



U.S. DEPARTMENT OF ENERGY

Presentation to the Savannah River Site Citizens Advisory Board

Savannah River Site H-Area Tank Farm Closure

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Waste Disposition Project

March 26, 2013



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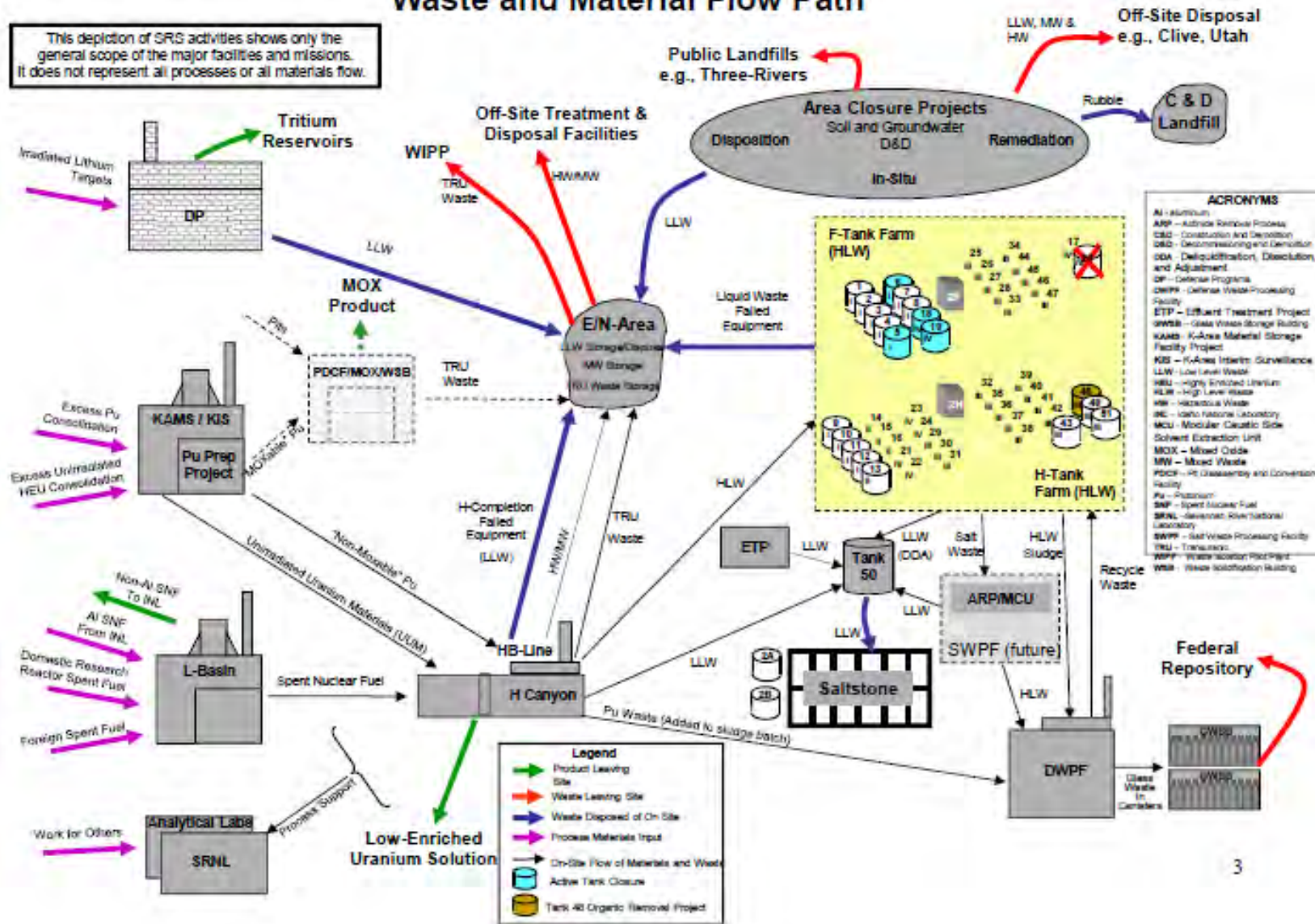
Purpose

- To address Citizens Advisory Board 2013 Annual Work Plan, Waste Management Committee (Ill.c.)
- Provide update of H Tank Farm Closure
 - Regulatory Drivers for Closure
 - Draft Section 3116 Determination
 - Overview of H Tank Farm
 - H Tank Farm Performance Assessment
 - Path Forward



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.



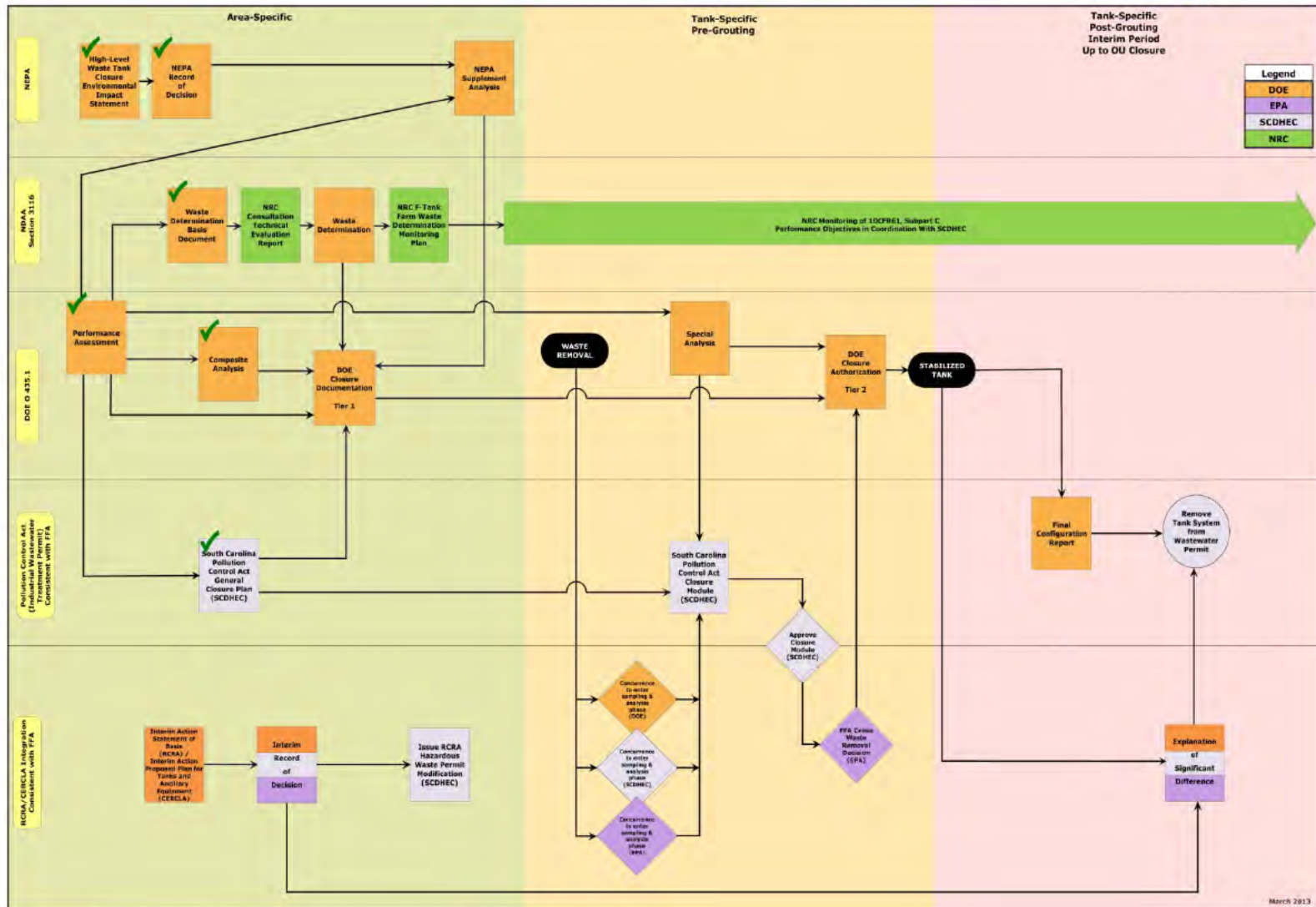
ACRONYMS

- Al - Aluminum
- ARP - Actinide Removal Process
- C&D - Construction and Demolition
- CDR - Decommissioning and Demolition
- DA - Decontamination, Disinfection, and Adjustment
- DP - Defense Programs
- DWPF - Defense Waste Processing Facility
- ETP - Effluent Treatment Project
- GWSS - Glass Waste Storage Building
- KAMS - K-Area Material Storage Facility Project
- KIS - K-Area Interim Surveillance
- LLW - Low Level Waste
- HLU - Highly Enriched Uranium
- HLW - High Level Waste
- HW - Hazardous Waste
- ICL - Idaho National Laboratory
- MCU - Modular Ceramic Solvent Extraction Unit
- MOX - Mixed Oxide
- MW - Mixed Waste
- PDCR - Plutonium Conversion and Conversion Facility
- Pu - Plutonium
- SNF - Spent Nuclear Fuel
- SRNL - Savannah River National Laboratory
- SWPF - Salt Waste Processing Facility
- TRU - Transuranic
- WIPP - Waste Isolation Plant
- WBB - Waste Isolation Building

Legend

- Green Arrow: Product Leaving Site
- Red Arrow: Waste Leaving Site
- Blue Arrow: Waste Disposed of On Site
- Purple Arrow: Process Materials Input
- Black Arrow: On-Site Flow of Materials and Waste
- Blue Circle: Active Tank Closure
- Yellow Circle: Tank 40 Organic Removal Project

H Tank Farm Regulatory Drivers for Closure



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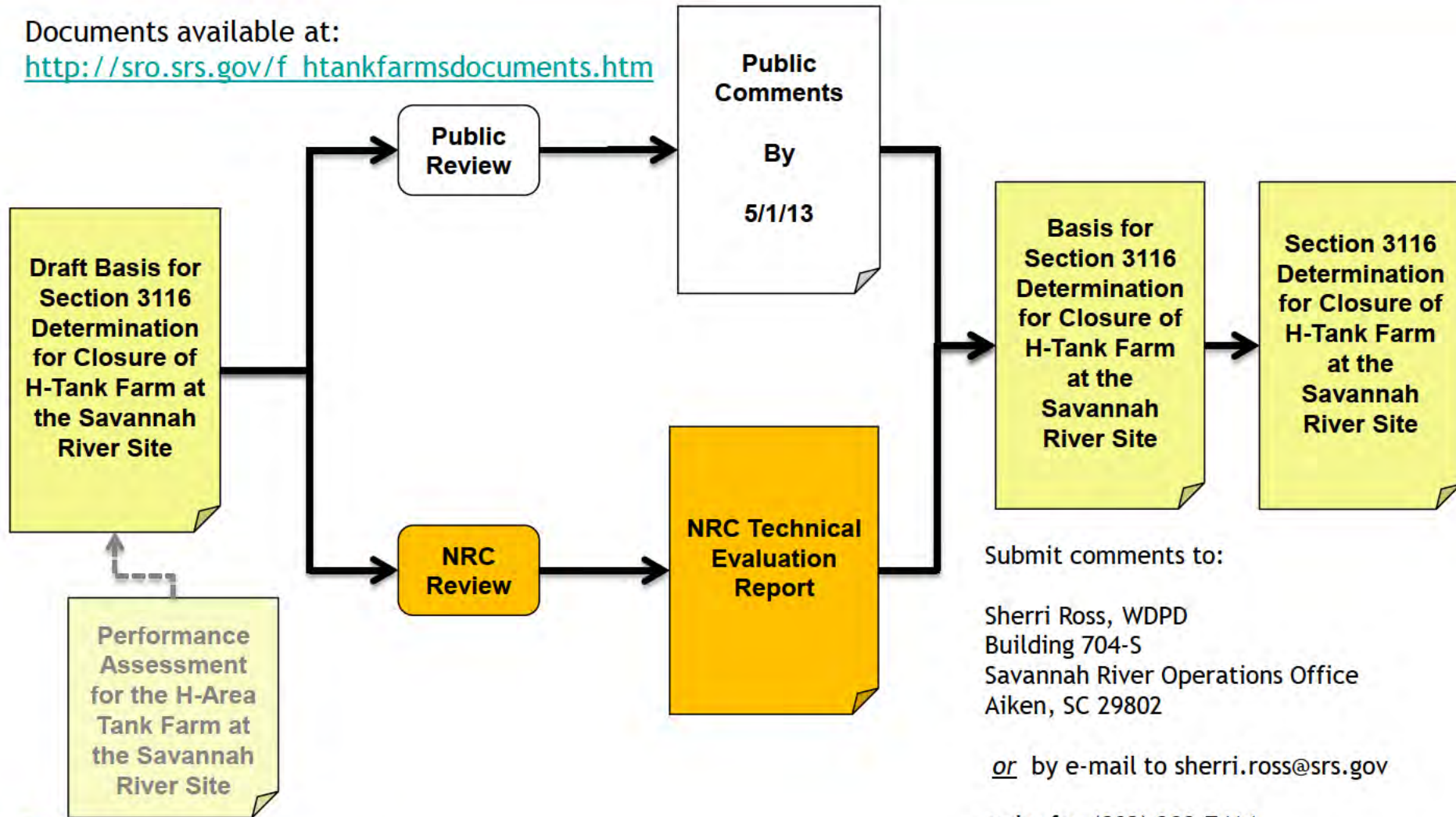
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NDAA Section 3116

Documents available at:

<http://sro.srs.gov/ftankfarmsdocuments.htm>



Submit comments to:

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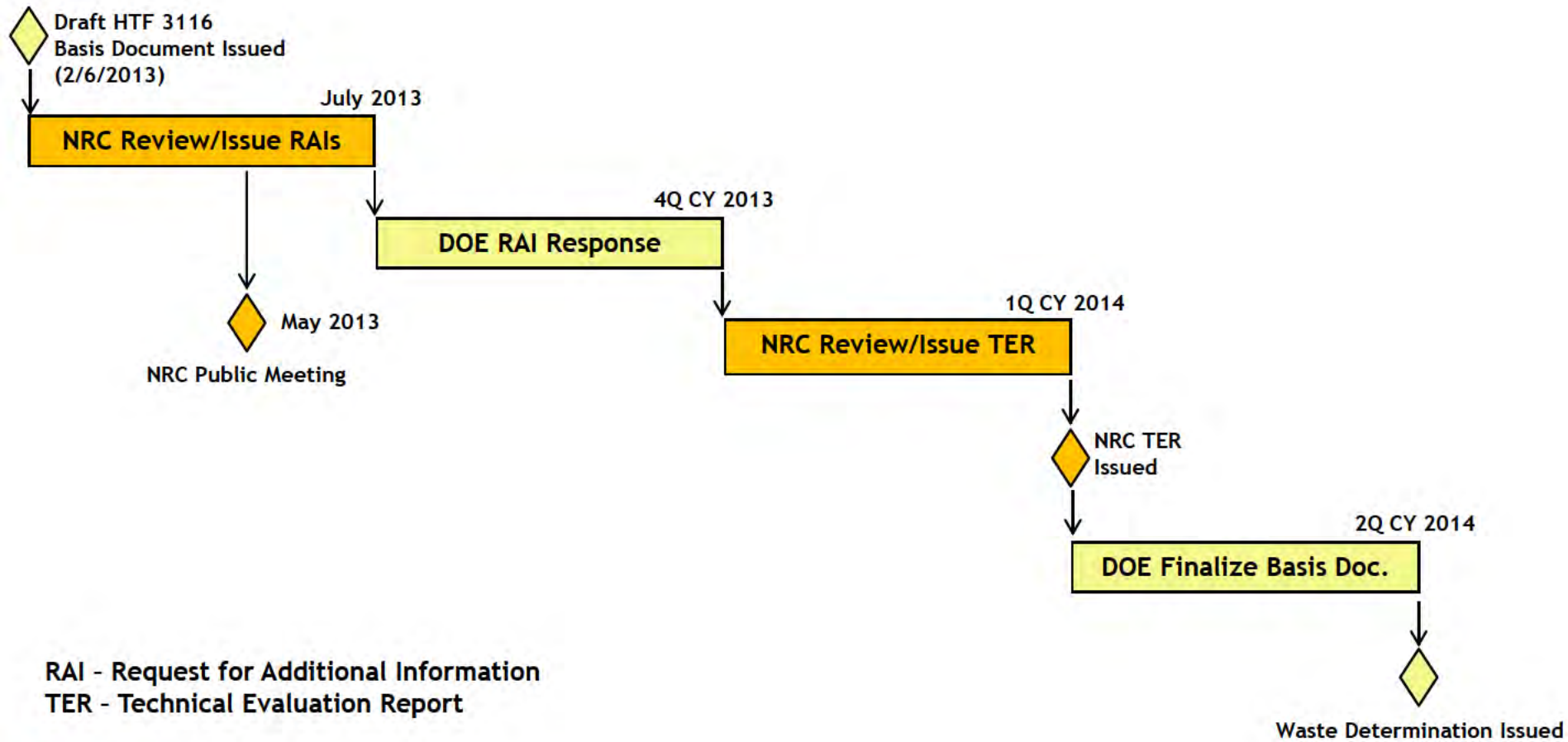
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Draft H Tank Farm 3116 Basis Document

1. Introduction & Purpose
 2. Background
 3. NDAA Section 3116
 4. Waste Does Not Require Permanent Isolation in a Deep Geologic Repository
 5. Highly Radioactive Radionuclides Removed to the Maximum Extent Practical
 6. Radionuclide Concentrations
 7. Disposal in Accordance with the Performance Objectives Set Out in 10 CFR 61, Subpart C
 8. State-approved Closure Plan
 9. Conclusion
 10. References
 11. Glossary
- Appendix A: Liquid Waste System Description
- Appendix B: Approach to Documenting Removal of Radionuclides to Support DOE Closure Authorization
- Appendix C: H Tank Farm Performance Assessment Dose Summary



DOE and NRC Consultation



RAI - Request for Additional Information
TER - Technical Evaluation Report



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Overview of the H Tank Farm

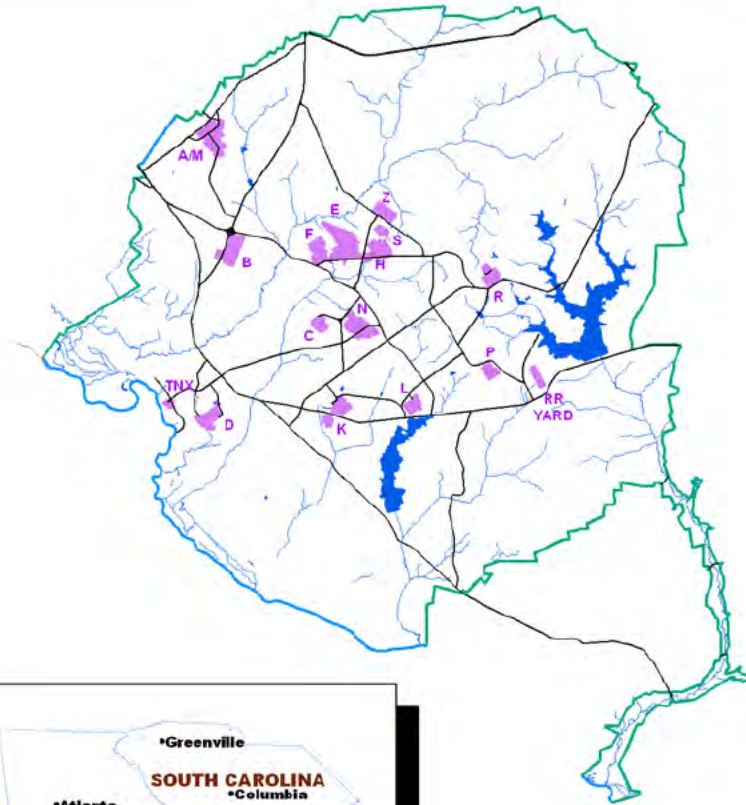


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Savannah River Site

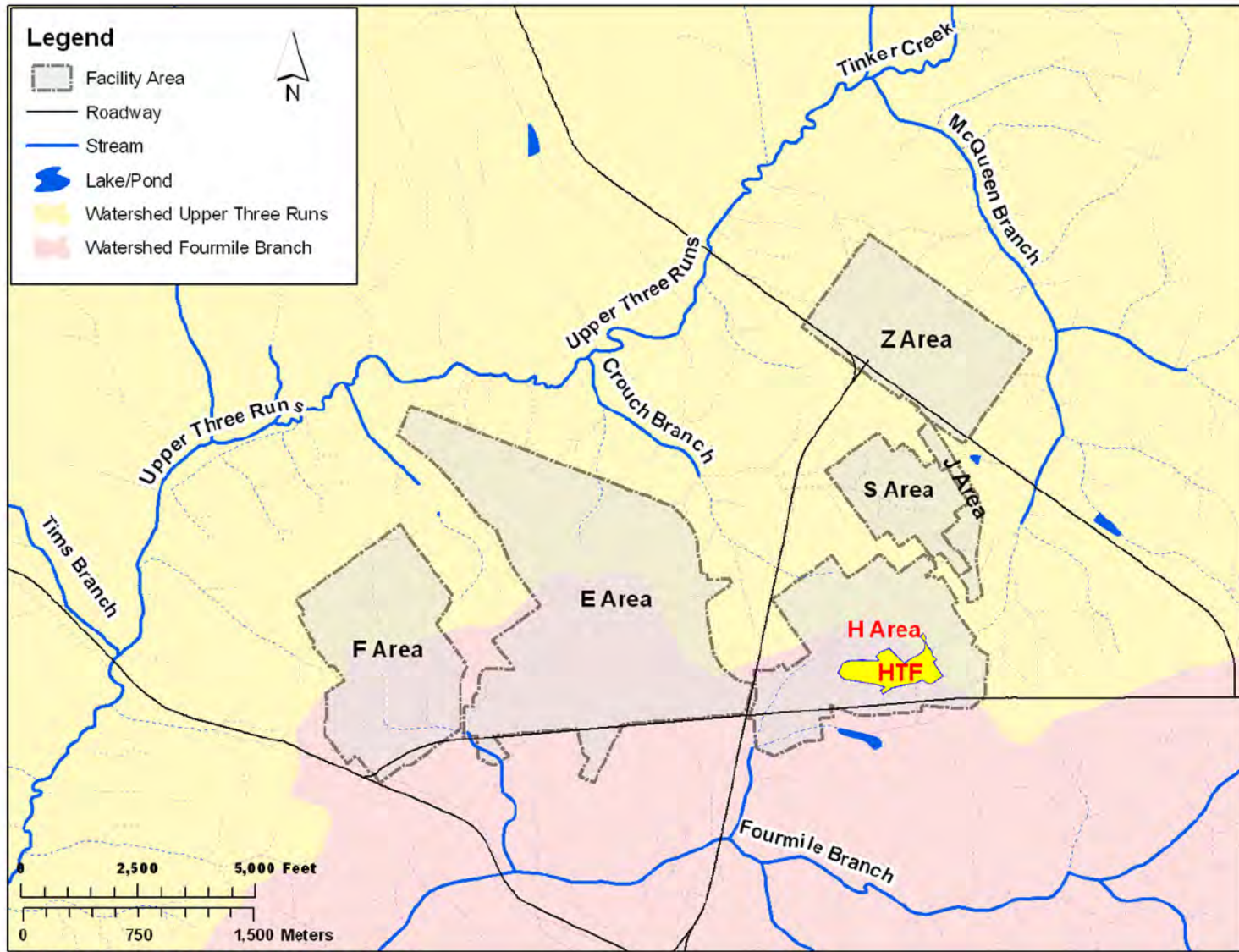


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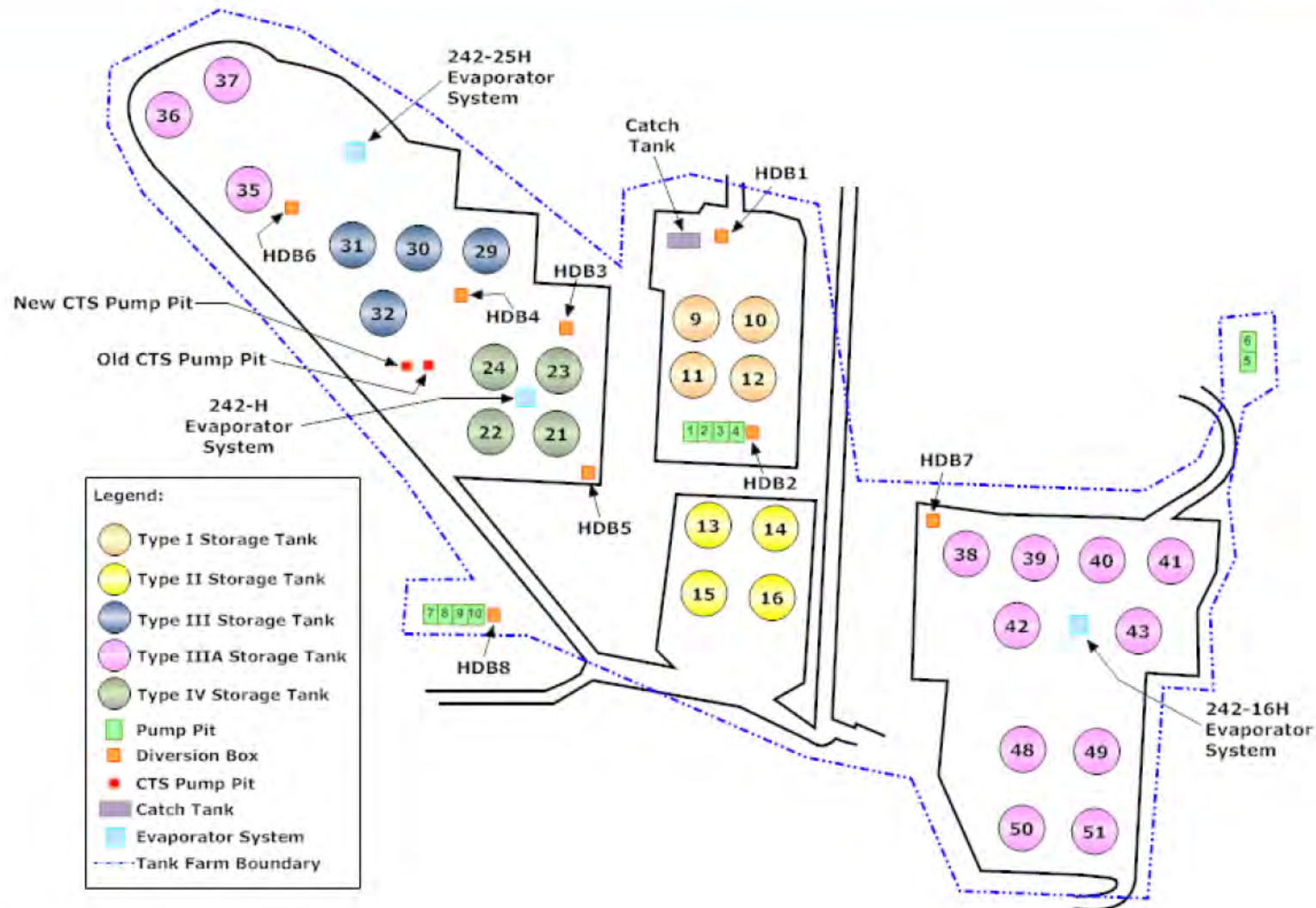
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General Separations Area



H-Tank Farm Layout



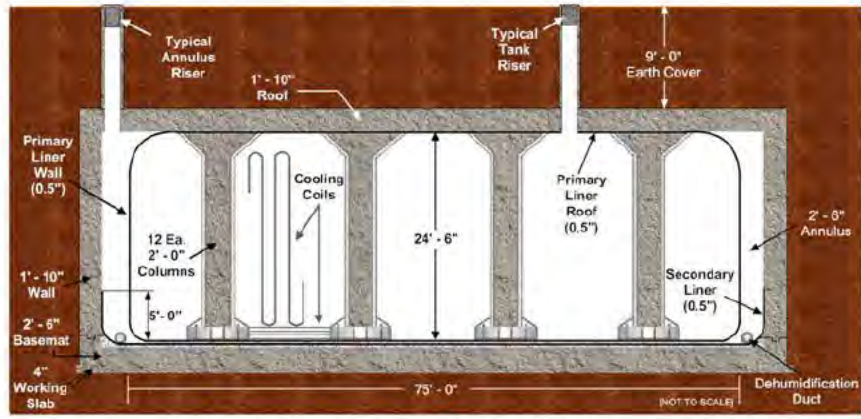
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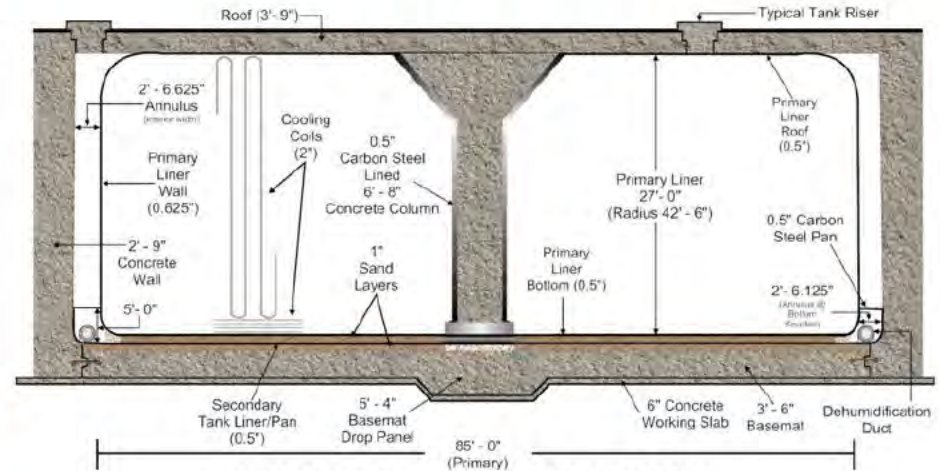
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H Tank Farm Tank Types

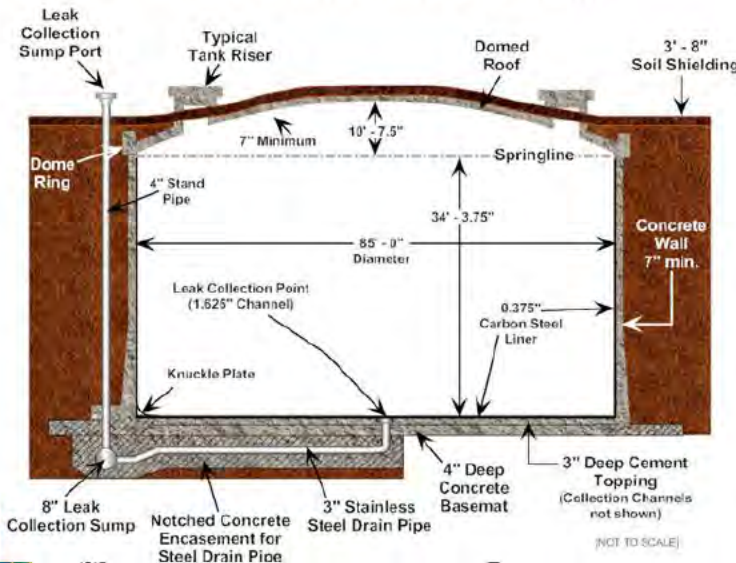
TYPICAL TYPE I WASTE TANK



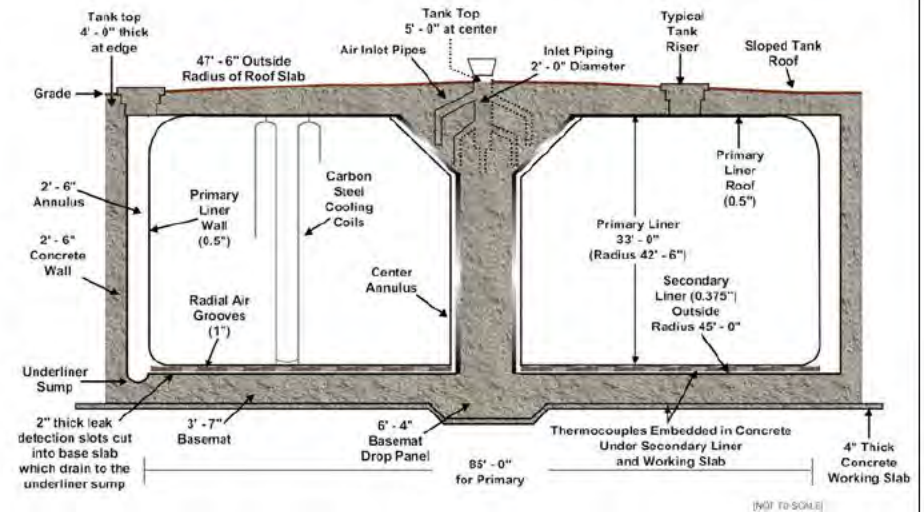
TYPICAL TYPE II WASTE TANK



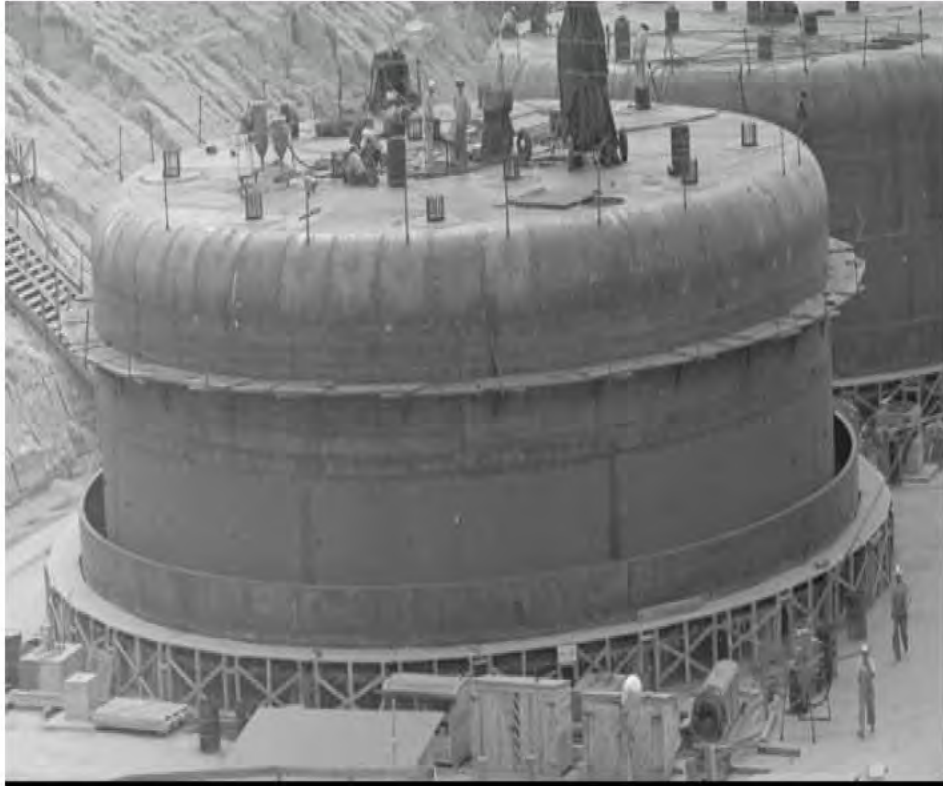
TYPICAL TYPE IV WASTE TANK



TYPICAL TYPE IIIA WASTE TANK



Type I Tank



HTF Contains Four Type I Tanks
(Tanks 9, 19, 11, 12)



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Type II Tank



HTF Contains Four Type II Tanks
(Tanks 13, 14, 15, 16)



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Type III/IIIA Tank



HTF Contains Seventeen Type III/IIIA Tanks
(Type III: Tanks 29 through 32)
(Type IIIA: Tanks 35 through 43 & 48 through 51)



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Type IV Tank



HTF Contains Four Type IV Tanks
(Tanks 21, 22, 23, 24)



Tank Closure Progression

4 tanks closed
8 more in progress



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Overview of the H Tank Farm Performance Assessment Revision 1



What is a Performance Assessment?

- The H Tank Farm Performance Assessment is a risk assessment tool to facilitate agency decisions
- Evaluates potential human impacts associated with the residual chemical and radioactive constituents in the H Tank Farm at the time of closure
- Based on many assumptions and calculations over very long time frames (100,000 years)
- Living document - updated periodically with new information
 - Special Analysis used to update actual residual source terms prior to closure



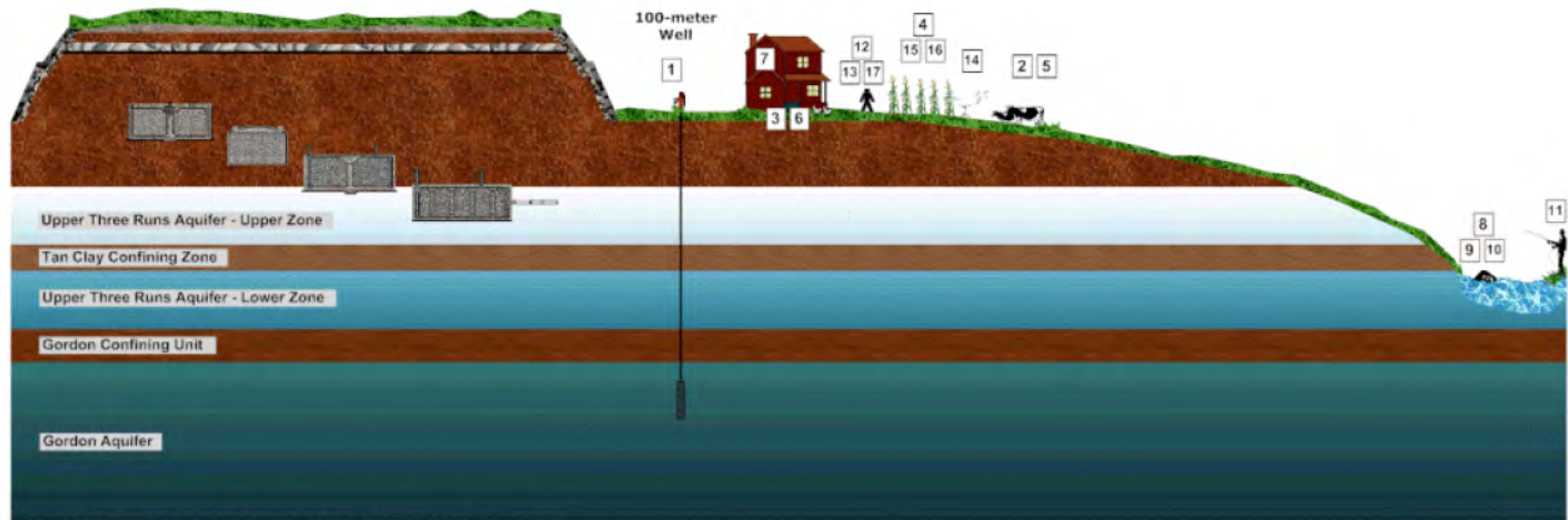
Performance Assessment Contents Overview

- Eleven chapters
- Appendices A-U containing modeling outputs
- Over 400 figures and tables of information in the body of the Performance Assessment
- Over 3500 total pages between the Performance Assessment body (850 pages) and appendices
- Over 300 references utilized in development of Performance Assessment



Member of the Public

Figure 7.1-1: Scenario with Well Water as Primary Source



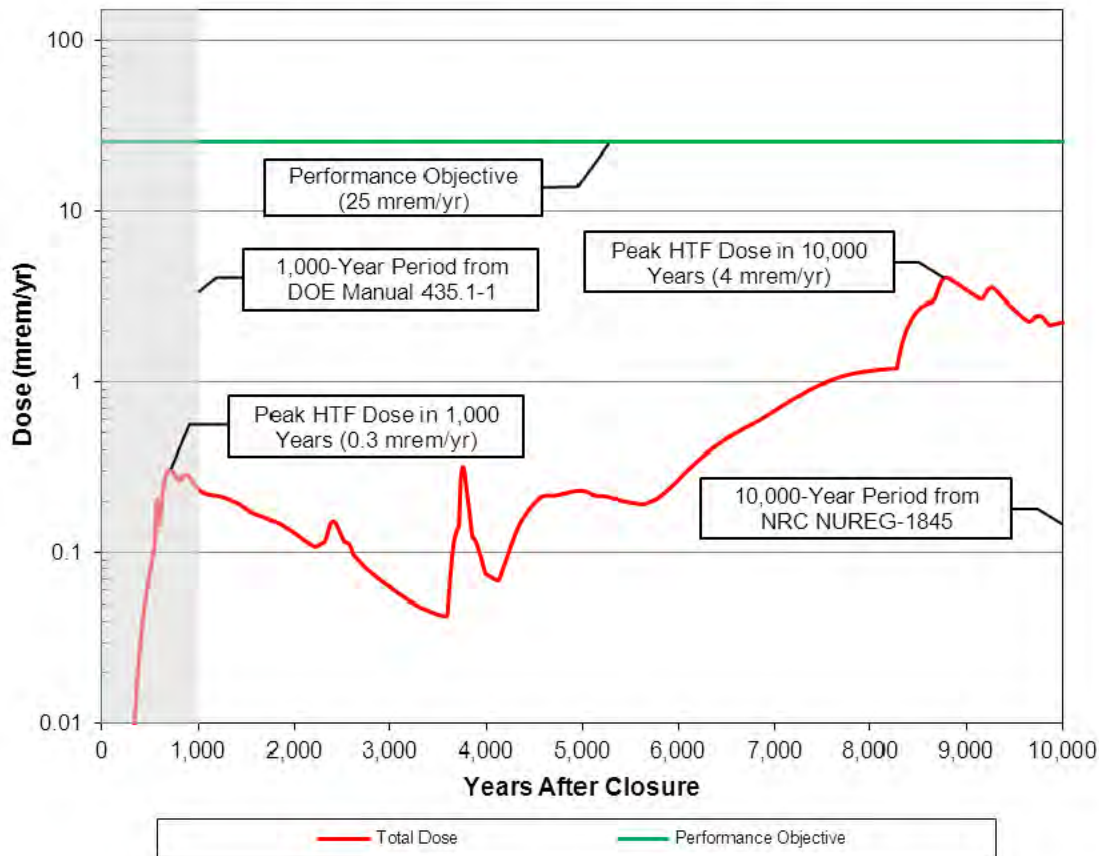
SCENARIO WITH WELL WATER AS PRIMARY WATER SOURCE

1. Direct ingestion of well water
2. Ingestion of milk and meat from livestock (e.g., dairy and beef cattle) that drink well water
3. Ingestion of meat and eggs from poultry that drink well water
4. Ingestion of vegetables grown in garden soil irrigated with well water
5. Ingestion of milk and meat from livestock (e.g., dairy and beef cattle) that eat fodder from a pasture irrigated with well water
6. Ingestion of meat and eggs from poultry that eat fodder from a pasture irrigated with well water
7. Ingestion and inhalation of well water while showing
8. Direct irradiation during recreational activities (e.g., swimming, fishing, boating) from stream water
9. Dermal contact with stream water during recreational activities (e.g., swimming, fishing)
10. Incidental ingestion and inhalation of stream water during recreational activities
11. Ingestion of fish from the stream water
12. Direct plume shine
13. Inhalation
14. Inhalation of well water used for irrigation
15. Inhalation of dust from the soil that was irrigated with well water
16. Ingestion of or dermal contact with soil that was irrigated with well water
17. Direct radiation exposure from radionuclides deposited on the soil that was irrigated with well water



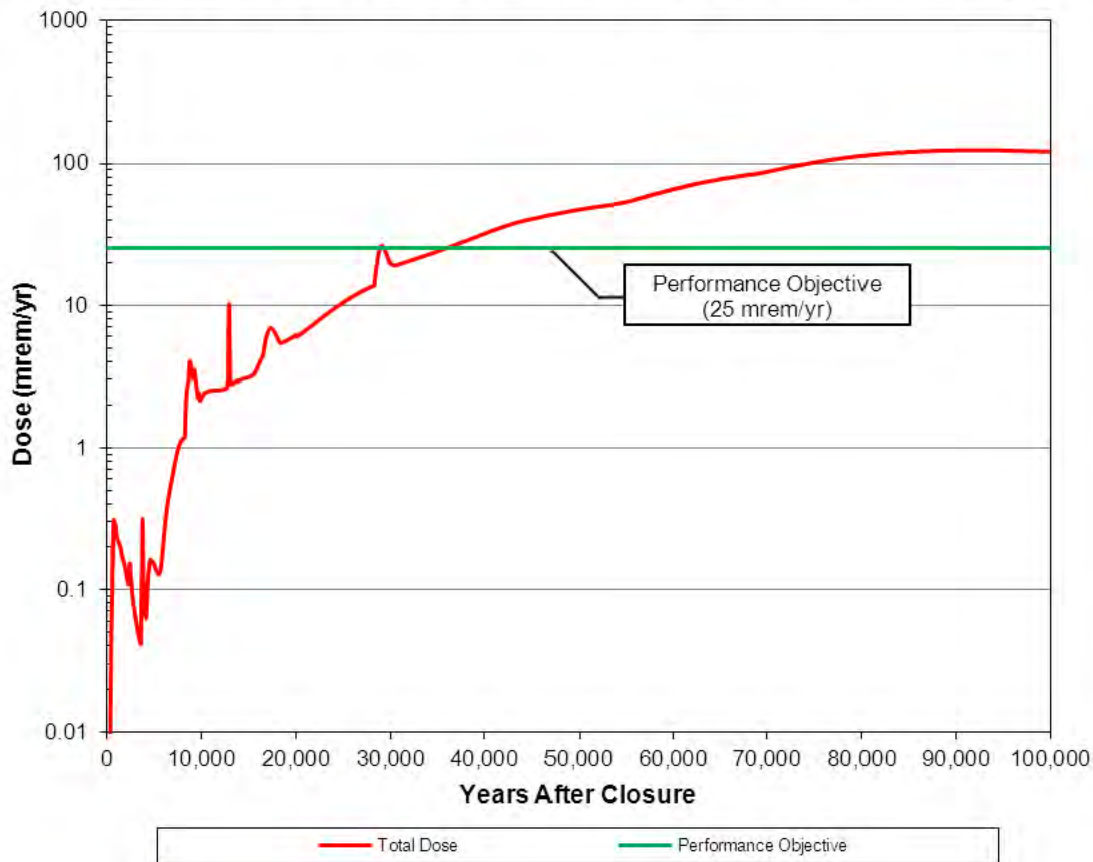
Dose to Member of the Public

Figure 7.1-2: Peak All-Pathways Dose to a Member of the Public Within 10,000 Years (Base Case Deterministic Analysis)



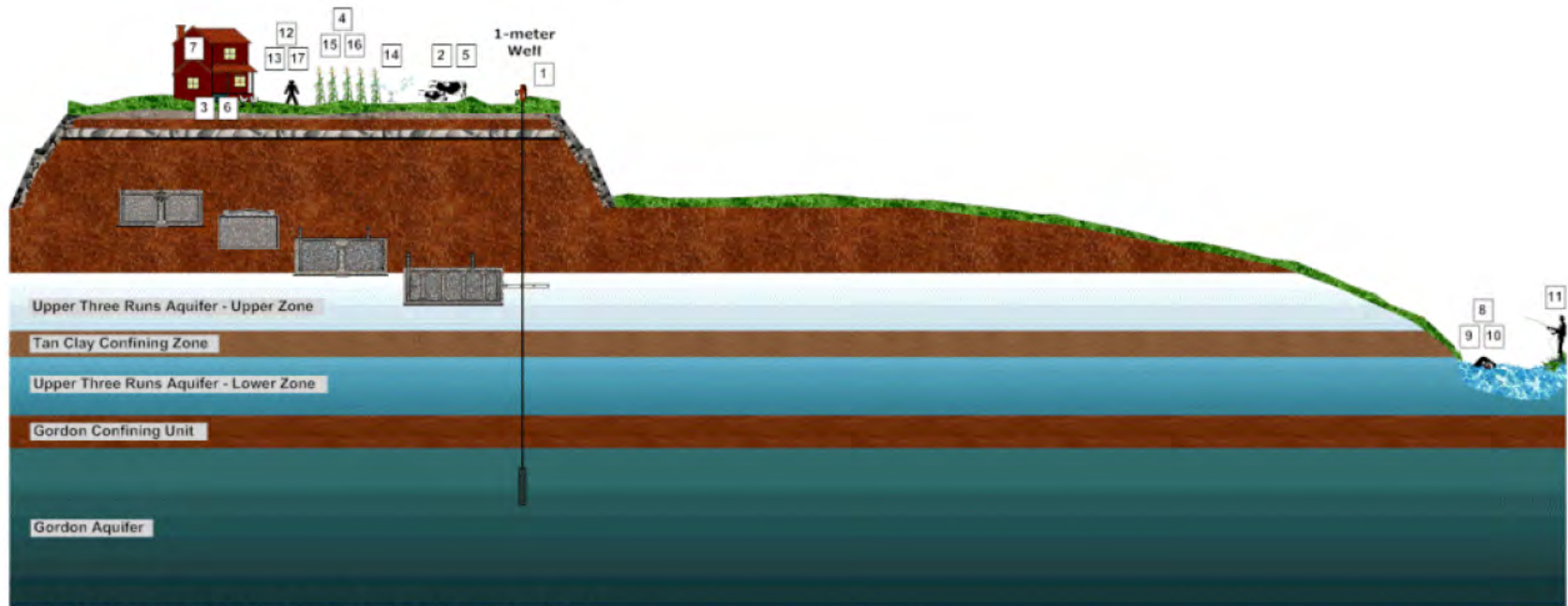
Dose to Member of Public

Figure 7.1-3: Peak All-Pathways Dose to a Member of the Public Within 100,000 Years (Base Case Deterministic Analysis)



Intruder

Figure 7.2-2: Chronic Intruder-Agricultural (Post-Drilling) Scenario



CHRONIC INTRUDER-AGRICULTURAL (POST-DRILLING) SCENARIO

1. Direct ingestion of well water
2. Ingestion of milk and meat from livestock (e.g., dairy and beef cattle) that drink well water
3. Ingestion of meat and eggs from poultry that drink well water
4. Ingestion of vegetables grown in garden soil irrigated with well water and containing contaminated drill cuttings
5. Ingestion of milk and meat from livestock (e.g., dairy and beef cattle) that eat fodder from a pasture irrigated with well water
6. Ingestion of meat and eggs from poultry that eat fodder from a pasture irrigated with well water
7. Ingestion and inhalation of well water while showing
8. Direct irradiation during recreation activities (e.g., swimming, fishing, boating) from stream water
9. Dermal contact with stream water during recreational activities (e.g., swimming, fishing)
10. Incidental ingestion and inhalation of stream water during recreational activities
11. Ingestion of fish from the stream water
12. Direct plume shine
13. Inhalation
14. Inhalation of well water used for irrigation
15. Inhalation of dust from the soil that was contaminated by drill cuttings and irrigated with well water
16. Ingestion of soil that was contaminated by drill cuttings and irrigated with well water
17. Direct radiation exposure from radionuclides on the soil that was contaminated by drill cuttings and irrigated with well water



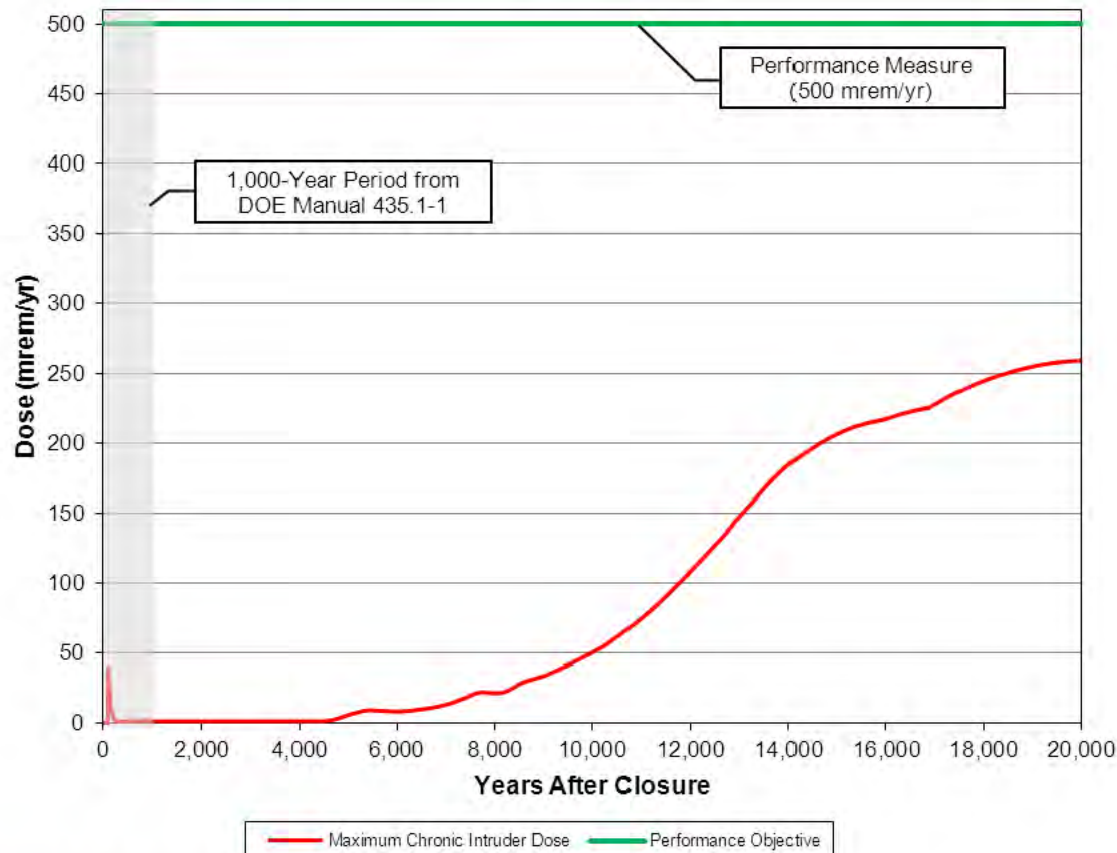
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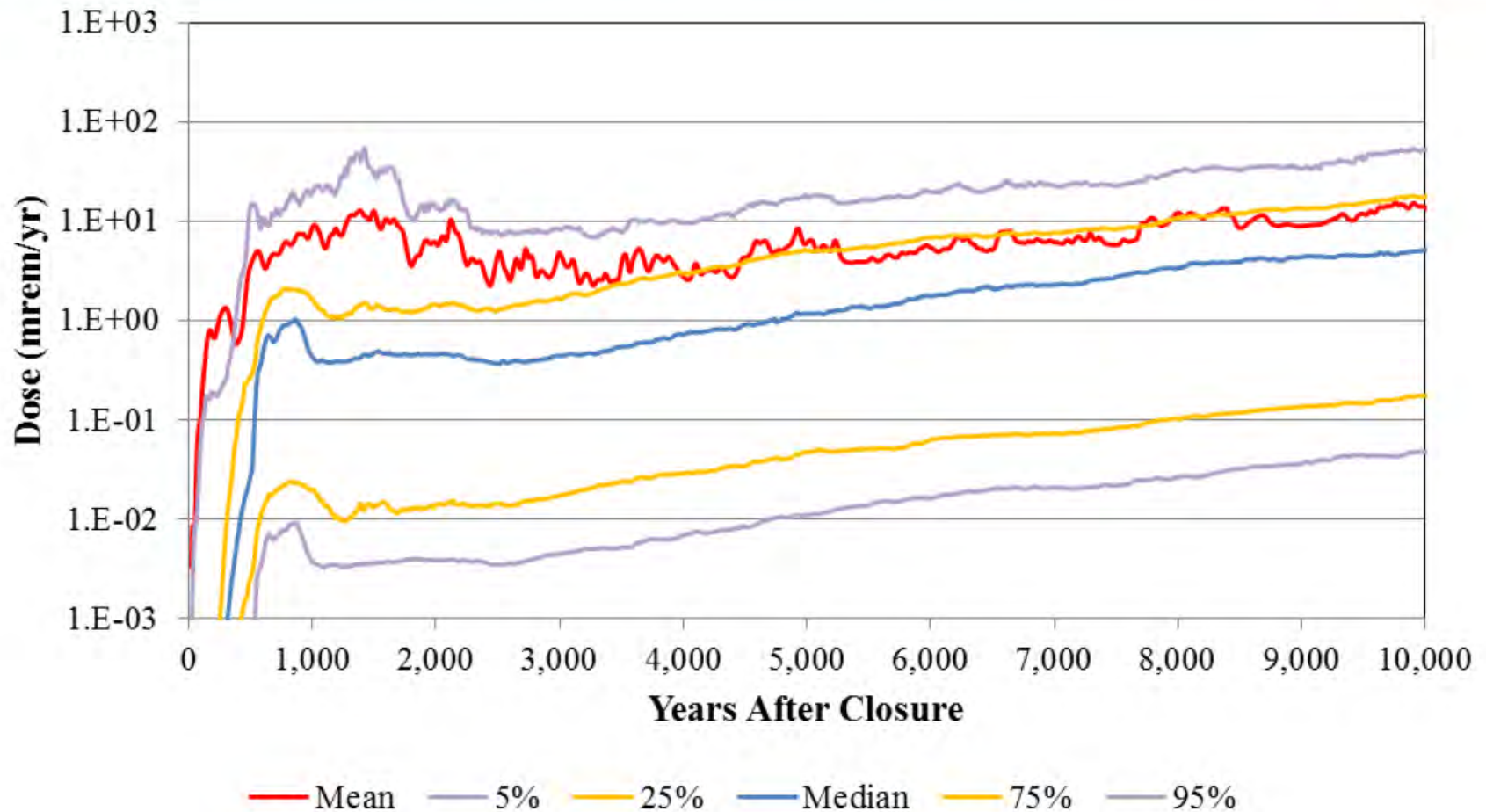
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Chronic Dose to Intruder

Figure 7.2-4: Peak Chronic Dose to the Inadvertent Intruder (Base Case Deterministic Analysis)



Uncertainty Analysis Results – All Cases

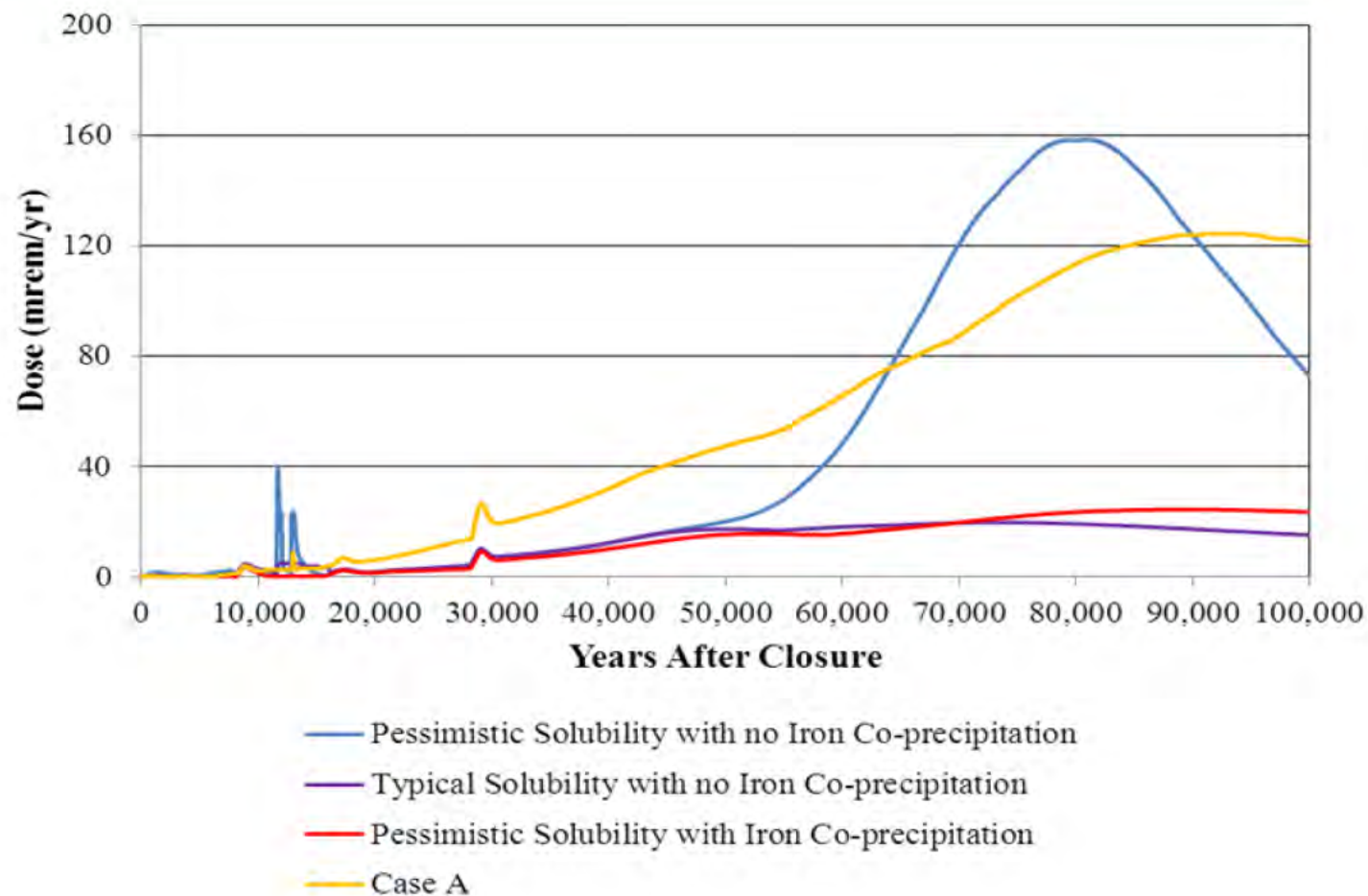


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Sensitivity Analysis – Solubility



Path Forward

- DOE welcomes public comments on the H Tank Farm Draft Basis and Performance Assessment
- DOE and Nuclear Regulatory Commission consultation process will be open to the public
- Nuclear Regulatory Commission's Technical Evaluation Report anticipated next Spring 2014
- DOE's determination for closure of H Tank Farm anticipated CY 2014



Acronyms

| | |
|--------|--|
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| DOE | Department of Energy |
| EPA | Environmental Protection Agency |
| FFA | Federal Facility Agreement |
| HTF | H Tank Farm |
| NDAA | Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 |
| NEPA | National Environmental Policy Act |
| NRC | Nuclear Regulatory Commission |
| PA | Performance Assessment |
| RAI | Request for Additional Information |
| RCRA | Resource Conservation and Recovery Act |
| SCDHEC | South Carolina Department of Health and Environmental Control |
| TER | Technical Evaluation Report |

