan View



Residual Solids 3-D Model (height exaggerated to show detail)

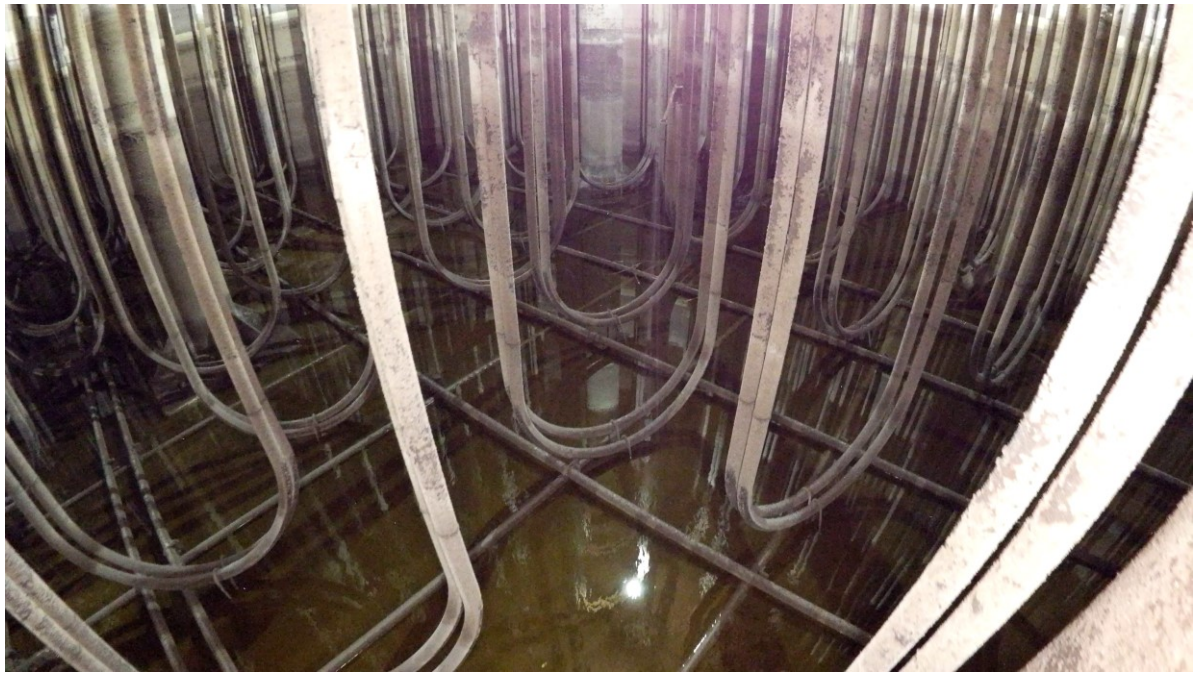


Remaining Solids <7,100 gallons

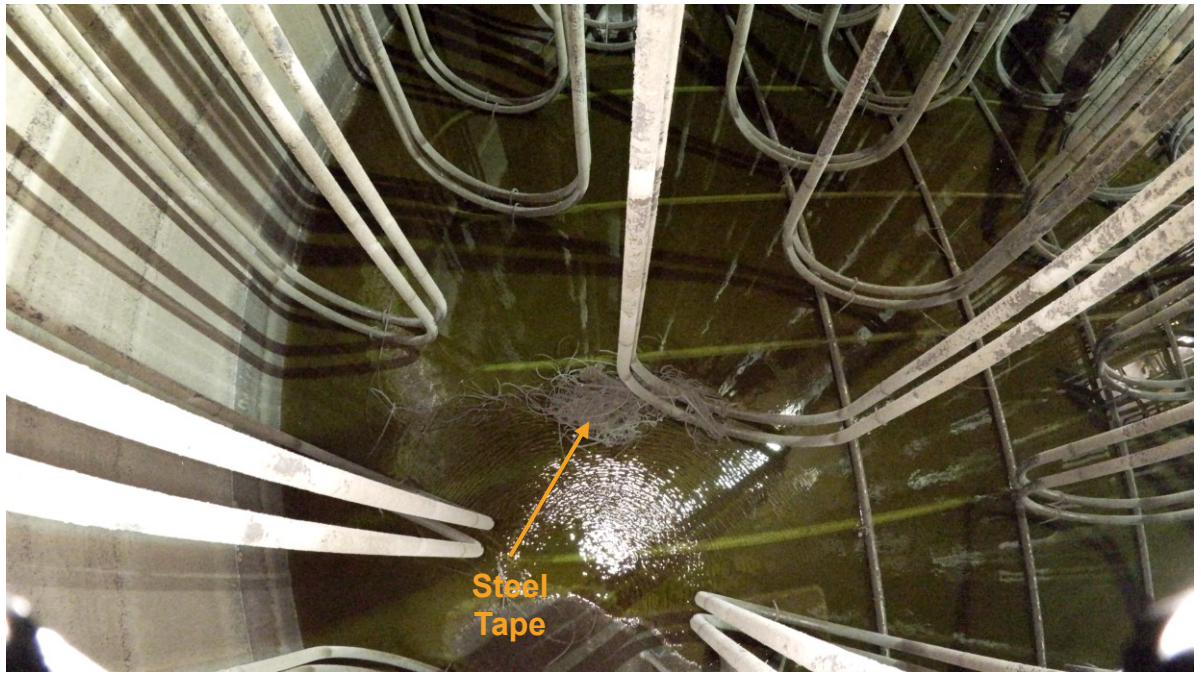
[U-ESR-F-00130]

Current Status of Tank 8 – From Drone Inspection

North

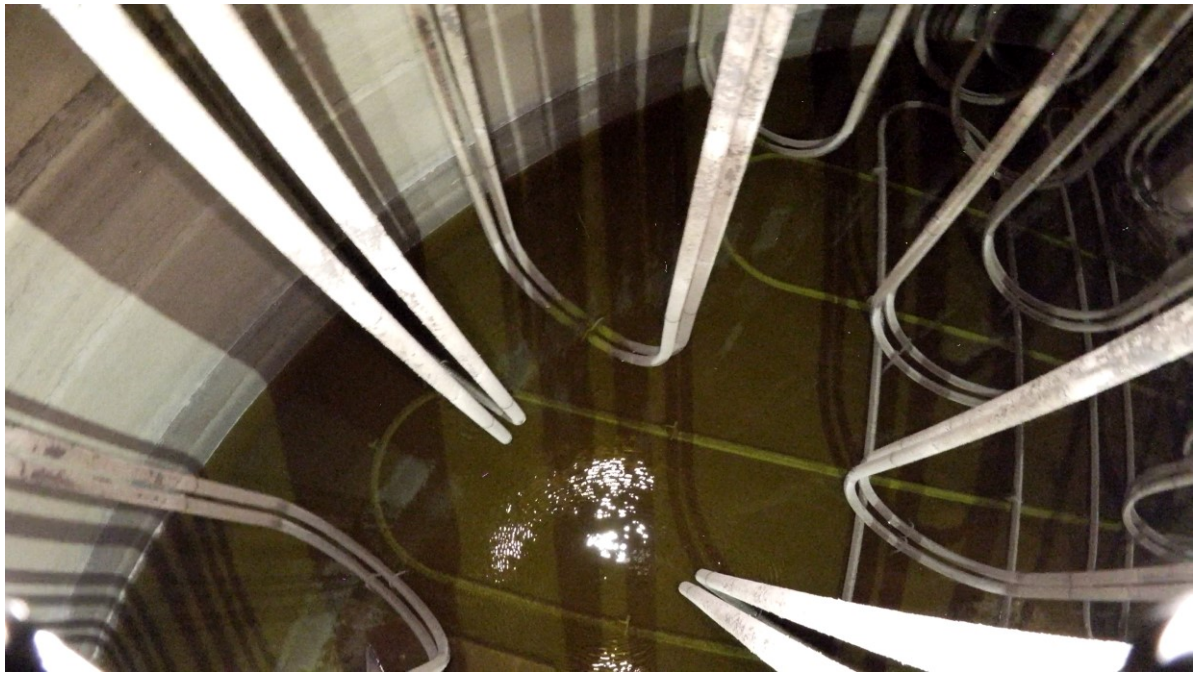


North Tank Wall



Current Status of Tank 8 – From Drone Inspection

Northeast

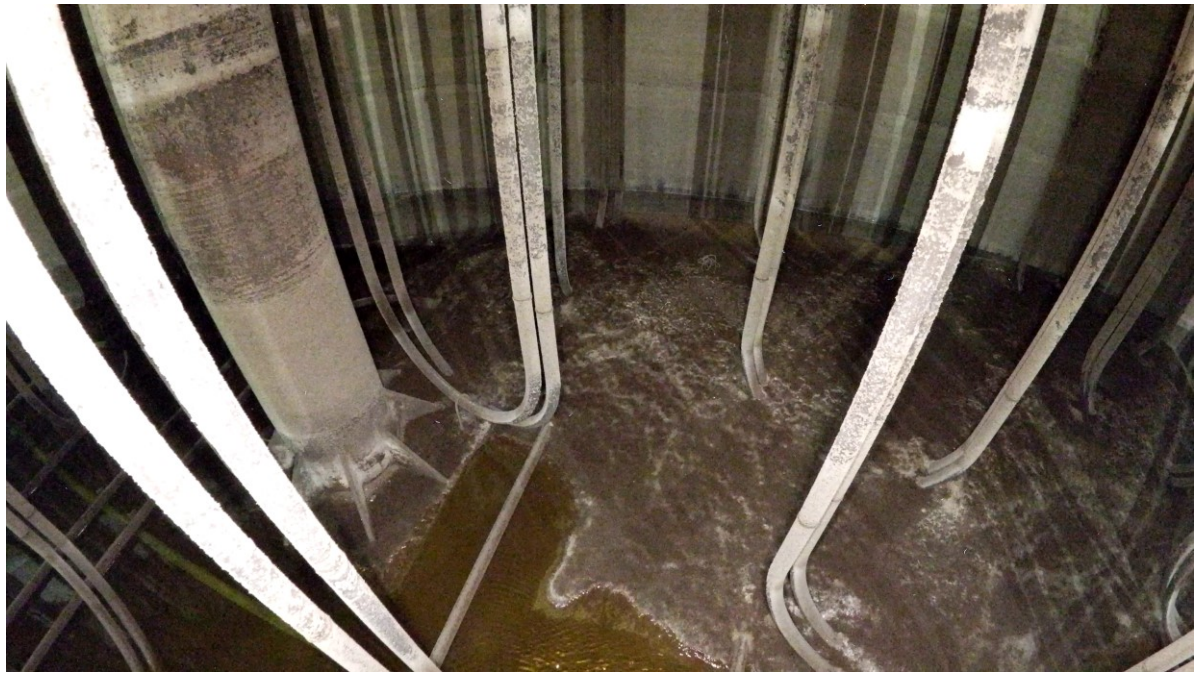


East Mound from North

Current Status of Tank 8 – From Drone Inspection

East

East Mound



Current Status of Tank 8 – From Drone Inspection

East Mound

East Mound

Current Status of Tank 8 – From Drone Inspection

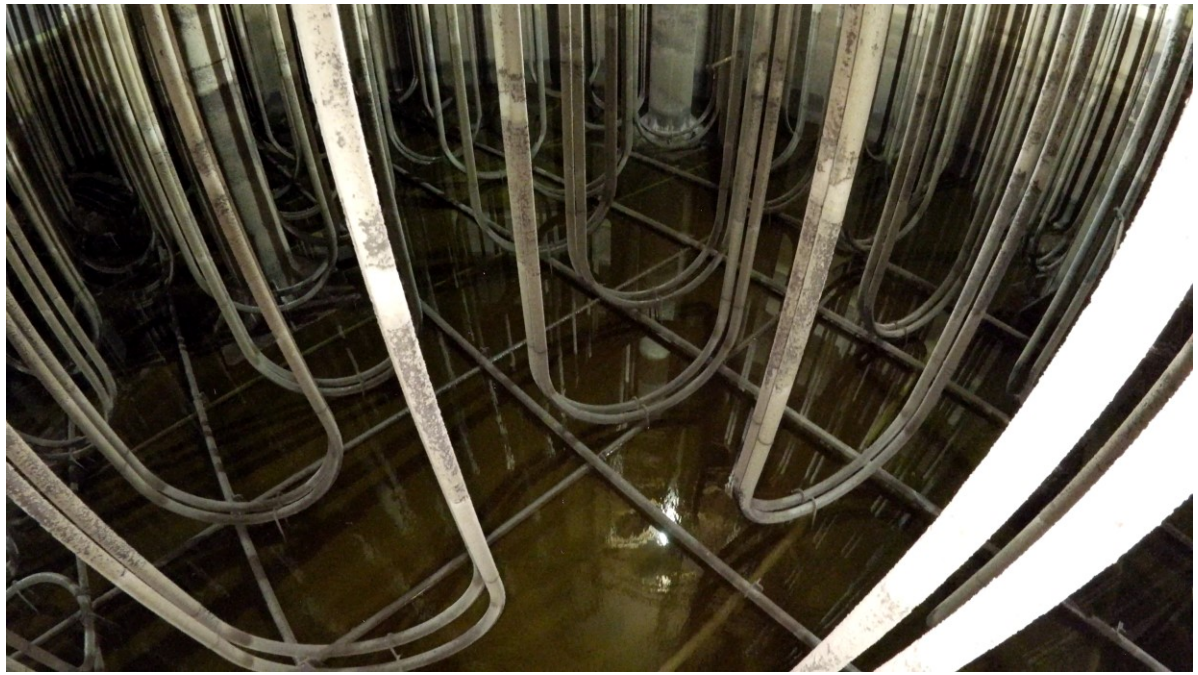
East Mound

East Mound from South

Current Status of Tank 8 – From Drone Inspection

Southeast

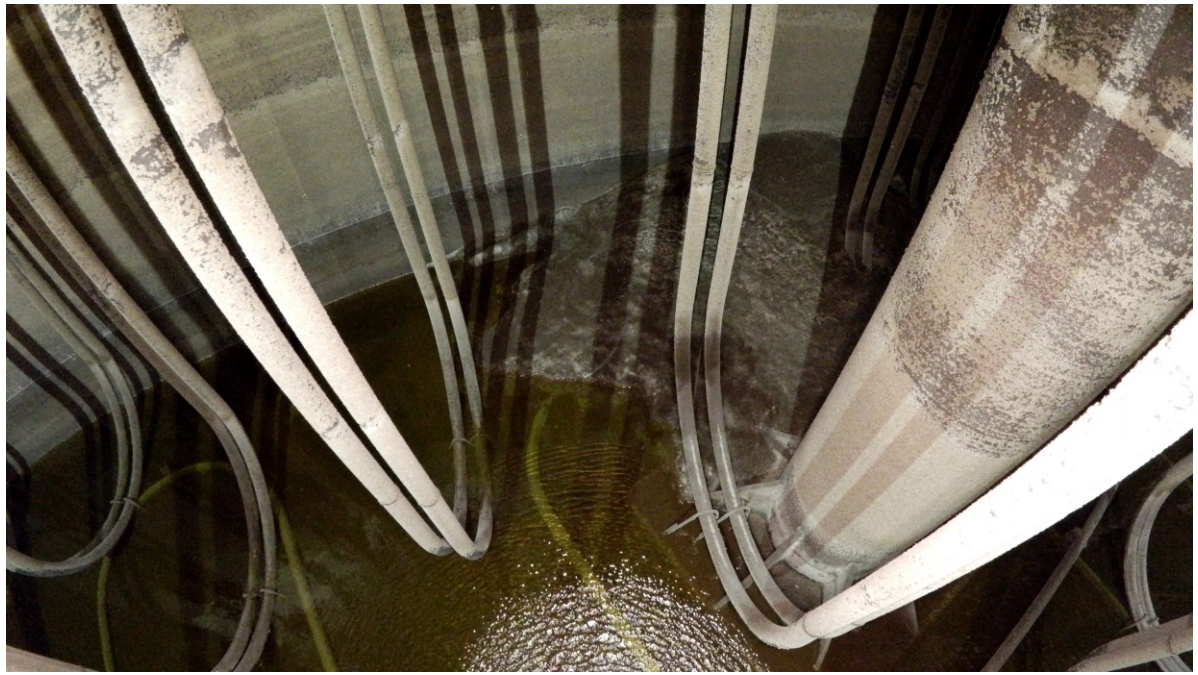
South



Current Status of Tank 8 – From Drone Inspection

South Tank Wall

South Mound



Current Status of Tank 8 – From Drone Inspection

Southwest

Transfer Pump

Current Status of Tank 8 – From Drone Inspection

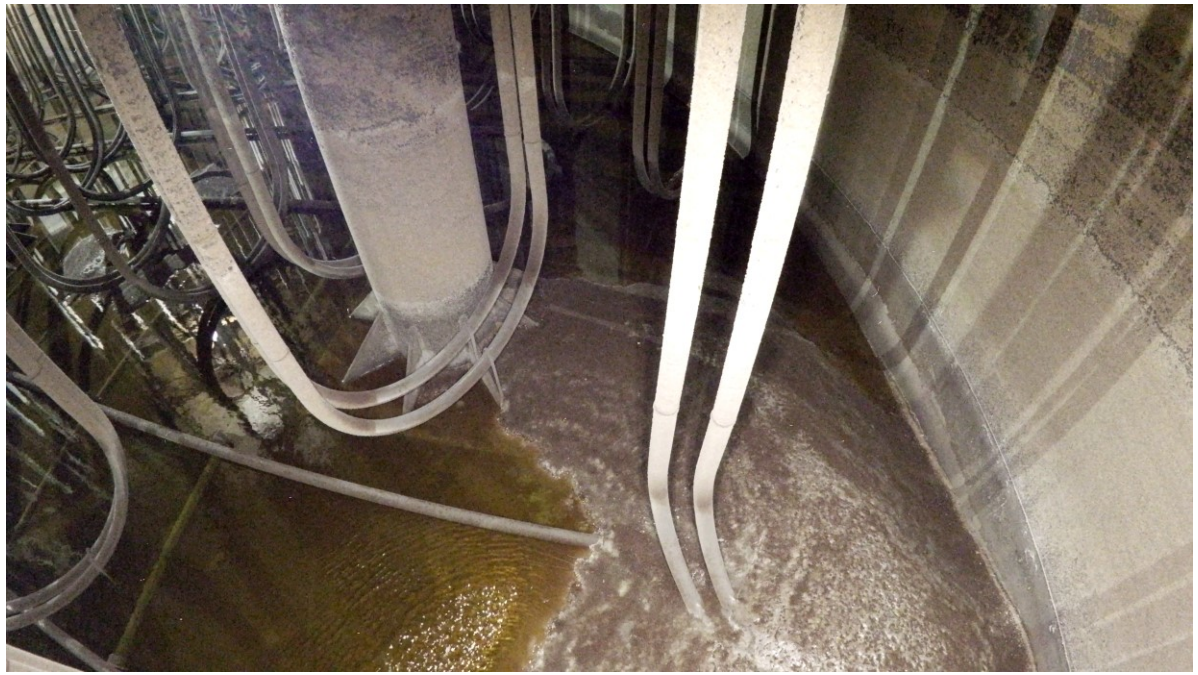
Accumulation Below Riser 5

West

Current Status of Tank 8 – From Drone Inspection

West Mound

West Mound



Current Status of Tank 8 – From Drone Inspection

West Mound

West Mound

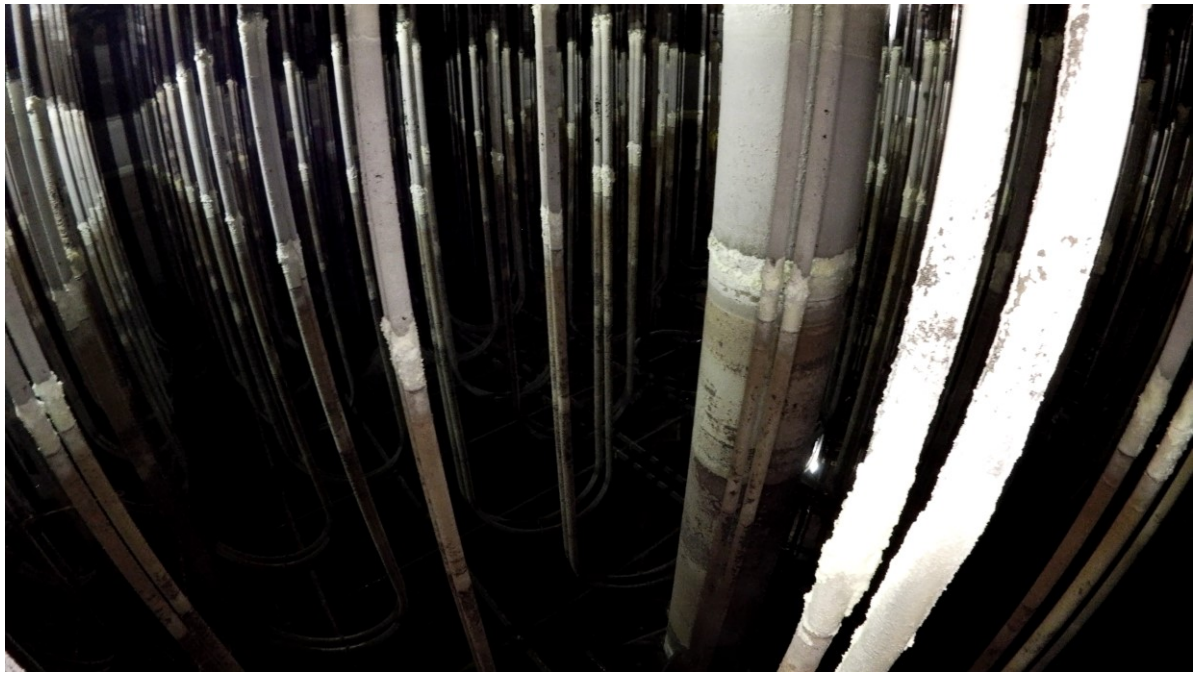
Current Status of Tank 8 – From Drone Inspection

Northwest

Center

Current Status of Tank 8 – From Drone Inspection

Coils



Coils

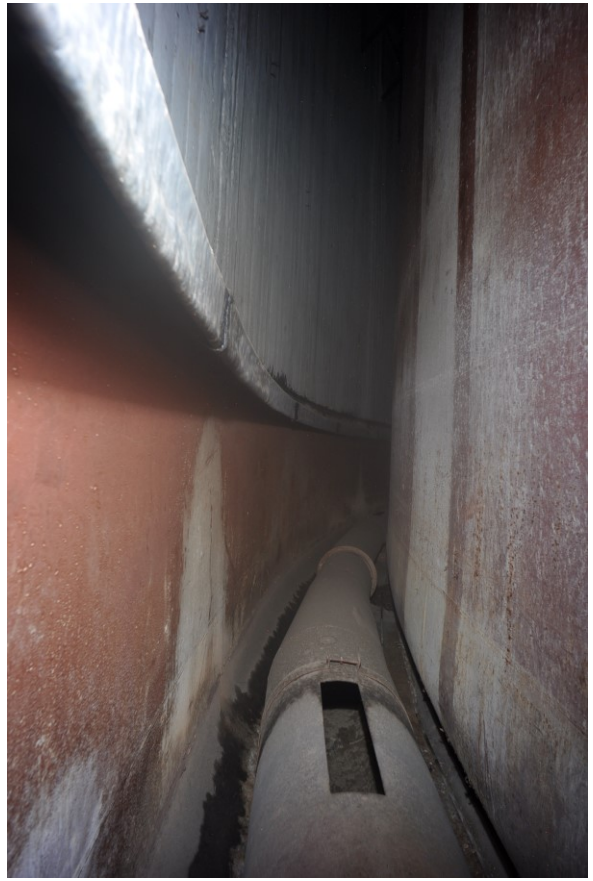
Tank 8 Annulus Condition

- **Through November of 2023**
  - *No leak sites have been documented and no waste is visible on the annulus floor*
  - *Four annulus risers, North, South, East, and West, are available for inspection and provide a 25% inspection capability*

[SRMC-STI-2024-00076]

Tank 8 Annulus Condition

South Looking West



South Looking East

West Looking North

West Looking South

Tank 8 Annulus Condition

East Looking South

East Looking North

North Looking West

North Looking East

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