

Introduction to DOE Order 435.1 Low Level Radioactive Waste Disposal Requirements

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Introduction and Regulatory Implementation

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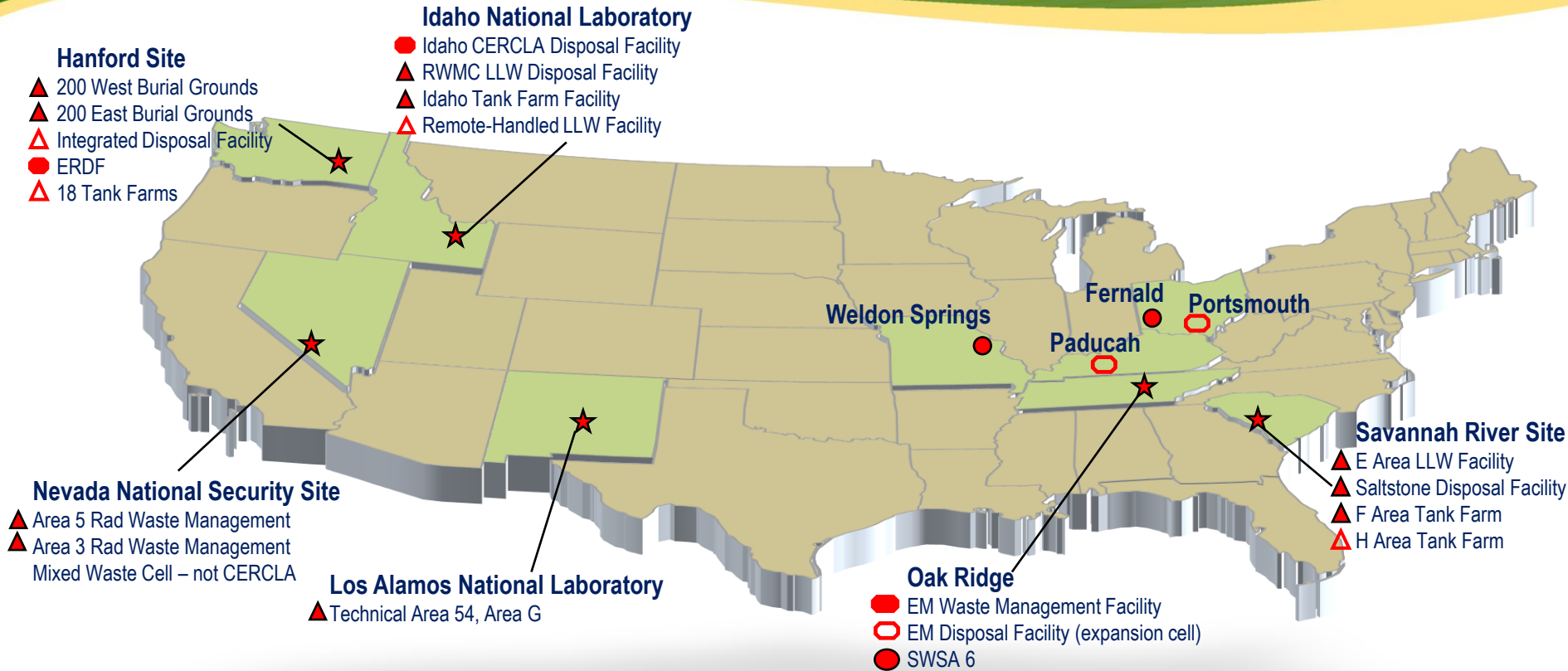
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- DOE has a long history of regulating and implementing a risk informed, performance based approach for low-level radioactive waste (LLW) disposal
- DOE Order 458.1, Radiation Protection of the Public and the Environment, provides the overall protection system
- LLW Disposal is regulated under DOE Order 435.1, Radioactive Waste Management
- Disposal cells for cleanup wastes that may include LLW and non-radioactive contaminants of concern are also regulated by State/US EPA



Disposal Facilities

- Existing CERCLA Disposal Facility
- Potential Future CERCLA Disposal Facility
- ▲ LLW Operations Disposal Facility
- ▲ Future LLW Disposal Facility
- Closed Disposal Facility

DOE's Regulation of Radioactive Materials and Waste Disposal

- Self-regulation does not mean everyone gets to do whatever they want
- Responsibilities and authorities under the Atomic Energy Act implemented through Directives and Orders
- Requirement to protect members of the public from all sources of radiation, not to exceed 100 mrem/yr
- Seek common approaches with existing promulgated Federal requirements
- Strive for internal consistency in Regulations and Directives (DOE O 458.1 and 10 CFR Part 835 establish protection requirements and DOE O 435.1 implements the requirements for waste management)

DOE Order 458.1 – Radiation Protection

Purpose: To establish requirements to protect the public and the environment against undue risk from radiation.

Establishes Public Dose Limit from all sources and pathways:
100 mrem/yr total effective dose, excepting dose from:

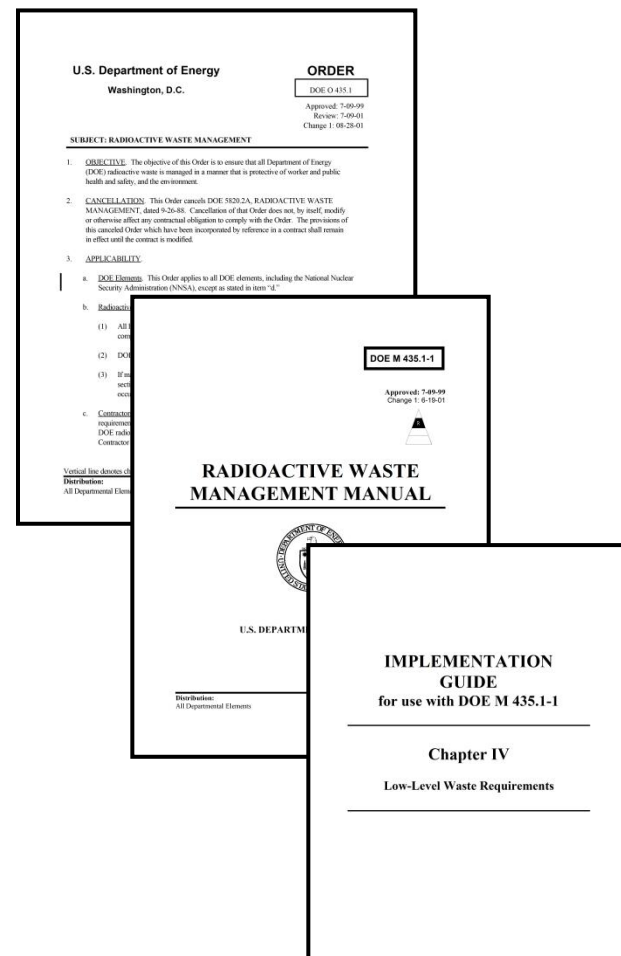
- Radon and decay products in air
- Medical exposures
- Background radiation
- Occupational exposure

Also, must meet applicable ALARA process requirements.

Includes specific requirement that DOE property cannot be released from DOE control until the approved authorized limits are met (applies to waste disposal facilities).

Development of DOE Order 435.1 (Current)

- DOE Order 435.1, Radioactive Waste Management, is an update to DOE Order 5820.2A issued in 1988
- Began update process in September 1996
- Structured process of workshops and steps to incorporate input from the DOE Complex (included a Complex Wide Review)
- Package included Order, Manual (detailed requirements), Implementation Guide, Technical Basis, and training program



DOE Order 435.1 – Radioactive Waste Management

Objective: Ensure that all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety, and the environment.

- Effective implementation date July 2000
- Established DOE HQ/Site responsibilities including establishment of a Low-Level Waste Disposal Facility Federal Review Group (LFRG) to provide independent assessments and oversight of PAs
- Established Performance Objective and Requirements governing disposal actions
- Required Composite Analysis to assess cumulative impacts of the disposal system and other DOE activities (planning tool)

- DOE PAs have always been conducted on a site-specific basis to establish waste acceptance criteria
- Risk-informed and performance-based approach is used to determine appropriate barriers/containers/waste form required for any given waste stream at a given facility
- Maintain awareness and provide input for on-going rulemaking, pleased to see increased emphasis on site-specific rather than generic approaches



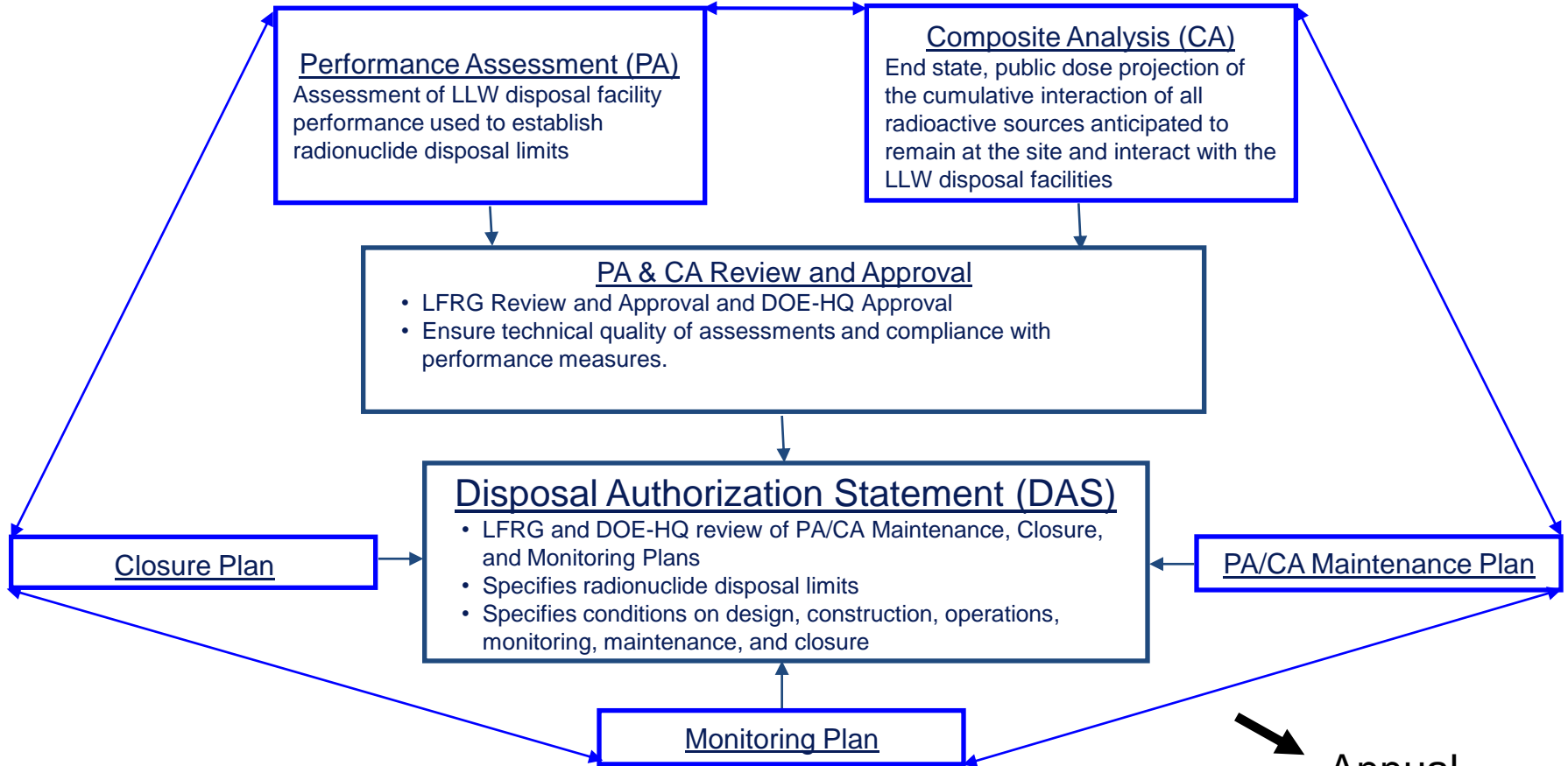
Examples of vault and slit trench disposal used at SRS



Vaults (foreground) and containers in disposal pit (background) at Idaho

Documentation Required for a LLW Disposal Facility

An Integrated & Iterative Regulatory Framework



This information is combined with safety analyses, operating procedures, etc. to form the Radioactive Waste Management Basis

Annual Reviews

- First step was to revisit the Complex-Wide Review
 - More than 10 years since first Complex-Wide Review (1996)
 - 10 years experience implementing DOE Order 435.1
 - First step to evaluate needs for DOE Order 435.1 update
- Final Complex-Wide Review Report was published
- DOE Order 435.1 Update is nearly complete in draft form
 - Order, Technical Standard and Guide are being prepared
 - Will include a public review and comment period

- Technical Standard being developed to replace format and content guides and other informal guidance, for example
 - Disposal Authorizations,
 - Contents for PA report, CA report, monitoring report, closure plan,
 - LFRG review process,
 - Unreviewed disposal question process.
- Specific requirements to provide the ability to use probabilistic results to compare with objectives
- Specific provisions to address Waste Incidental to Reprocessing and Tank Closure

- DOE has many years of experience with LLW disposal operations and regulatory oversight using a site-specific and risk-informed, performance based approach
- The regulatory framework continues to be refined and updated to address practical experience
- Maintaining awareness and providing input for on-going NRC rulemaking - pleased about site-specific and risk informed, performance-based approach