Savannah River Remediation

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EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

# Supplemental Salt Processing Initiative

Presentation to:

Citizens Advisory Board, Waste Management Committee

10/19/2010

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Chief Technology Officer
Savannah River Remediation

SRR-MS-2010-00202

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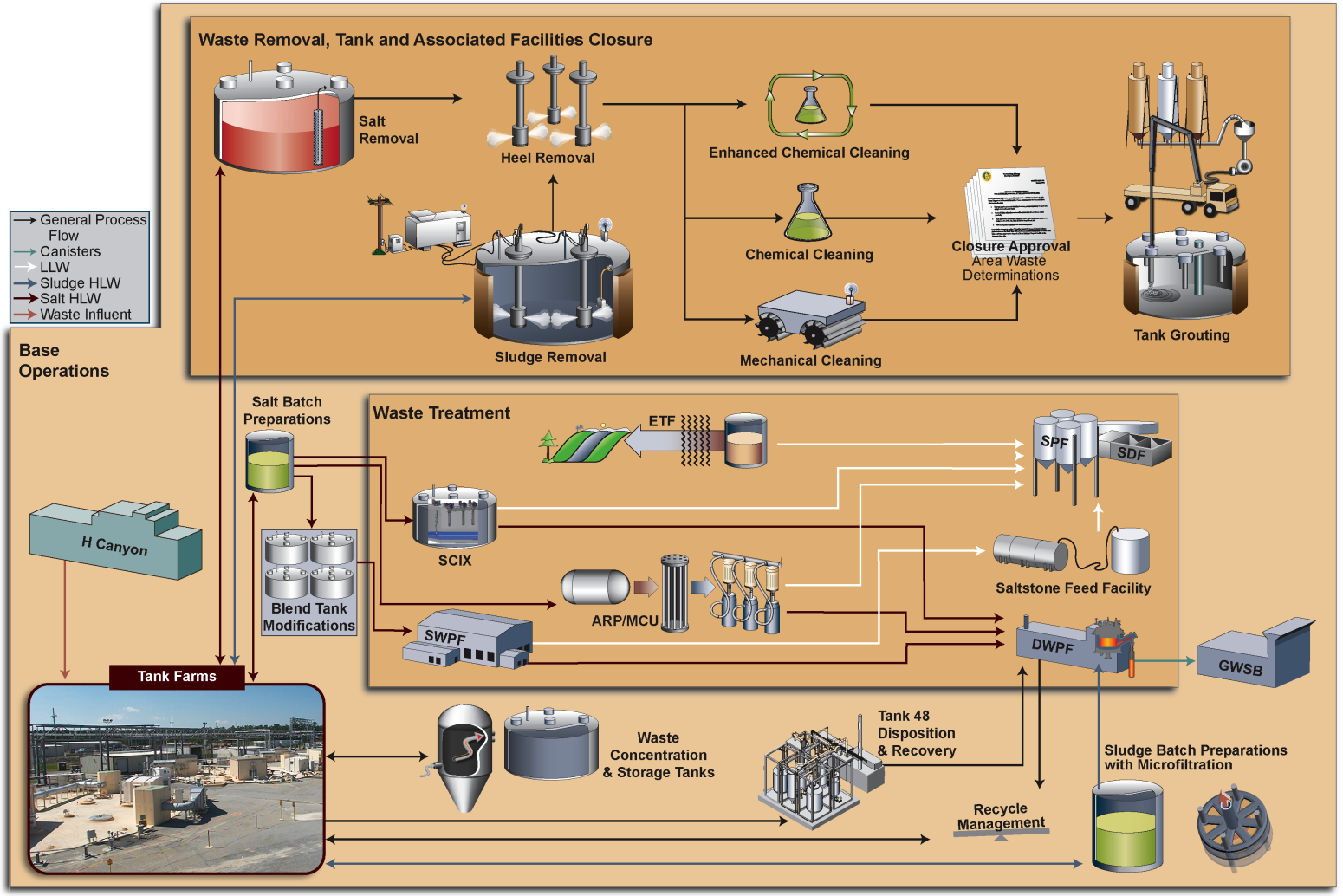
# SRS Liquid Waste System

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# Liquid Waste System

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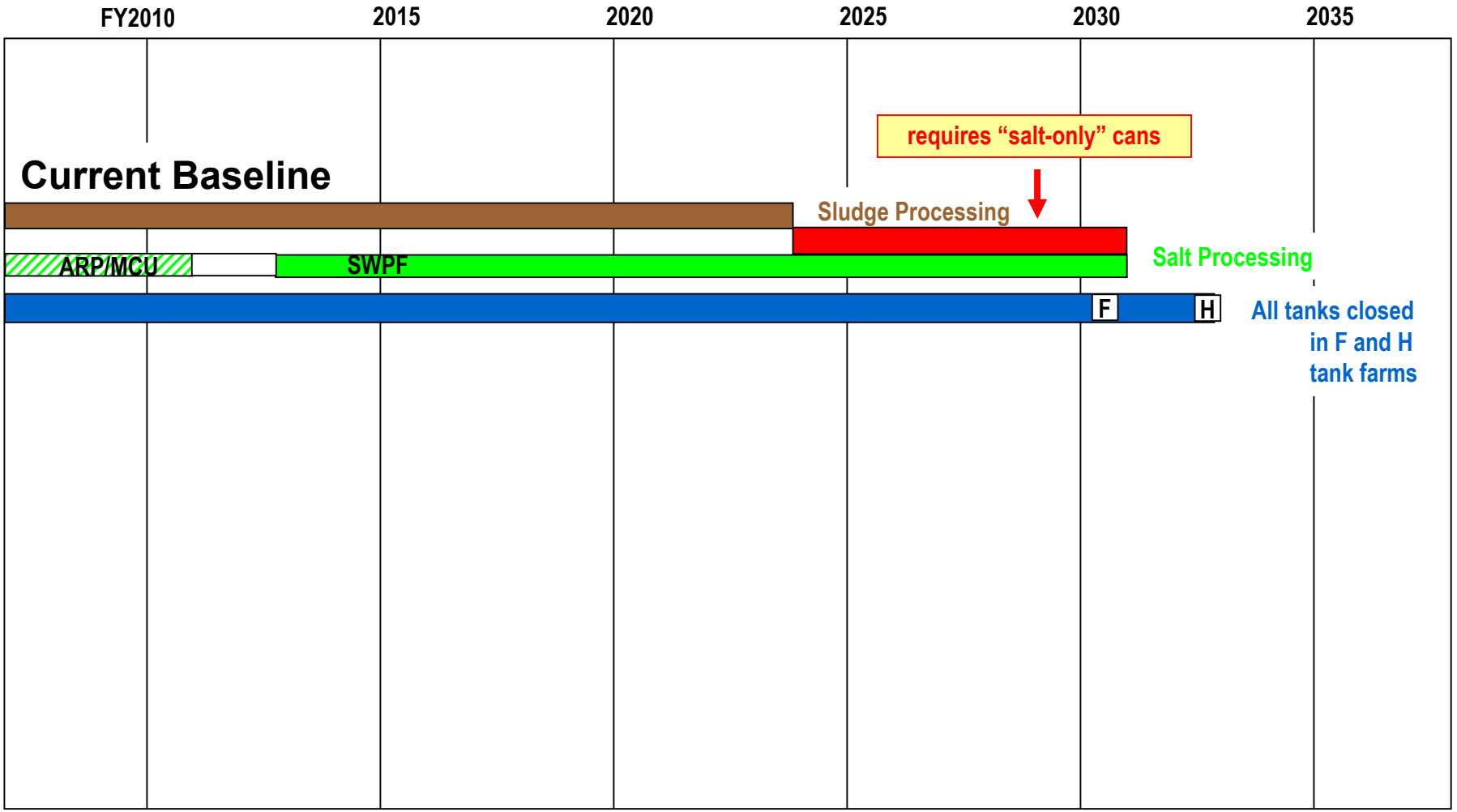
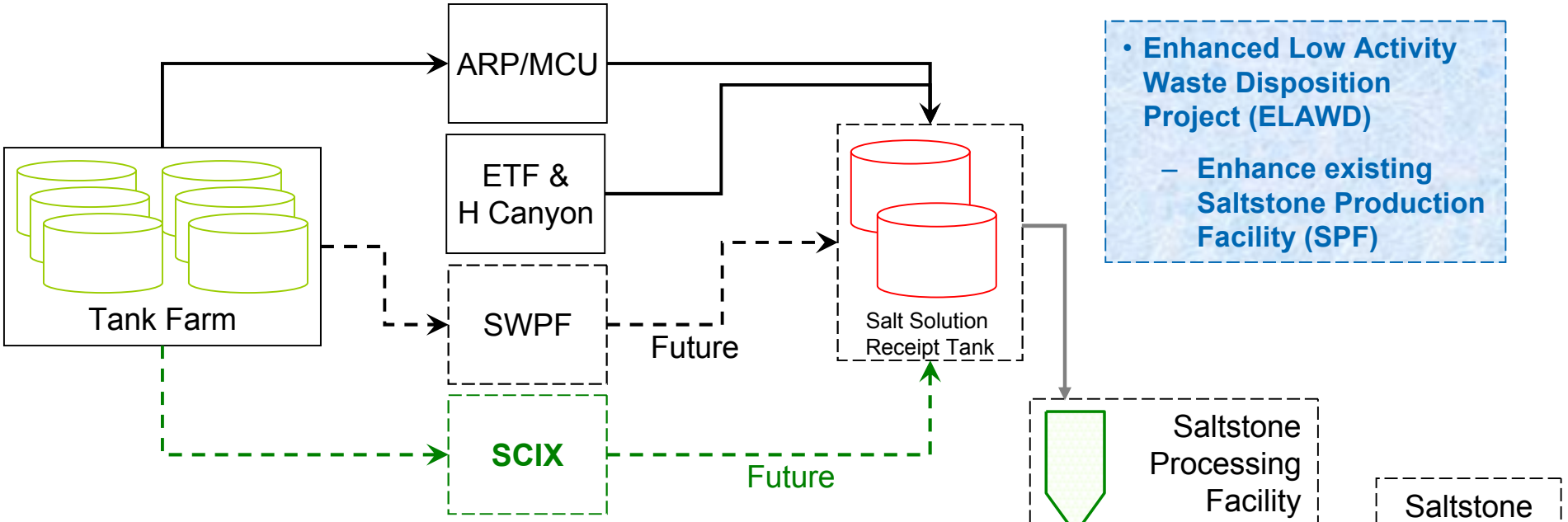
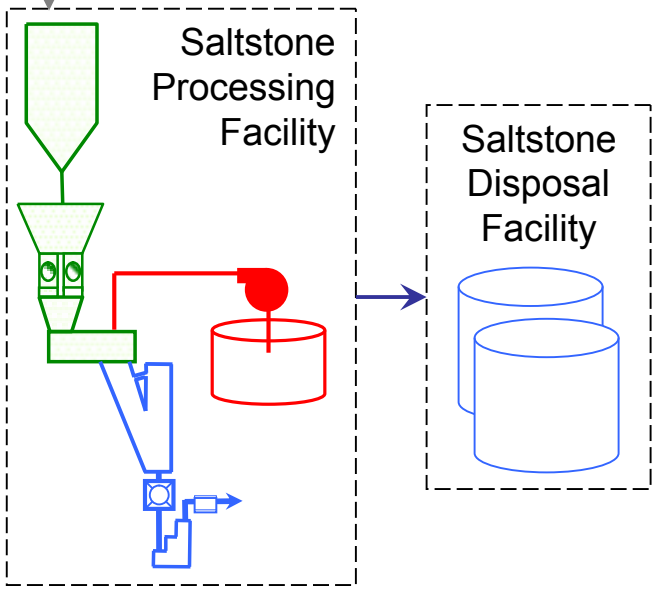
# The Need for Supplemental Salt Processing



# Supplemental Salt Processing



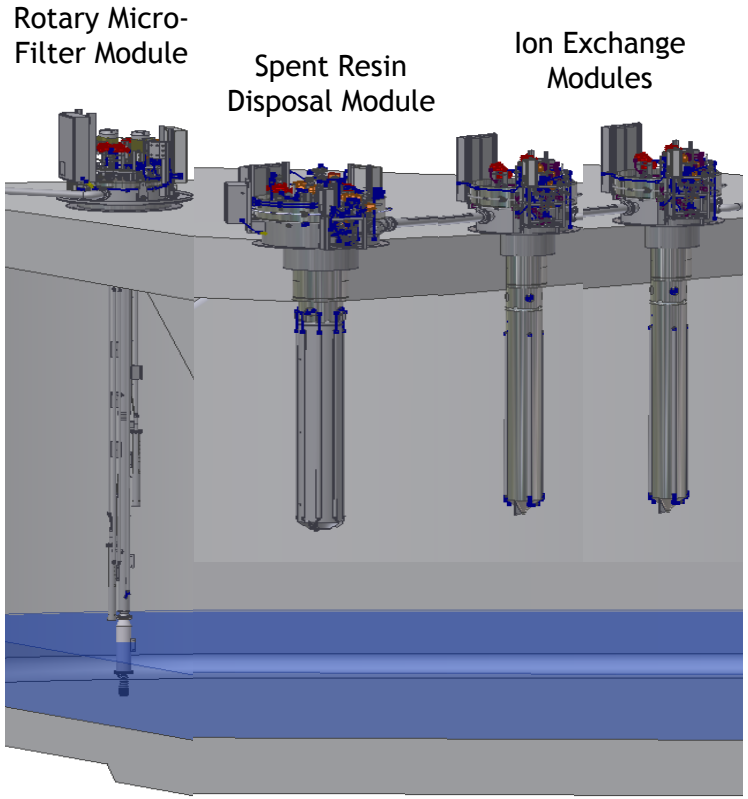

- **Enhanced Low Activity Waste Disposition Project (ELAWD)**
  - **Enhance existing Saltstone Production Facility (SPF)**




- **Supplemental Salt Processing Strategy**
  - **Extended salt processing through ARP/MCU**
  - **SWPF (6M gals/yr) salt processing baseline results in program completion by 2030**
  - **Deploy SCIX (2.5 M gals/yr) supplementing SWPF resulting in acceleration of 6 years**

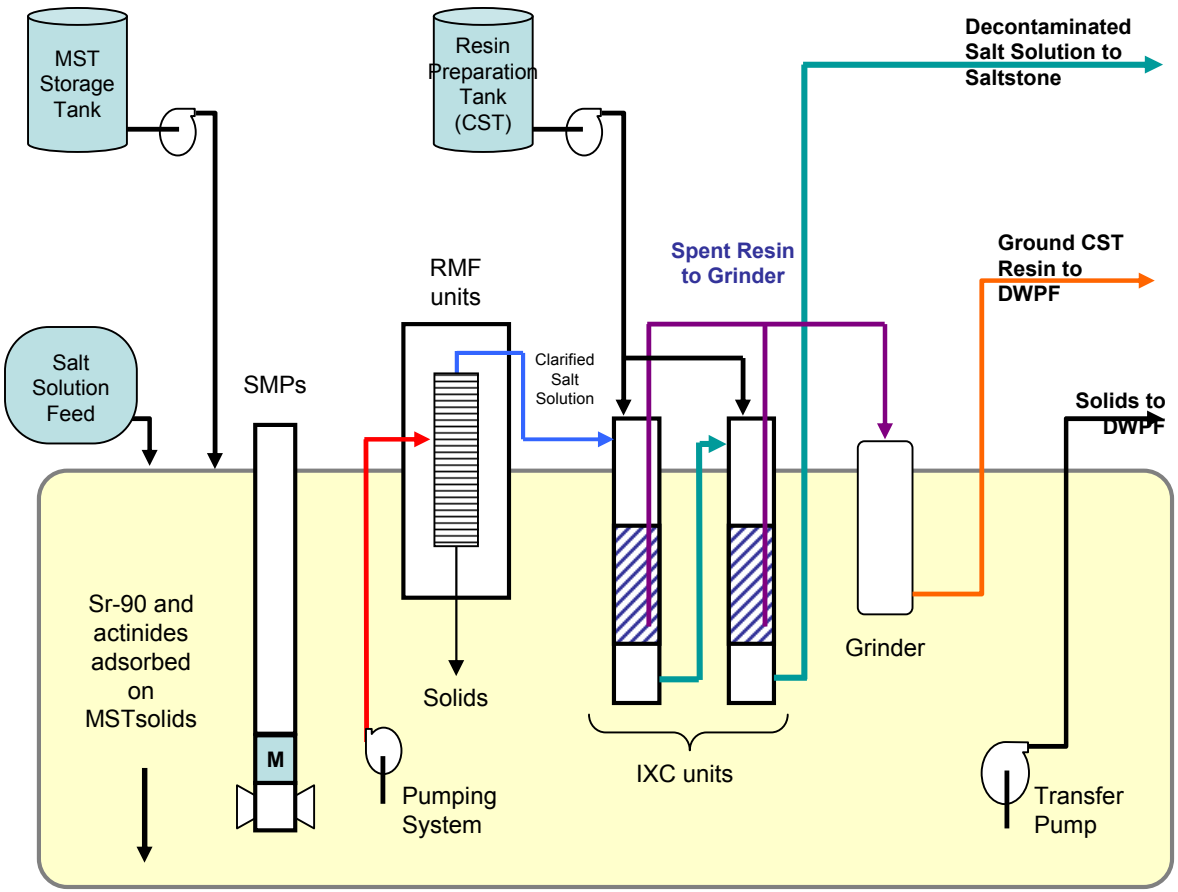
# Small Column Ion Exchange (SCIX)

- Deploy At-tank treatment process
  - Rotary Microfilter
  - Small Column Ion Exchange
  - Spent Resin Disposal
- Provide additional salt processing capability
- Operational Expectations
  - Throughput: 2.5 Mgal/yr
  - Equivalent performance specification as SWPF
  - Output to SPF



# SCIX Process

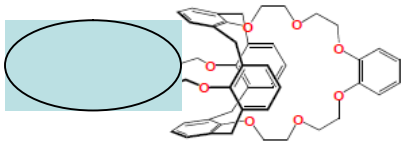
1. Add MST to waste tank
2. Mix tank contents
3. Filter sludge and MST/actinides from salt solution
4. Pass clarified salt solution through ion exchange columns
5. Transfer decontaminated salt solution to Saltstone Processing Facility
6. Transfer sludge and MST/actinide tank heel to DWPF (when necessary)
7. Transfer spent ion exchange media to DWPF (when necessary)



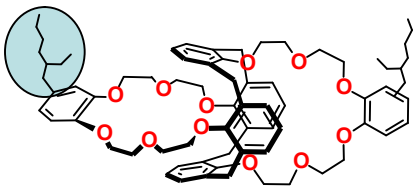
# SRS Salt Processing Initiatives ARP/MCU

- Extend operations
- Increased reliability to increase throughput to 2M gal/yr
- Enhanced Decontamination Performance

- Next Generation Extractant
  - Higher solubility isomer of BOBCalix
  - Enhanced stripping methodology
  - Enhanced decontamination
- Proven technology when introduced into SWPF
- Fewer radionuclides sent to Saltstone Disposal Facility



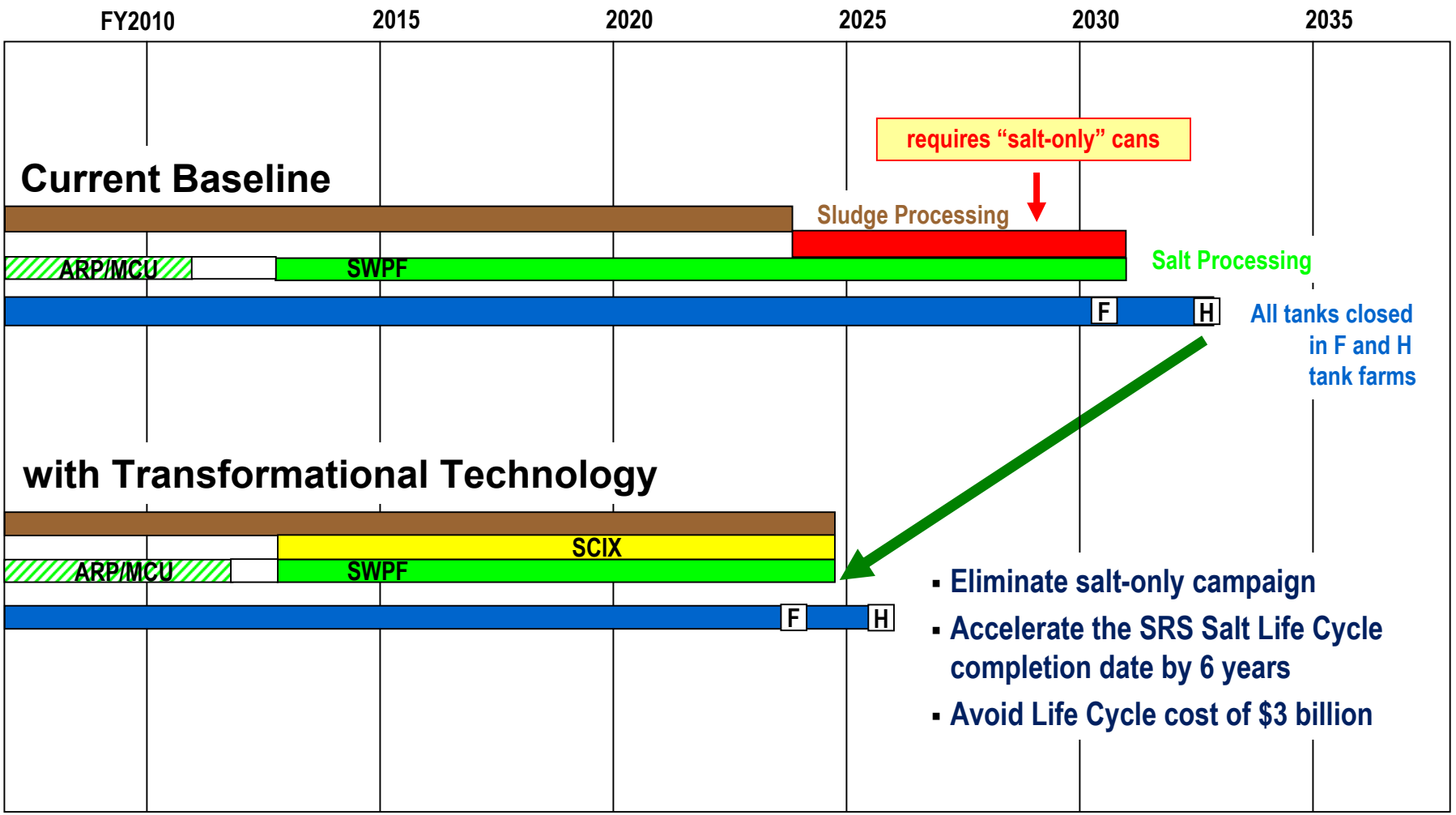
**MAXCalix**



**e.g. BEHBCalix**

- **Substitution of groups remote from $Cs^+$ ion binding site**
- **Enhanced scrub/strip methodology**
- **Combination of increased solubility and enhanced stripping methodology yields much higher DF**

# Results


FY2010
2015
2020
2025
2030
2035
requires "salt-only" cans
Current Baseline
Sludge Processing
Salt Processing
ARP/MCU
SWPF
F
H
All tanks closed in F and H tank farms
with Transformational Technology
SCIX
ARP/MCU
SWPF
F
H
▪ Eliminate salt-only campaign
▪ Accelerate the SRS Salt Life Cycle completion date by 6 years
▪ Avoid Life Cycle cost of $3 billion

- QUESTIONS