



Savannah River
Remediation

We do the right thing.



Tanks 18 and 19 Mechanical Cleaning

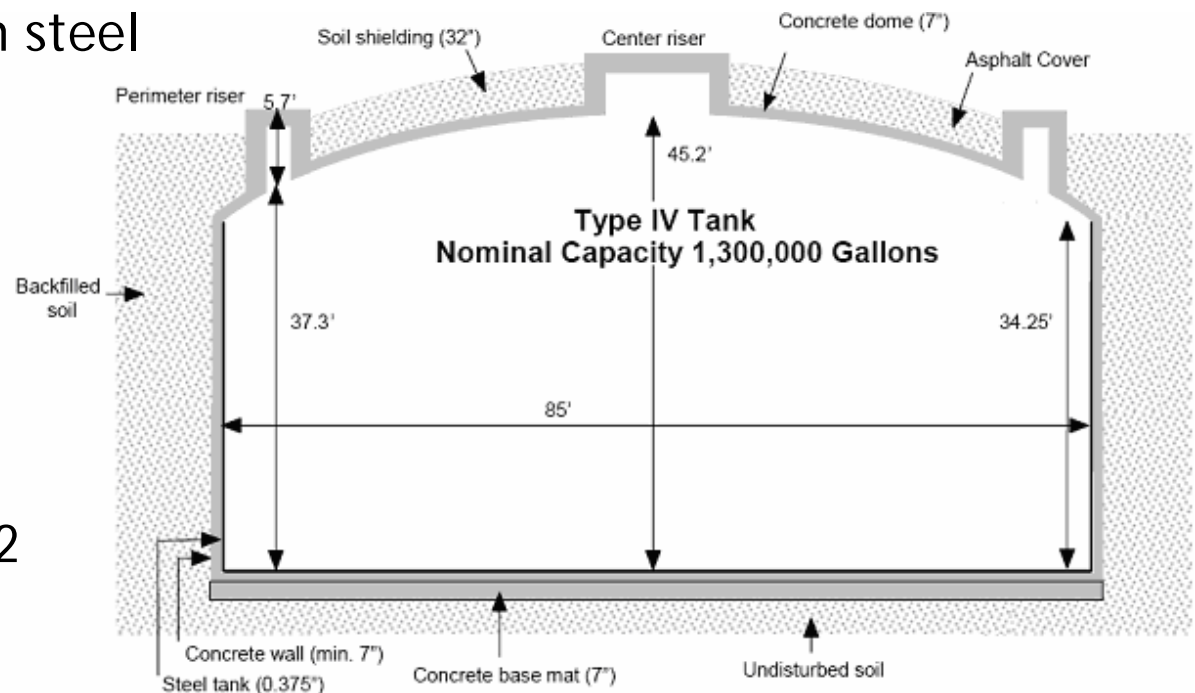
Date: April 16, 2010

Presenter:
Bill Ferguson, SRR

- Construction of Type 4 Tanks
- History of Tank 18 and Tank 19
- Evolution of cleaning
- Characterization of the waste
- Sampling

Type 4 Tanks

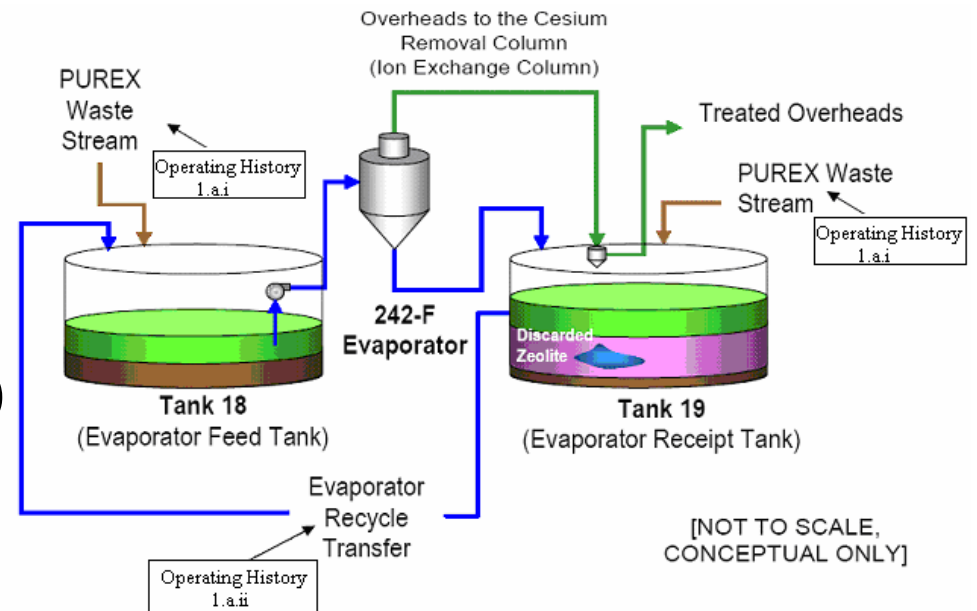
- Operating volume: 1.3 Million Gallons
- Single-Shell Carbon steel Lined Tanks
- Dimensions:
 - Diameter- 85 ft
 - Height-45 ft
- No secondary Containment
- Domed roof with 32 inches of soil



- 1958-1961 received Low Heat Waste (LHW)
- 4 Types of Waste Received
 - 1. 1960-1977: F-Canyon PUREX Process(33,600 kgals)
 - 2. 1960-1985:242-F Evaporator Recycle(24,000 kgals)
 - 3. Sludge Removal from Tank 17, Tank 18, and Tank 19(560 kgals)
 - 4. Tank 19 Heel Removal with Zeolie(2.5 kgals)



- 1961: Placed in service and received Low Heat Waste from Tank 17
- 3 Types of Waste Received
 - 1. 1961-1972: F-Canyon PUREX Process(2,400 kgals)
 - 2. 1962-1976: 242-F Evaporator concentrated salt cake(8,700 kgals)
 - 3. 1964-1984: Zeolite Resin from Ion-Exchange Column(13 kgals)



- Bulk waste July 1980- August 1981
 - 2 agitation pumps and transfer jet 1 million to 33,000 gals.
- Heel removal September 2000- August 2001
 - 3 submersible centrifugal transfer pump to Tk 18
 - Decanted liquid from Tk 18 to Tk 19
 - Spray washing tool in center riser
- After waste removal approximately 15,100 gallons of wet solids are left in the tank.
- Mechanical Waste Removal System (Sand Mantis) started residual heel removal

- 2001: 47,000 gallons of sludge
- Jan.- July 2003: heel volume reduced to approximately 4,300 gallons
- January 2009: Mechanical Waste Removal System (Sand Mantis) started residual heel removal

- Tank 19 is comprised of, by weight:
 - • ~66% zeolite
 - • ~26% aluminum hydroxides,
• ~ 8% iron oxides • ~ 96,000 curies radioactive material

- Tank 18 is comprised of, by weight:
 - • ~46% zeolite
 - • ~43% iron oxides
 - • ~11% aluminum hydroxides,
• ~ 27,600 curies radioactive material



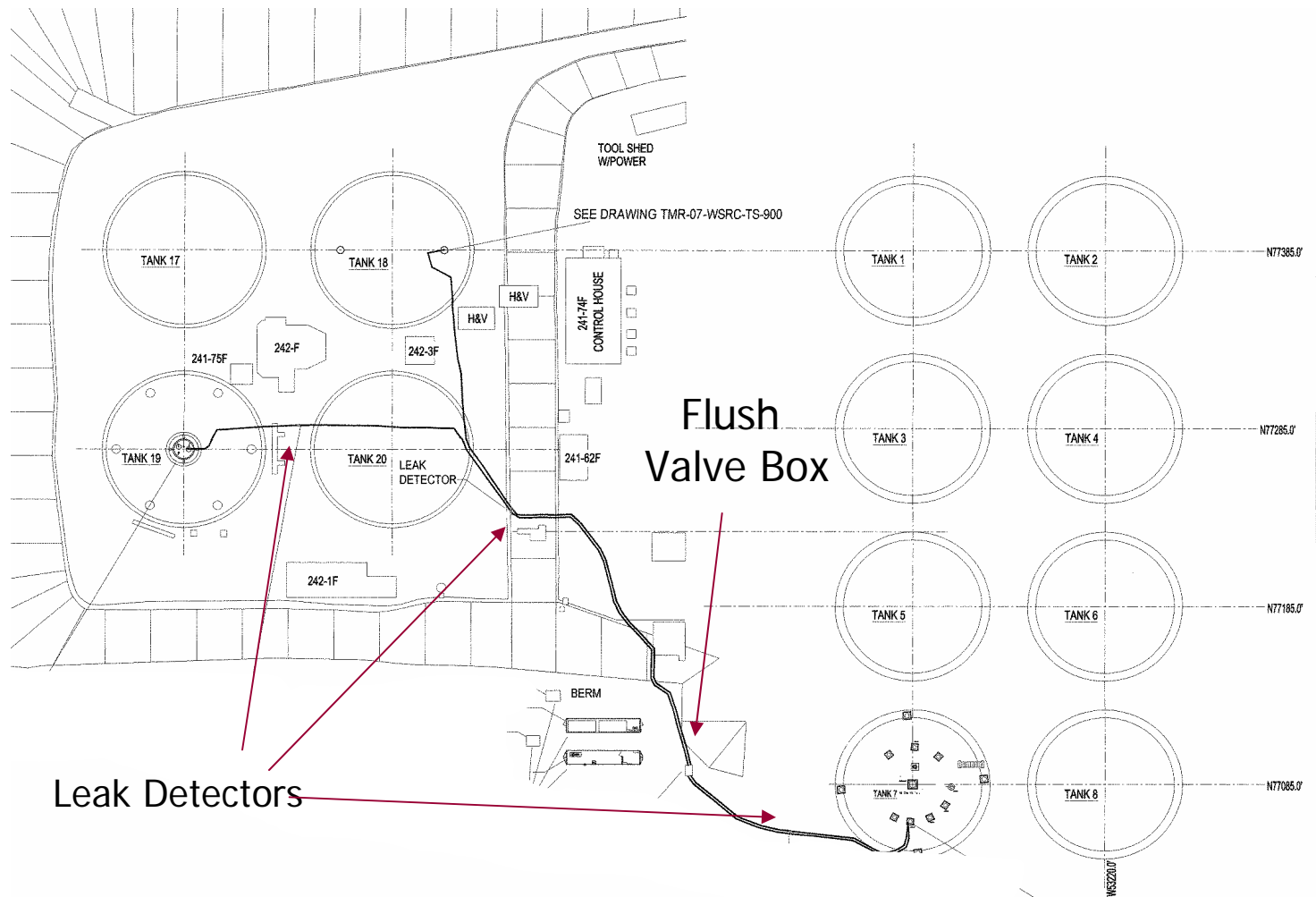


Mechanical Waste Removal System (Sand Mantis)

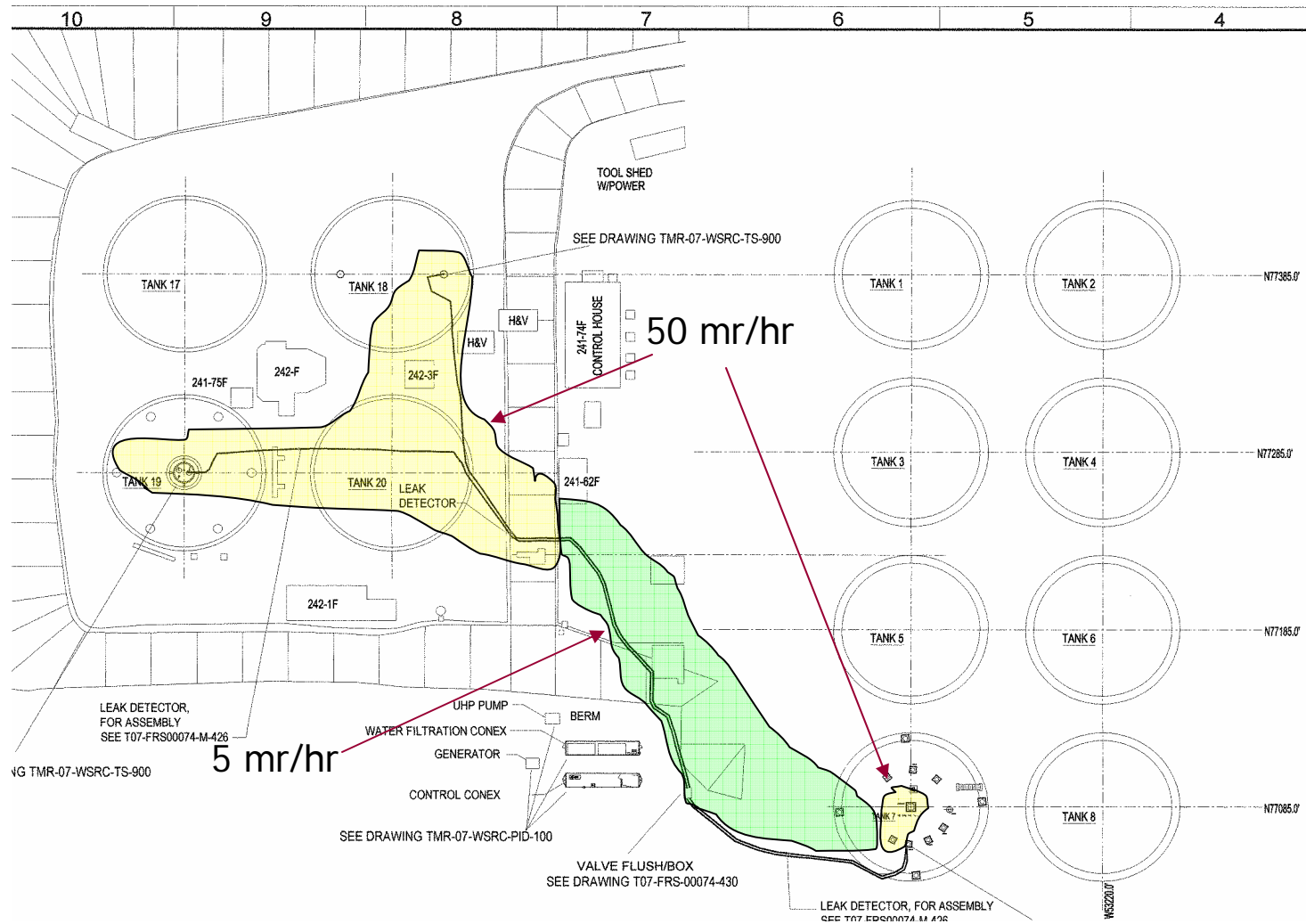


- Remote controlled in-tank Sand Mantis
 - High Pressure Hydro Lance (4,500 psi)
 - Eductor(17,500 psi)
- Umbilical hose
 - Hydraulic supply lines
 - High-pressure water hoses
 - In-tank waste retrieval hose
- Diesel Generator
- Above ground hose-in-hose transfer lines to Tank 7
- Waste Mixing Chamber
- Operating controls











- Mapping
 - Provides final estimates of waste thicknesses
- Sampling
- Characterization of Waste
- Removal of Above Grade line

