



# Update on H Area Operations



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*Savannah River Site Citizens Advisory Board  
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## To satisfy Nuclear Materials Committee Work Plan by:

- **Providing an update on H Area Operations**
  - Conduct of Operations improvements
  - H Canyon – Legacy Transuranic (TRU)
  - Plutonium (Pu) processing for the Mixed Oxide Fuel Fabrication Facility (MFFF)
  - Spent Nuclear Fuel (SNF) Disposition via H Canyon



# Acronyms

**Al –clad - Aluminum clad**

**AROD - Amended Record of Decision**

**ARRA - American Recovery and Reinvestment Act**

**DSA - Documented Safety Analysis**

**HEU - Highly Enriched Uranium**

**HFIR - High Flux Isotope Reactor**

**MFFF - Mixed Oxide Fuel Fabrication Facility**

**MOX - Mixed Oxide**

**MTR – Material Test Reactor**

**NNSA - National Nuclear Security Administration**

**Pu – Plutonium**

**SA - Supplement Analysis**

**SNF - Spent Nuclear Fuel**

**SRE - Sodium Reactor Experiment**

**SRNS - Savannah River Nuclear Solutions**

**TRU - Transuranic Waste**

**TSR - Technical Safety Requirements**

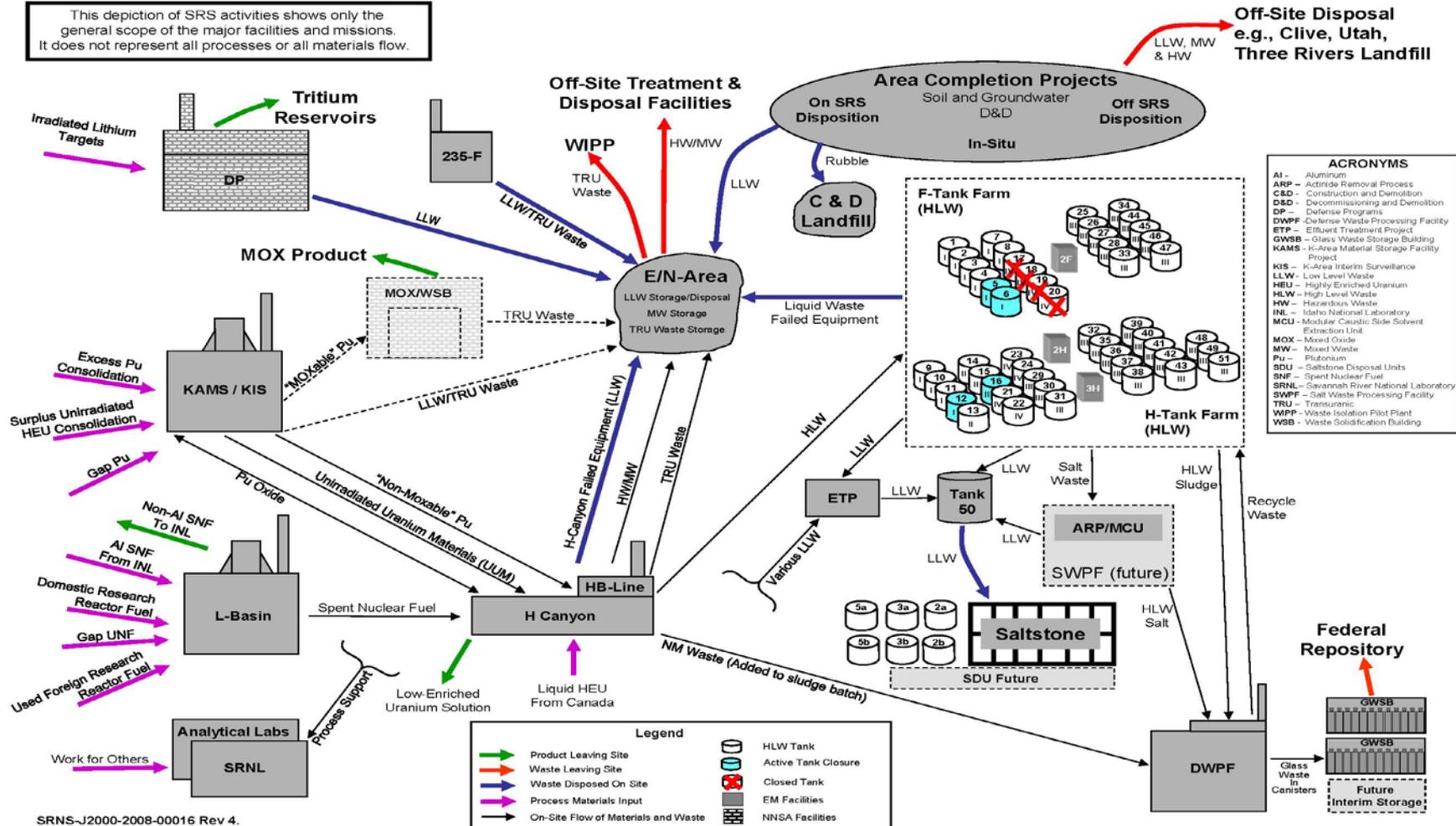
**U – Uranium**

**WIPP - Waste Isolation Pilot Plant**



# Savannah River Site Waste and Material Flow Path

This depiction of SRS activities shows only the general scope of the major facilities and missions. It does not represent all processes or all materials flow.



# Conduct of Operations Improvement

- On 4/18/13 SR issued a letter to Savannah River Nuclear Solutions (SRNS) stating its concern with the status of conduct of operations in its facilities.
- No eminent safety issues identified, concern due to upward trend in conduct of operations incidents.
- SRNS submitted a Corrective Action Plan to SR on 5/20/13 with a revision on 6/14/13.
- Over the past several of months, the facilities implemented numerous corrective actions to improve its disciplined operations.
- SR has seen a improvement in the conduct of operations in the facilities and will continue to evaluate SRNS's continuing progress.



# H Canyon – Legacy TRU

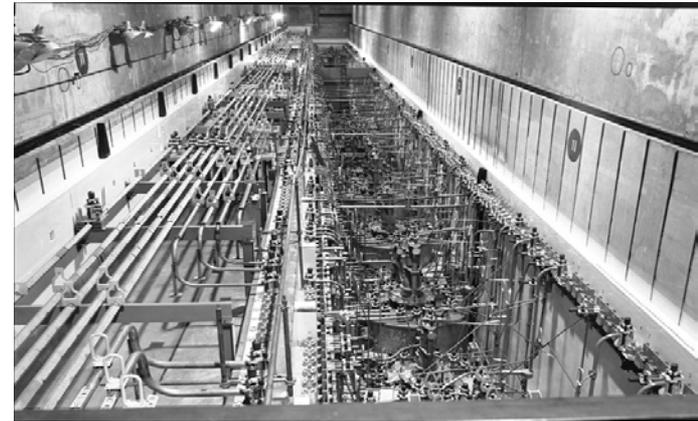
- Remediating legacy TRU waste for past 7 years in the H Warm Canyon...accelerated over the past few years with American Recovery and Reinvestment Act (ARRA) funding
- Rendering to achieve Waste Isolation Pilot Plant (WIPP) certification
- H Canyon processing some of the most radiologically challenging materials (Large Steel Boxes, Concrete Vaults, etc.)
- Expect to complete remediation of legacy waste in Fall 2013



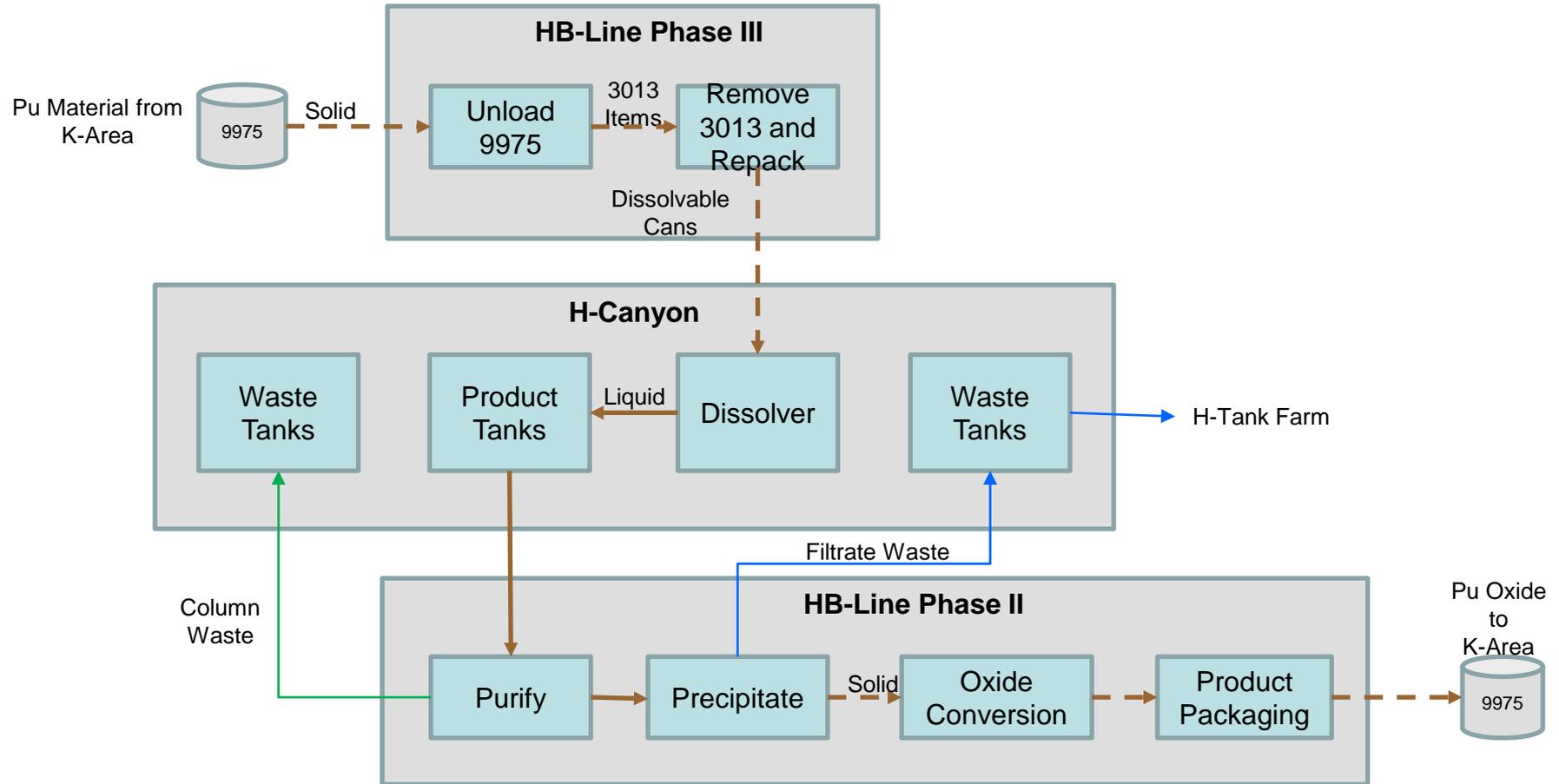
# Plutonium processing for Mixed Oxide Fabrication Facility

In November 2011, National Nuclear Security Administration (NNSA) assigned H Area a mission to produce Pu oxide feed for MFFF from non-pit material stored in K Area:

- Prepare H-Canyon/HB-Line and support facilities for startup to produce plutonium oxide to meet MFFF feed specs
- Reconfigure process operations to allow for full ramp up to 1 MT oxide production rate
- Develop/ Implement all required safety basis documentation and required modifications, including implementation of DOE Std 3009 complaint DSA/TSR for HB-Line



# Pu Oxide Production Flowsheet



# Plutonium processing for Mixed Oxide Fabrication Facility

## Progress/Current Status:

- Completed multiple safety basis changes, procedure changes, training, etc.
- H Canyon began dissolution of non-pit Pu in January 2013
- HB-Line DSA/TSR changes for oxide production have been approved by SRNS and SR.
- SRNS completed its HB-Line Readiness Assessment the week of August 5<sup>th</sup>
- SR began its HB-Line Readiness Assessment August 12<sup>th</sup> and plans to complete it this week
- Assuming a favorable review, facility will begin implementation of the DSA/TSR requirements and begin oxide production in early October



# H Canyon – “Vulnerable” SNF Disposition

- Continuing the disposition of Sodium Reactor Experiment (SRE) SNF Fuel
- Although no current issues with SRE in L Basin storage, it is considered more “vulnerable” to long term wet storage
- SRE and other Hi Al/Low U SNF campaigned as a blend to mitigate viscosity issues of thorium-based fuel (SRE) in caustic solution
- Disposition of resulting solution directly to sludge batch tank
- Expect to complete campaign in Spring 2014



# H Canyon – Spent Fuel Disposition

- DOE approved an Supplement Analysis (SA) and Amended Record of Decision (AROD) to allow the processing of a limited amount of enriched uranium Aluminum clad (Al-clad) SNF.
  - 1000 MTR Bundles
  - 200 HFIR Cores
- Upon completion of the SRE campaign in Spring 2014, SRS will proceed directly with processing al-clad enriched uranium SNF.
- SNF will be dissolved, uranium recovered, purified, down blended, and shipped for use at Tennessee Valley Authority (TVA).
- Processing will only generate approximately 35 glass canisters.



# Summary

- H Canyon Complex remains a unique national asset for large scale nuclear materials processing
- Maintaining operator proficiency/equipment operability
- Made improvements in conduct of operations
- Continuing Legacy TRU remediation with planned completion in Fall 2013 (Allows waste to leave South Carolina)
- Completed facility preparations for the startup of Pu oxide production
- In process of performing readiness reviews for Pu oxide production with plans to begin oxide production in October 2013
- Plan to complete SRE campaign in Spring 2104
- Proceed with processing Highly Enriched Uranium (HEU) Al-clad SNF immediately after completion of SRE



# H Area Complex

