



U.S. DEPARTMENT OF  
**ENERGY**

Savannah River Site

## Savannah River Site Citizens Advisory Board

# P-Area Operable Unit (PAOU) & R-Area Operable Unit (RAOU) Update

**Presentation By**

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## Purpose and Agenda

**Purpose: To fulfill the committee's work plan topic and provide a status of the P and R Area Operable Units**

- **P and R Area Operable Units Background**
- **Area Completion Objectives**
- **Scope**
- **Accomplishments**
- **Photo Gallery**
- **Lessons Learned**
- **Conclusion**





## List of Acronyms

- **D&D**            **Deactivation and Decommissioning**
- **GPP/OPS**      **General Plant Projects / Operations**
- **PAOU**           **P-Area Operable Unit**
- **PCE**            **Tetrachloroethylene**
- **RAOU**          **R-Area Operable Unit**
- **PSA**            **Potential Source Area**
- **SVE**            **Soil Vapor Extraction**
- **TCE**            **Trichloroethylene**
- **TPC**            **Total Project Cost**



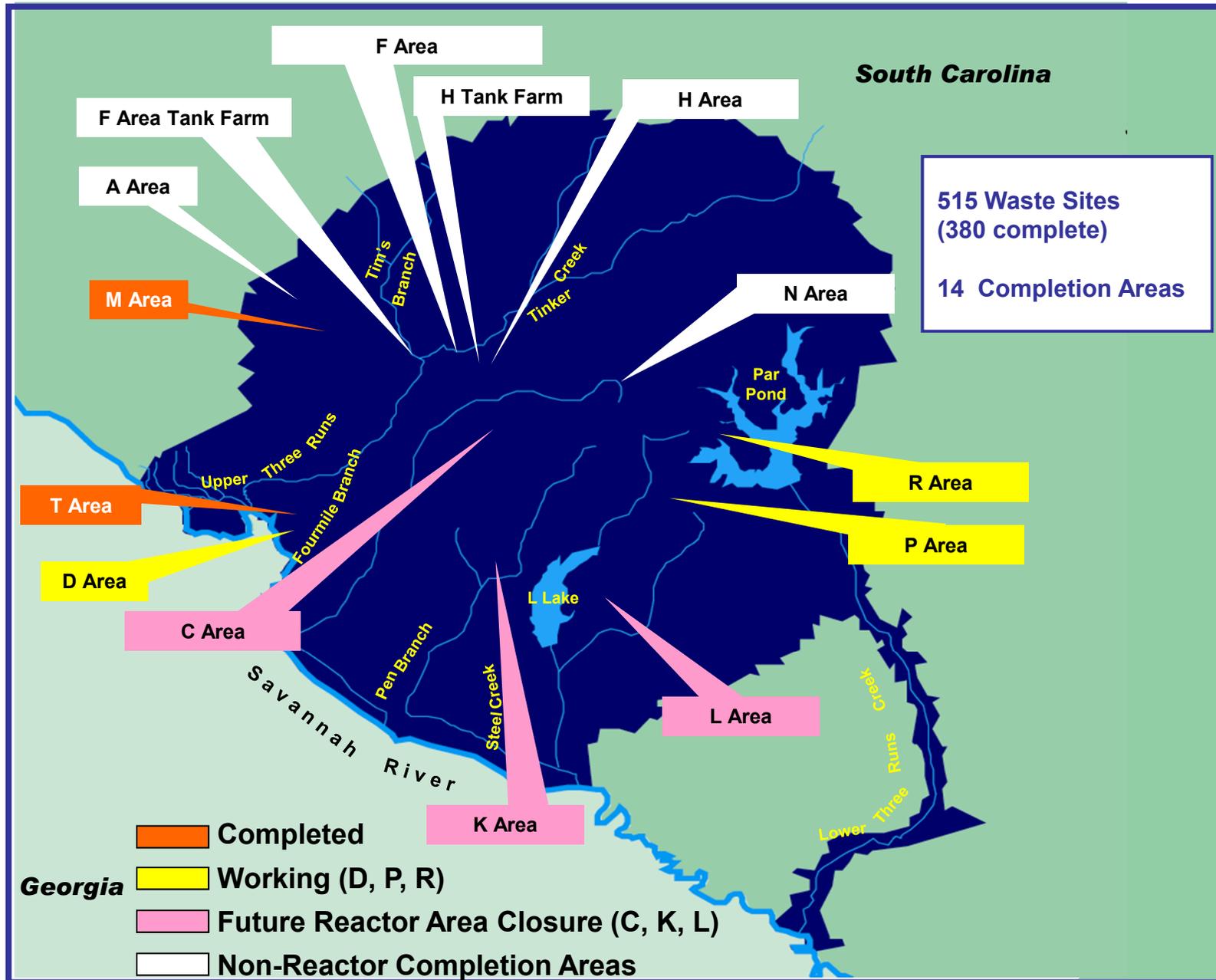


## **P and R Area Operable Unit Background**

- **P Reactor operated from 1954-1988; R Reactor operated from 1953-1964**
- **Each operable unit comprises over 100 acres and includes waste units, and at one time, multiple buildings and ancillary structures that have been decommissioned**
- **Facilities in the areas included the reactor building, maintenance buildings, administrative building, cooling water basin, pump house, and a coal fired power house**
- **Reactors were the operational centerpiece of the area and its purpose was to produce special nuclear materials for national defense**
- **Operable units are the first reactor areas to be addressed under the Area Completion Strategy**

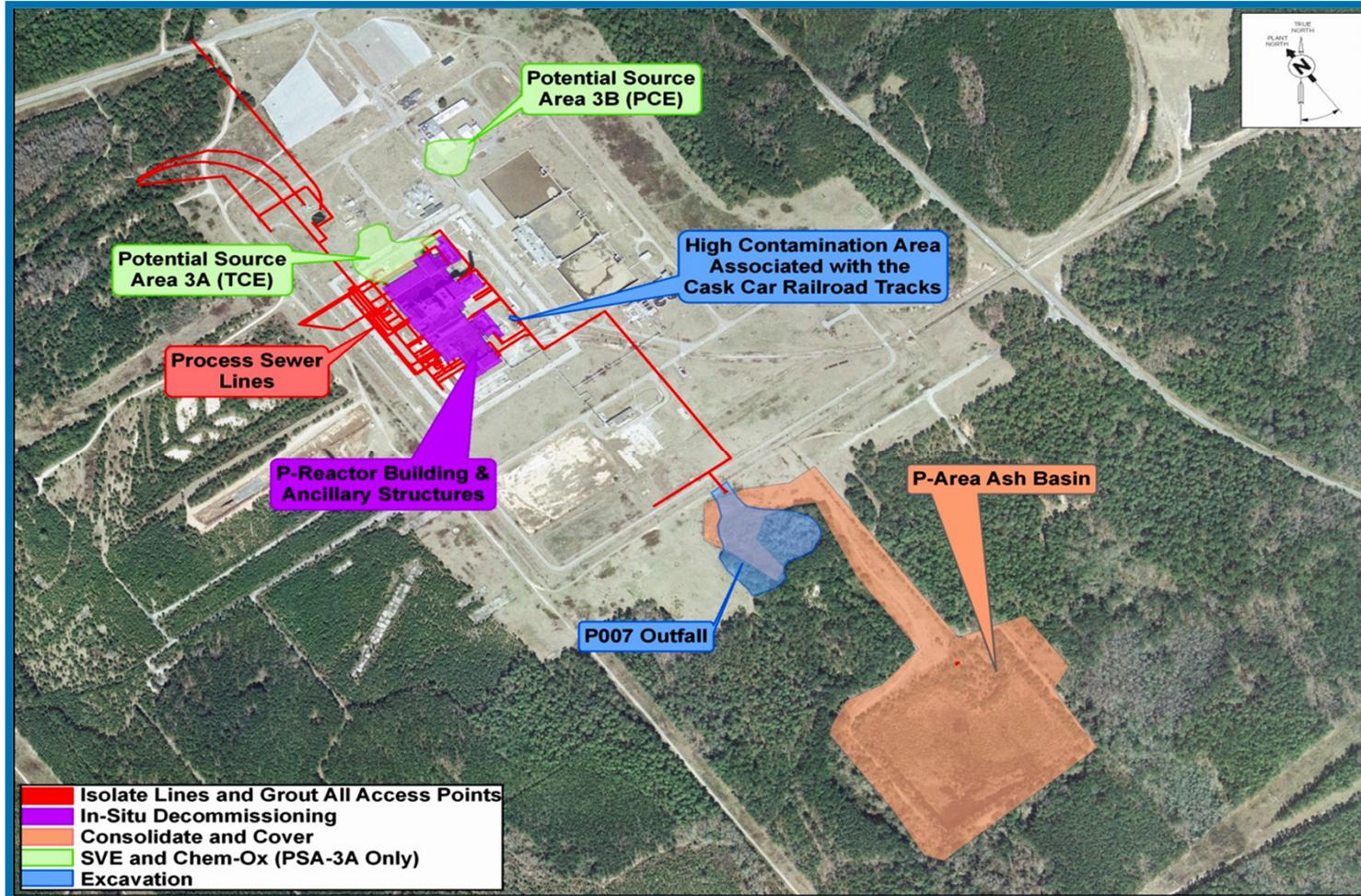


# Area Completion Approach



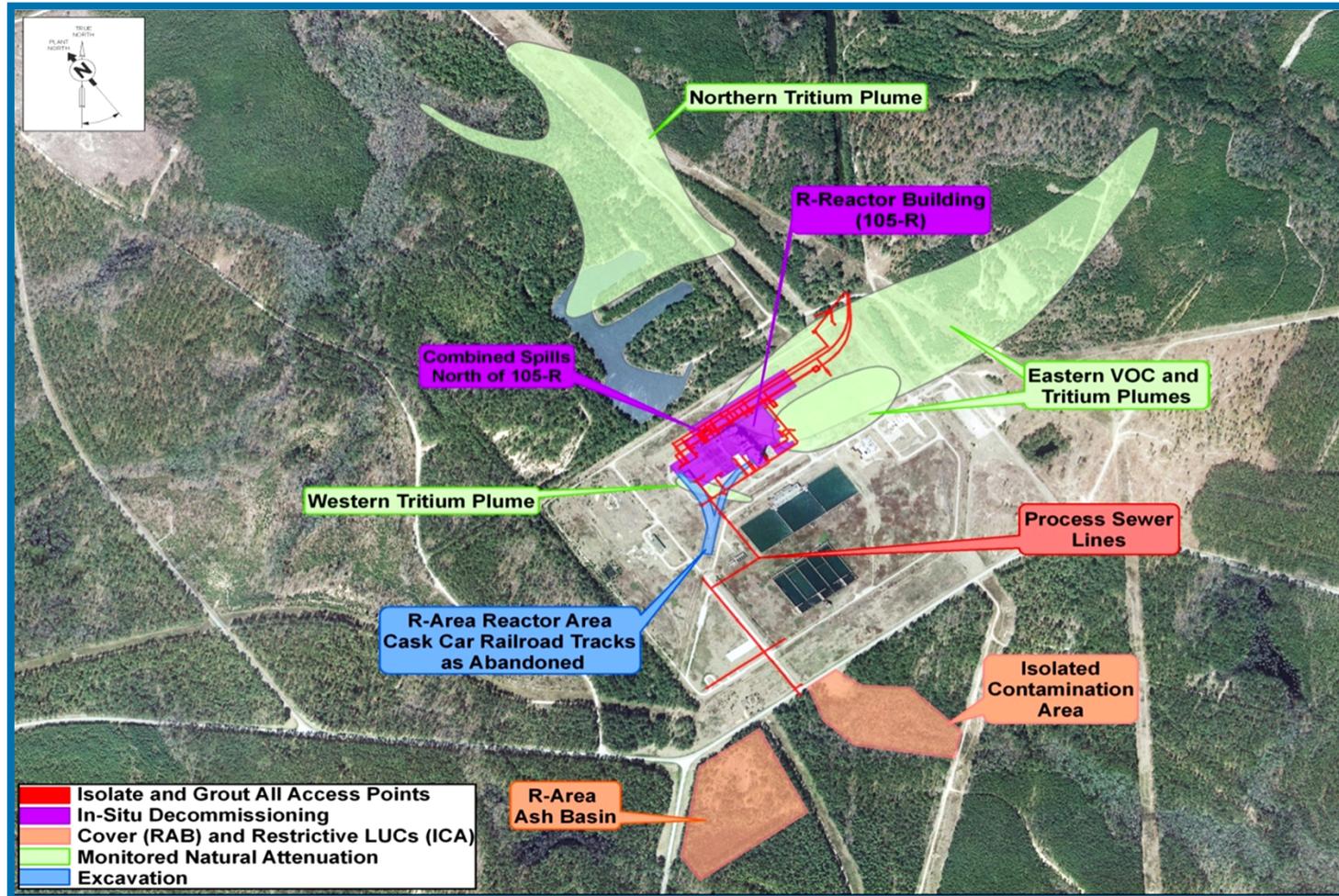


# PAOU





# RAOU





## Operable Unit Completion Objectives

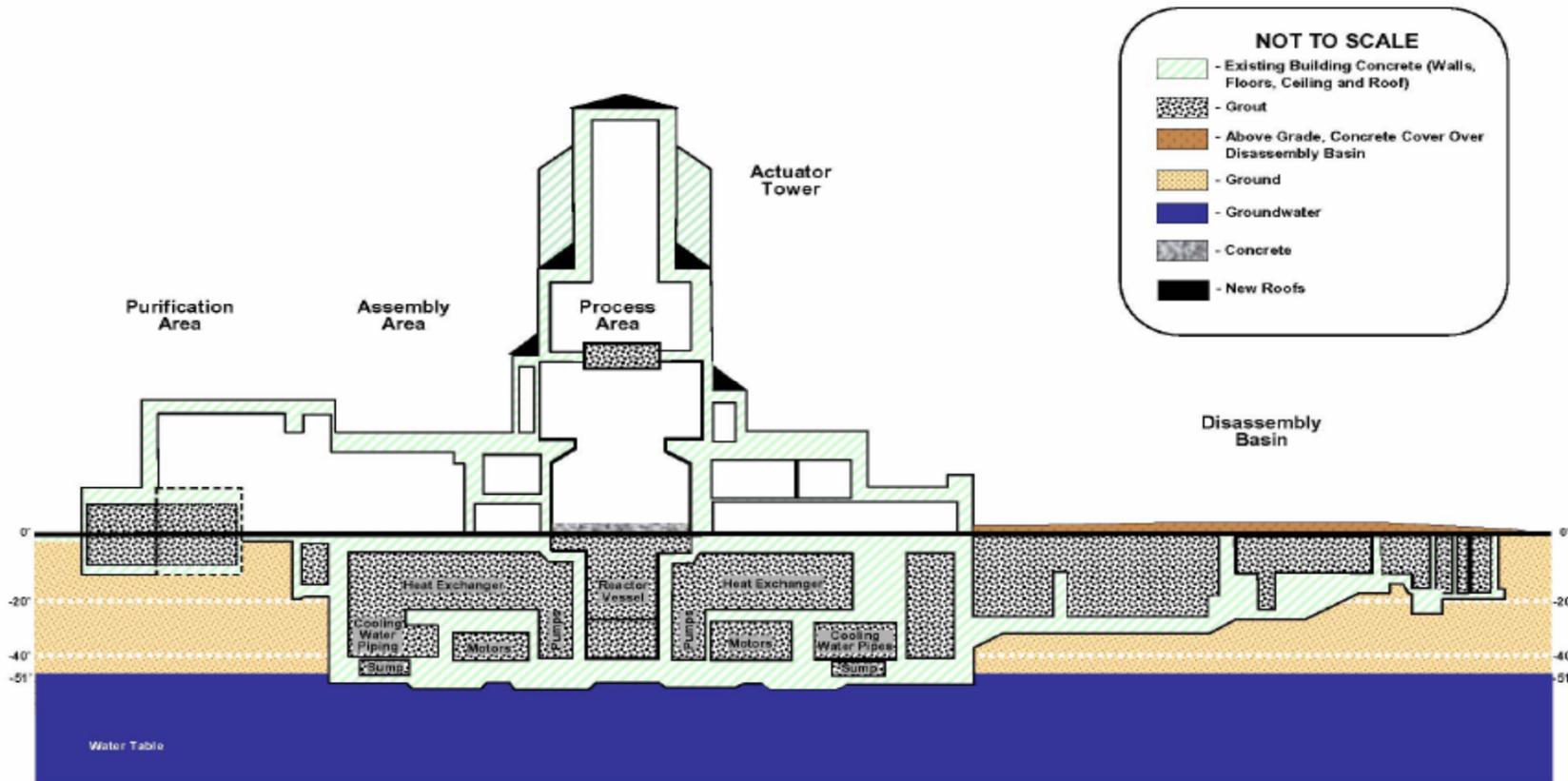
- **Remediate waste units requiring action**
- **In-Situ Decommission Reactor Building**
- **At completion, Operable Unit will be safe for industrial reuse**





# Operable Unit Scope (continued)

## Reactor In-Situ End-State Cross Section





## Operable Unit Scope

- **The projects are being safely performed as part of the Recovery Act funding. Scope includes:**
  - **D&D of each Reactor Building**
    - **The placement of approximately 120,000 cubic yards of grout within the reactor building and Disassembly Basin**
    - **The removal of the Disassembly Basin wing and concrete cap installation over that footprint**
    - **Ventilation Stack and Gantry Crane removal**
    - **Roof modifications and sealing of building**
    - **Evaporation of four million gallons of water from the P-Reactor Disassembly Basin (R Reactor previously completed)**





## Operable Unit Scope (continued)

- **PAOU**

- Remediate waste units requiring action:
  - Cask Car Railroad Tracks (radiological contamination)
  - PSA-3A and 3B waste units (solvent contamination)
  - P007 Outfall (radiological contamination)
  - Process Sewer Lines (radiological contamination)
  - Ash Basin (spent coal ash including arsenic)
- Characterize groundwater

- **RAOU**

- Remediate waste units requiring action:
  - Cask Car Railroad Tracks (radiological contamination)
  - Process Sewer Lines (radiological contamination)
  - Area North of Reactor Building
  - Ash Basin (spent coal ash including arsenic)
  - Groundwater contamination (tritium & VOC plume)
- Construct drainage improvements





# Operable Unit Current Status

- **P Reactor**

- Removed Gantry Crane
- Completed Disassembly Basin water evaporation
- Deactivation complete
- Placed over 116,000 cubic yards of grout in building
- Completed roof modifications
- Completed stack removal
- Completed sealing of building
- Completed Disassembly Basin wing demolition and cap installation
- Project is mechanically complete

- **R Reactor**

- Removed Gantry Crane
- Deactivation complete
- Placed over 124,000 cubic yards of grout in Disassembly Basin
- Completed roof modifications
- Completed stack removal
- Completed sealing of building
- Completed Disassembly Basin wing demolition and cap installation
- Project is mechanically complete





## Operable Unit Current Status (continued)

- **PAOU**

- Completed Cask Car Railroad Track remediation (excavated soil contamination)
- Completed well installation at PSA-3A/3B
- Completed Process Sewer Line remediation (grouted manholes)
- Completed P Ash Basin 30-acre vegetation removal and soil cover installation
- Batch plant demobilized
- P Groundwater characterization complete

- **RAOU**

- Completed Cask Car Railroad Track remediation (excavated soil contamination)
- Completed monitor well installation for Groundwater
- Completed Process Sewer Line remediation (grouted manholes)
- Completed drainage improvements on southern portion and initiated at northern portion
- Completed R Ash Basin soil cover installation





# Photo Gallery





# 105R Reactor Vessel





# 105R Stack Demolition

Before

After





# P Ash Basin Remediation

Before

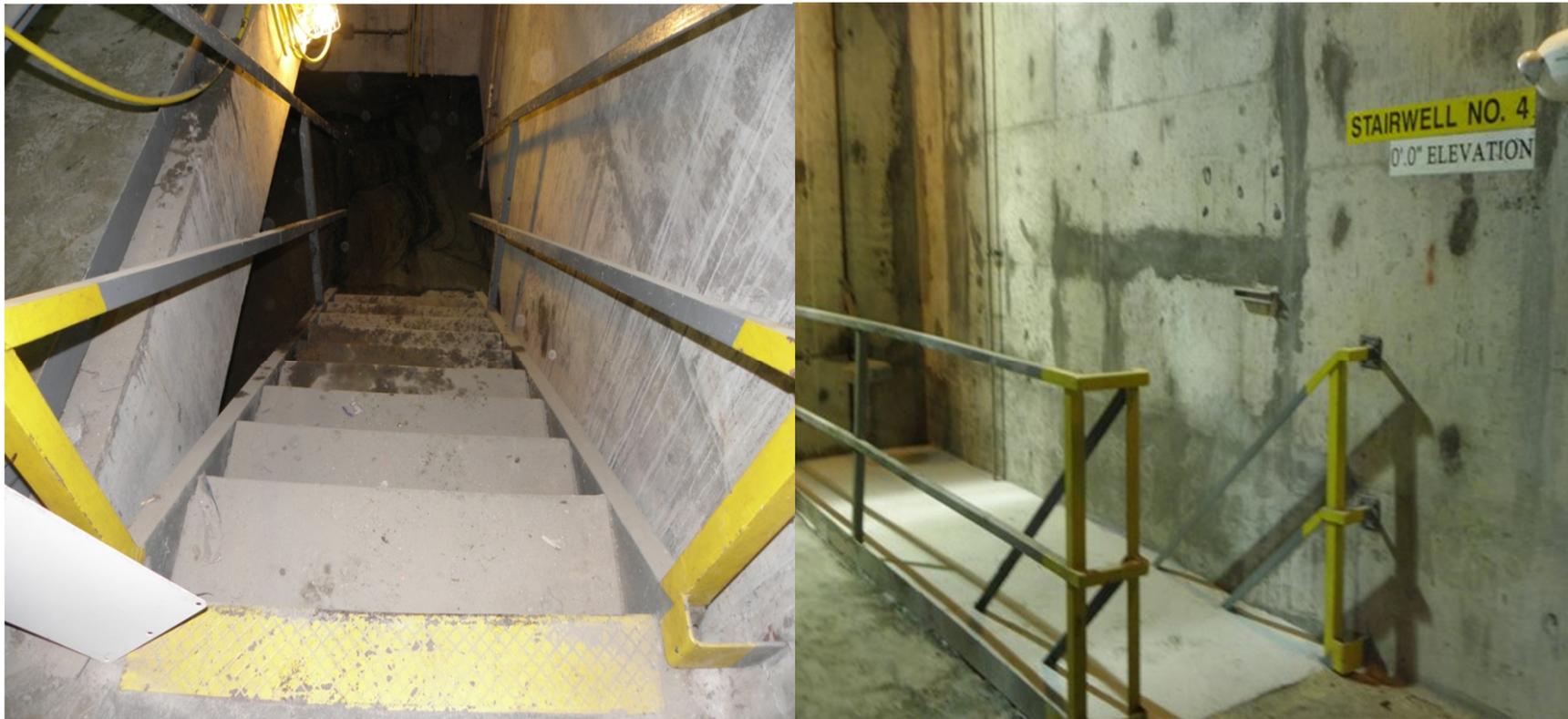


Final





# 105P Lower Level Grouting



Stairwell #4 from Zero Elevation





## 105P Lower Level Grouting (con't)





# 105R Roof Modifications

Rebar Placement at +149



Final roof cap after curing at +149





# 105R Disassembly Basin

During Demolition



Final Cap





# 105R Aerial





# 105R Aerial





# Final Sealing of 105P Reactor





# 105P Reactor Initial State





# 105P Aerial End State





# 105R Reactor Aerial-End State





## Conclusion

- **Work has been performed safely**
- **Reactor decommissioning scope and waste unit remediations have been executed**
- **Projects are mechanically complete and completed ahead of schedule in August 2011 and below cost**





## Cost Backup (Total Project Cost)

- **P Reactor Decommissioning** **\$77.5M**
- **R Reactor Decommissioning** **\$75.8M**
- **R Ash Basin Remediation** **\$9.4M**
- **P Ash Basin Remediation** **\$17.7M**
- **PAOU & RAOU GPP/OPS** **\$160M**

