



U.S. DEPARTMENT
of **ENERGY**

Low-Level Waste Operations and Design Considerations

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Savannah River Site Citizens Advisory Board Meeting

January 27th, 2026



Purpose

- Citizens Advisory Board requested a presentation concerning Low-Level Operations and Design Considerations.
- To give a high-level brief on the design and operations of the E-Area Low-Level Waste Facility (ELLWF)
 - Authority to operate
 - Design consideration examples
 - Overview of ELLWF Operations

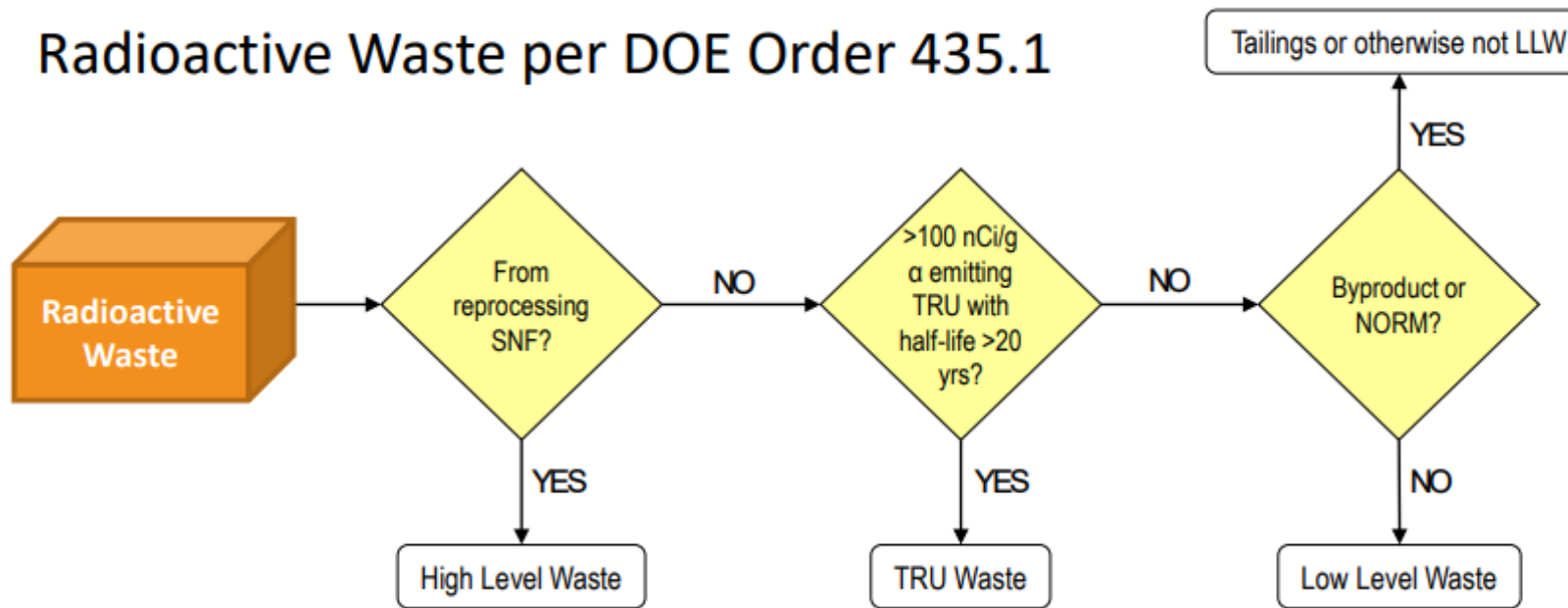


DOE Low-Level Waste Authority

- **Atomic Energy Act of 1954** - The AEA authorizes DOE to regulate possession, use and safe disposal of radioactive materials.
- **DOE O 435.1** - Radioactive Waste Management issued in 1999, provides the general objectives and applicability.
 - DOE M 435.1-1 - Radioactive Waste Management Manual provides requirements for waste planning, generation, characterization and disposal facility design, operations, and closure.
 - DOE Guide (G) 435.1-1 gives guidance for implementing the requirements.
 - DOE Standard DOE-STD-5002-2017 – content and format for Disposal Authorization Statement and Tank Closure Documentation
- **DOE considers applicable State and Federal Regulations**
- **Low-Level Waste Disposal Facility Federal Review Group (LFRG)** is the review group that approves and assesses LLW disposal facility performance.
- **The E-Area Low-Level Waste Performance Assessment (PA)** incorporates all requirements of DOE O 435.1 and once approved by the LFRG, a Disposal Authorization Statement (DAS) is issued. There is an annual review of the PA implementation.

Low-Level Waste

- LLW Radioactive waste is not High-Level Waste, spent nuclear fuel, TRU waste, byproduct material, or naturally occurring radioactive material



SNF – Spent Nuclear Fuel

HLW – High-Level Waste

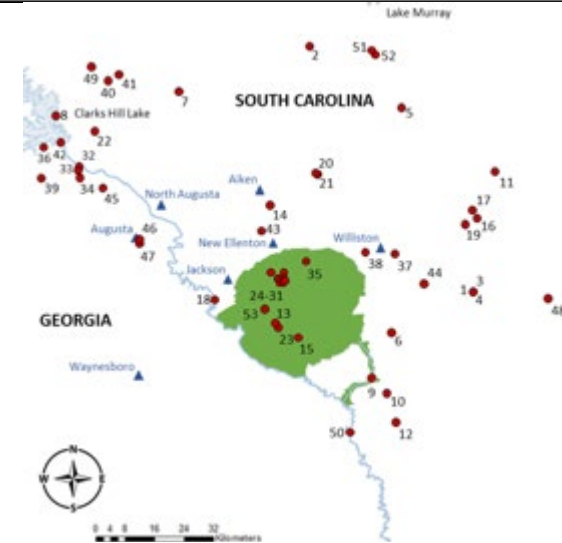
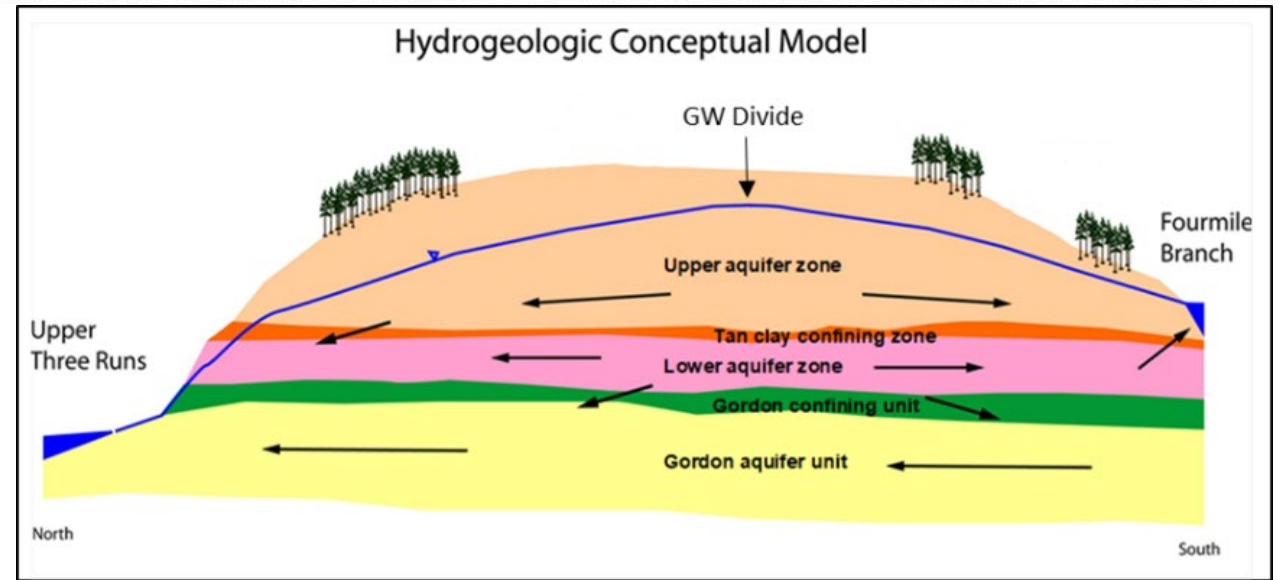
TRU – Transuranic

NORM – Naturally Occurring Radioactive Material

LLW – Low-Level Waste

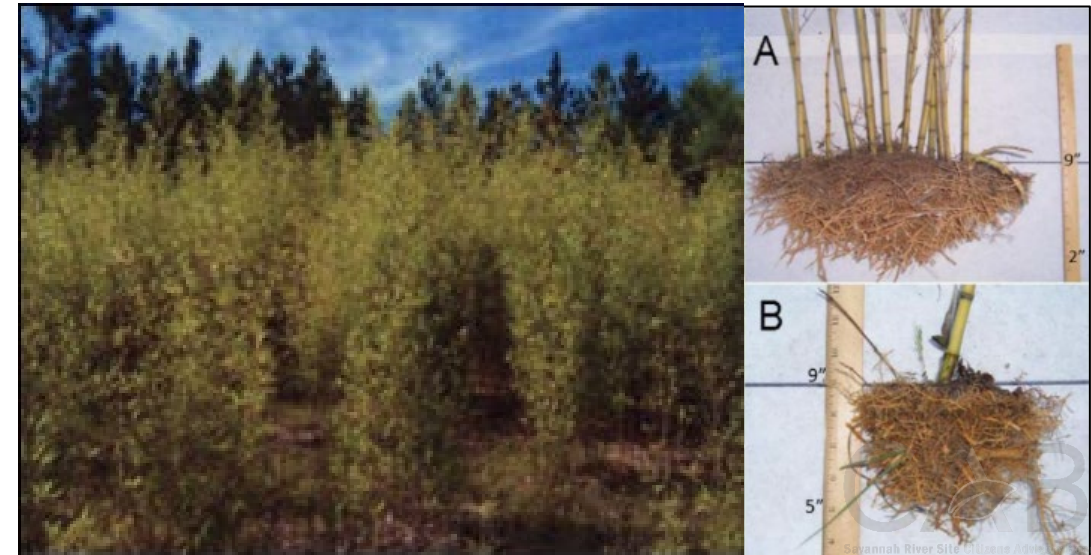
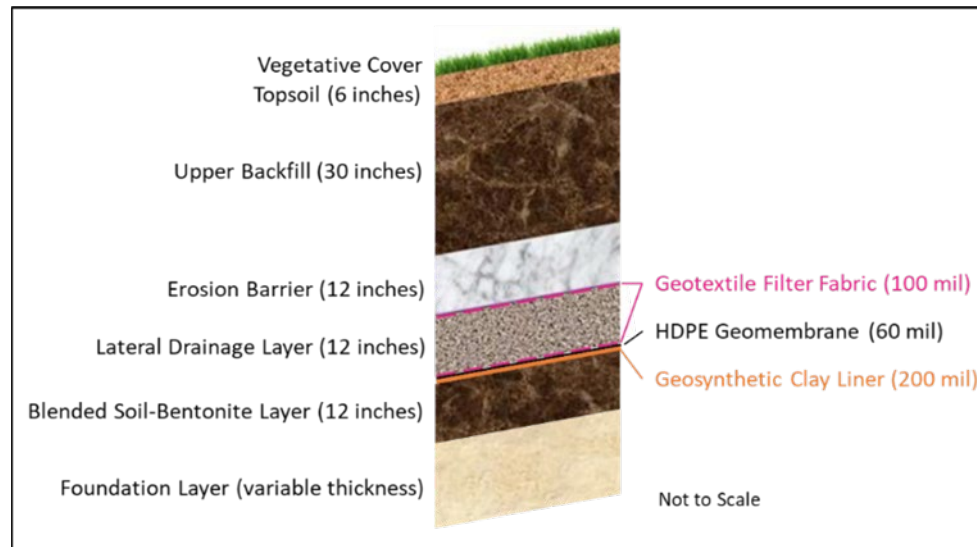
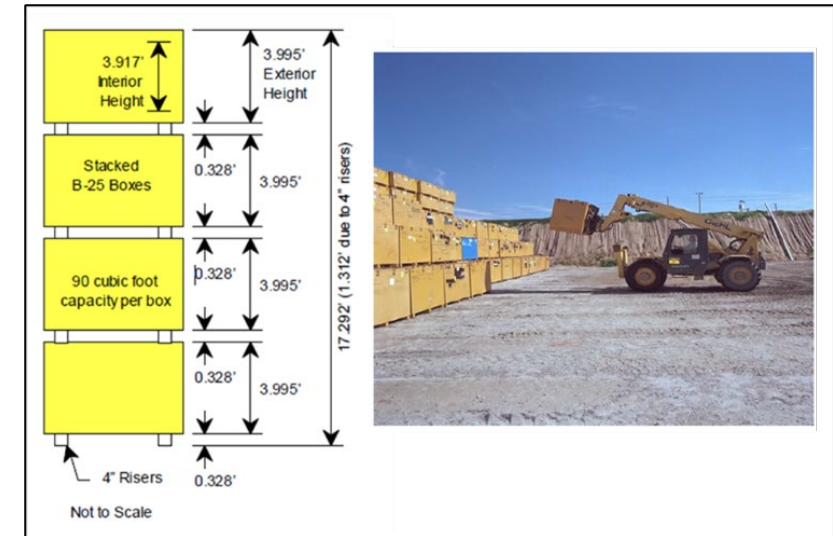
LLW Design Considerations – Input Examples

- Surface Water
- Groundwater
- Natural Drainage Features
- Average and Historical Rainfall
- Historic Hurricane Impacts on SRS
- Fault Lines Around / on SRS
- Historic Earthquake Locations and Magnitude
- Changes in Elevation
- Soil Types and Locations



LLW Design Considerations – Direct Control Examples

- Disposal Unit Type and Location
- Number of Disposal Units / Open /Close
- How Waste is placed in the Disposal Unit
- Design of the Waste Containers
- Interim Cover Design & Install Date
- Design of Final Closure Cap
- Long-term Vegetative Cover Design
- Waste that is sent offsite



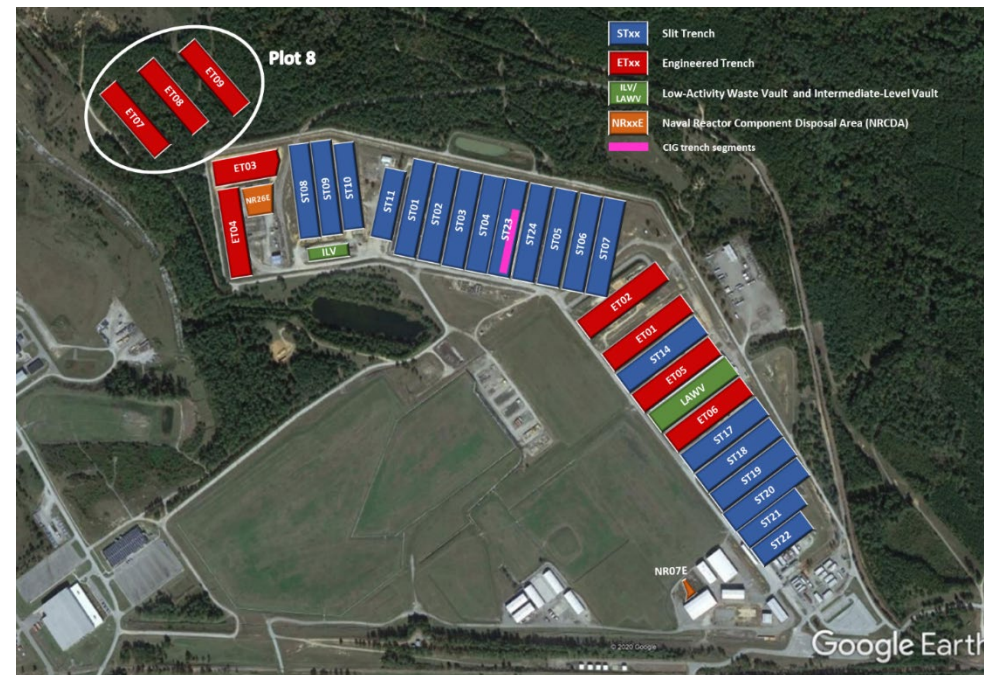
LLW Design Considerations – Verification and Experiments Examples

- Concrete Wall
- Coupon Field
- Lysimeters




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E-Area Low-Level Waste Facility (ELLWF) Operations



ELLWF Waste Acceptance Criteria

- The Waste Acceptance Criteria (WAC) is provided to site generators via the Site Manual and serves as a blueprint on what can and cannot be brought into the ELLWF, packaging of containers, proper labeling of containers, and required documentation for the waste.
- What waste is accepted under the WAC
 - Low-Level Waste (LLW) including job control waste, soil, debris, rubble, etc.
- What is NOT allowed under the WAC
 - LLW with liquids, includes explosives, is gaseous or pressurized, not compatible with other waste, etc.
 - Mixed Low-Level Waste
 - TRU Waste
 - Hazardous Waste
 - LLW containing refrigerant

1S SRS Radioactive Waste Requirements

Table of Contents

Return to: Site-Level TOC	Return to: Site-Wide Procedures	Approved: Standard Scope Statements	Search: Searchbox	List of Cancelled 1S Procedures
----------------------------------------------	----------------------------------------------------	--------------------------------------------------------	--------------------------------------	----------------------------------------------------

All Bluesheets and/or Applicability statement(s) previously located on this Table of Contents have been vetted by the applicable Performing Entities and resolved accordingly. **See the Scope section of the procedure for specific scope and applicability information.** Contact the established Procedure Owner/SME (see SPPC | [Approval Authority](#) matrices) for further assistance.

Procedure No.	Title	Revision	Effective Date
Chapter-1	Waste Management Requirements	4	02/13/25
Chapter-2	Waste Certification Program	4	08/19/25
Chapter-3	Waste Characterization Program	8	10/01/24
Chapter-4	General Waste Requirements	8	08/19/25
Chapter-5	Low-Level Waste	3	04/13/23
Chapter-6	RCRA, TSCA, Mixed and LLLW	4	03/26/20
Chapter-7	Transuranic Waste	9	09/14/23
Chapter-8	Green-Is-Clean and Associated Waste	3	04/13/23
Chapter-10	Generation, Review, Approval and Control of Radioactive Waste Management Basis	1	10/01/24
Chapter-11	Unreviewed Composite Analysis Question	2	10/01/24
Appendices			
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References	References and Bibliography	6	04/13/23

ELLWF Disposal Unit Types



Engineered Trench



Slit Trench



Low-Activity Waste Vault (LAWV)



**Intermediate Level Vault
(ILV)**

ELLWF Engineered Trench

Engineered Trench

- Acceptable for routine LLW containers (B-25s, Sealands, etc.)
- Most cost-effective disposal option - first choice if feasible
- ET2 is approximately 82% filled
- ET3 closed in May 2022
- ET4 opened in February 2022, approx. 21% filled



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ELLWF Slit Trench

Slit Trench

- A cost-effective alternative to the Engineered Trench
- Weight limited based on crane capacity with setback restrictions
- Provides benefit of waste isolation



ELLWF Low-Activity Waste Vault

Low-Activity Waste Vault (LAWV)

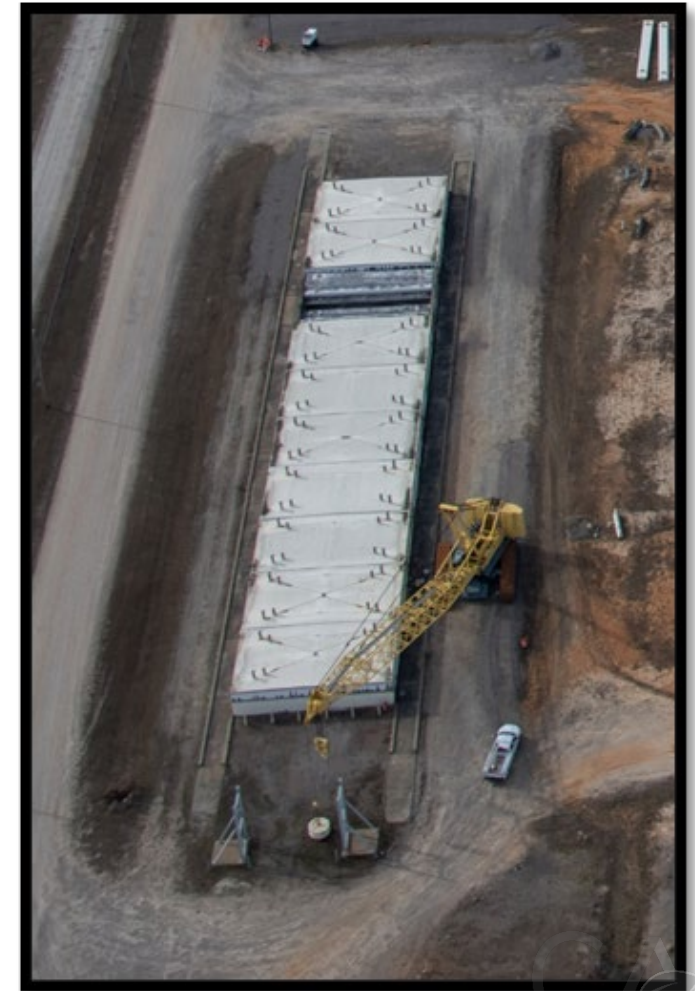
- For containers that exceed trench activity (Ci) limits
- For Leachable PCB waste (sump monitoring required)
- Much more expensive disposal option than earthen trenches
- Segregate LAWV waste from trench waste to minimize LAWV volumes



ELLWF Intermediate Level Vault

Intermediate Level Vault (ILV)

- For containers that exceed trench & LAWV activity (Ci) limits, or high dose rates
- Weight limited based on crane capacity with setback restrictions
- Acceptable for classified waste
- Most expensive disposal option



High-Level Summary of Generator Certification Program

SRS Waste Certification Program

- **1S Manual** – governing documents that include DOE 435.1 and other regulatory requirements as well as the ELLWF waste acceptance criteria.
- **SRS WAC Equivalency Crosswalk & LOIs** – core program document describing how generators comply with 1S Manual WAC requirements.
- **Periodic Reviews/Waste Certification Compliance Visit** – this is a physical facility walkdown and documents review where all aspects of the program are scrutinized (characterization, generation, segregation, packaging, storage, training, procedures, QA and transportation).
- **Initial/Continuing Training** – expected of all generator personnel qualified to handle/manage/disposition/ship waste covered by the 1S Manual and the Waste Certification Program.



CWTS

CONSOLIDATED WASTE TRACKING SYSTEM

Select the Waste Organization you will be entering waste for: --Select waste org-- Submit

☒ Read Only

Summary

- DOE has the authority to approve and regulate the E-Area Low-Level Waste Facility.
- Low-Level Waste Disposal Facility Federal Review Group (LFRG) provides ongoing independent assessments and oversight.
- ELLWF safely and compliantly manages the disposal of low-level waste utilizing the different types of disposal units.

