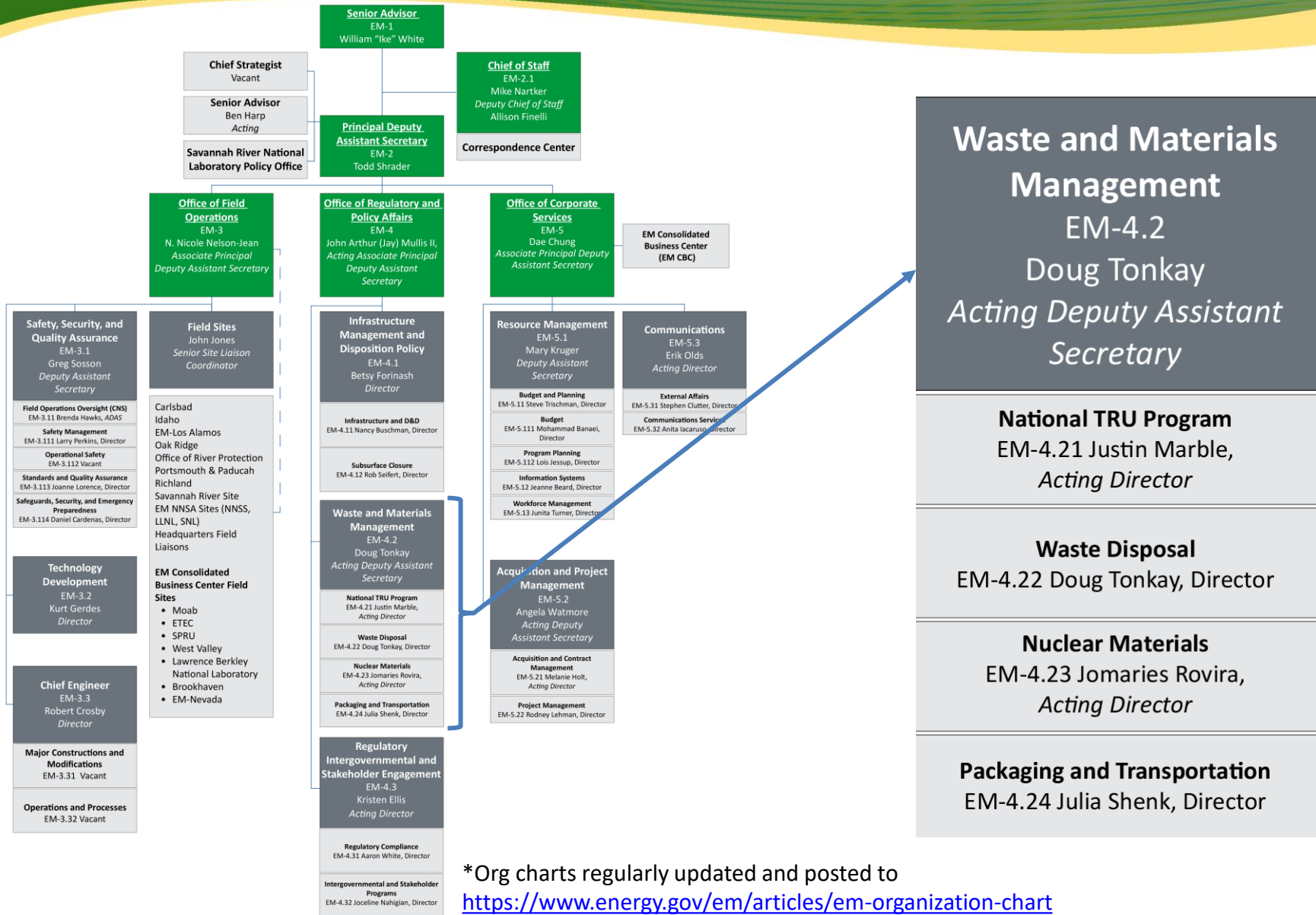


DOE/EM Waste Management Update LLW Forum Spring Meeting

**April 6, 2022
San Antonio, Texas**



Waste and Materials Management
EM-4.2
Doug Tonkay
Acting Deputy Assistant Secretary

National TRU Program
EM-4.21 Justin Marble,
Acting Director

Waste Disposal
EM-4.22 Doug Tonkay, Director

Nuclear Materials
EM-4.23 Jomarías Rovira,
Acting Director

Packaging and Transportation
EM-4.24 Julia Shenk, Director

*Org charts regularly updated and posted to <https://www.energy.gov/em/articles/em-organization-chart>

<https://www.energy.gov/em/articles/em-numbers>

100

shipments received at the Waste Isolation Pilot Plant (WIPP) in FY 2021.

3,200

hazardous materials shipments safely transported over 6 million miles in FY 2020.



20+

Packaging Certification Program actions completed in FY 2021; 25 new ones opened.

1,400+

first responders trained in over 90 Transportation Emergency Preparedness Program courses in FY 2020.



60+

Packaging Certification Program actions completed in FY 2020.

12,800

shipments to WIPP as of May 1, 2021.



10,000+

SNF assemblies (~5.0 metric tons heavy metal uranium) received by EM working collaboratively with NNSA, since 1996. EM has received assemblies from approximately 30 countries, and repatriated approximately 0.5 metric tons of plutonium now safely stored at the Savannah River Site.



99,000

cubic meters of transuranic mixed waste disposed at WIPP as of May 1, 2021.

2.2M



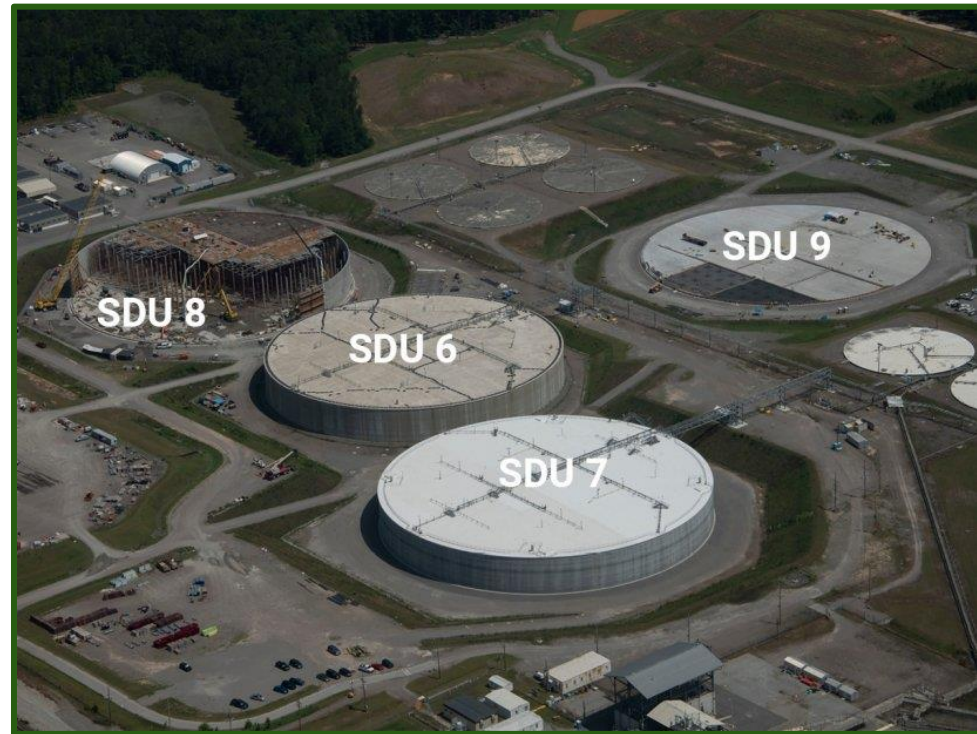
cubic meters of LLW and MLLW disposed by DOE at licensed commercial sites in Utah and Texas.

~17M

cubic meters of low-level radioactive waste (LLW) and mixed low-level radioactive waste (MLLW) from cleanup and other DOE missions disposed to date at sites including: Fernald, Hanford, Idaho, Los Alamos, Nevada National Security Site, Oak Ridge Reservation, and Savannah River Site.

Priority #1: Achieve Significant Construction Milestones

- Complete cold commissioning of the first WTP Melter at Hanford.
- Complete all concrete placements for Saltstone Disposal Unit (SDU) #9 at Savannah River Site (SRS).
- Complete construction of New Filter Building for the Safety Significant Confinement Ventilation Shaft at the Waste Isolation Pilot Plant (WIPP).



SRS continues to meet mission needs by constructing megasized SDUs to permanently dispose of decontaminated saltstone.

Priority #2: Execute Key Cleanup Projects

- Begin tank pre-treatment at Hanford through Tank-Side Cesium Removal operations **(complete)**.
- Complete processing of 100 sodium-bearing waste containers at the Idaho Waste Treatment Unit in Idaho.
- Complete all Subsurface Disposal Area buried waste remediation at Idaho **(complete)**.
- Treat 4 million gallons of tank waste at Savannah River.
- Begin hot cell processing of the high-activity U-233 inventory at Oak Ridge.
- Install equipment to support Los Alamos transuranic (TRU) waste removal from Waste Control Specialists.
- Complete 30 shipments of TRU waste from Los Alamos to WIPP.
- Complete 50 percent of West Access Drift Mining at WIPP.
- Complete removal of a cumulative 13M tons of material from the Moab Site.

Priority #2: Execute Key Cleanup Projects (cont.)

Waste Management is also a key component of these:

- Disposition 1 million pounds of hazardous refrigerant from Paducah.
- Complete demolition of the X-326 Building at Portsmouth Site in Piketon Ohio (debris going to onsite disposal).
- Complete demolition of ancillary support facilities and begin demolition of the Main Plant Processing Building at the West Valley Demonstration Project in Western New York.
- Begin demolition of the TCC and EMAD facilities at Nevada National Security Site.
- Begin demolition of Building B251 at Lawrence Livermore National Laboratory in California.
- Complete remediation of the D1G Ditch Area at Naval Reactors' Kesselring Site in New York.

Waste Disposal Considerations

- DOE's Radioactive Waste Management Manual (M435.1-1) has the current "tiered" policy on treatment, storage, and disposal:
DOE waste shall be treated, stored, and in the case of low-level waste, disposed of at the site where the waste is generated, if practical, or at another DOE facility. If DOE capabilities are not practical or cost effective, exemptions may be approved to allow use of non-DOE facilities for the storage, treatment, or disposal of DOE radioactive waste ...
- Waste disposal is always fully protective of worker and public health and the environment and in compliance with applicable Federal, state, and local requirements, with necessary permit(s), license(s), and approval(s) for the specific waste.
- Sufficient LLW/MLLW disposal capacity exists at DOE and commercial facilities to support the EM cleanup mission.

High-Level Radioactive Waste (HLW) Interpretation

- Current efforts focused on completion of National Environmental Policy Act Analysis of 2nd Waste Stream, i.e., *Draft Environmental Assessment for the Commercial Disposal of Savannah River Site Contaminated Process Equipment* (DOE/EA-2154), issued December 21, 2021, for 45-day public comment ending February 4, 2022.
- DOE also issued a Federal Register Notice on December 21, 2021, affirming its HLW interpretation.
- DOE is proceeding deliberately with proactive stakeholder engagement throughout the HLW interpretation process (key milestones below).

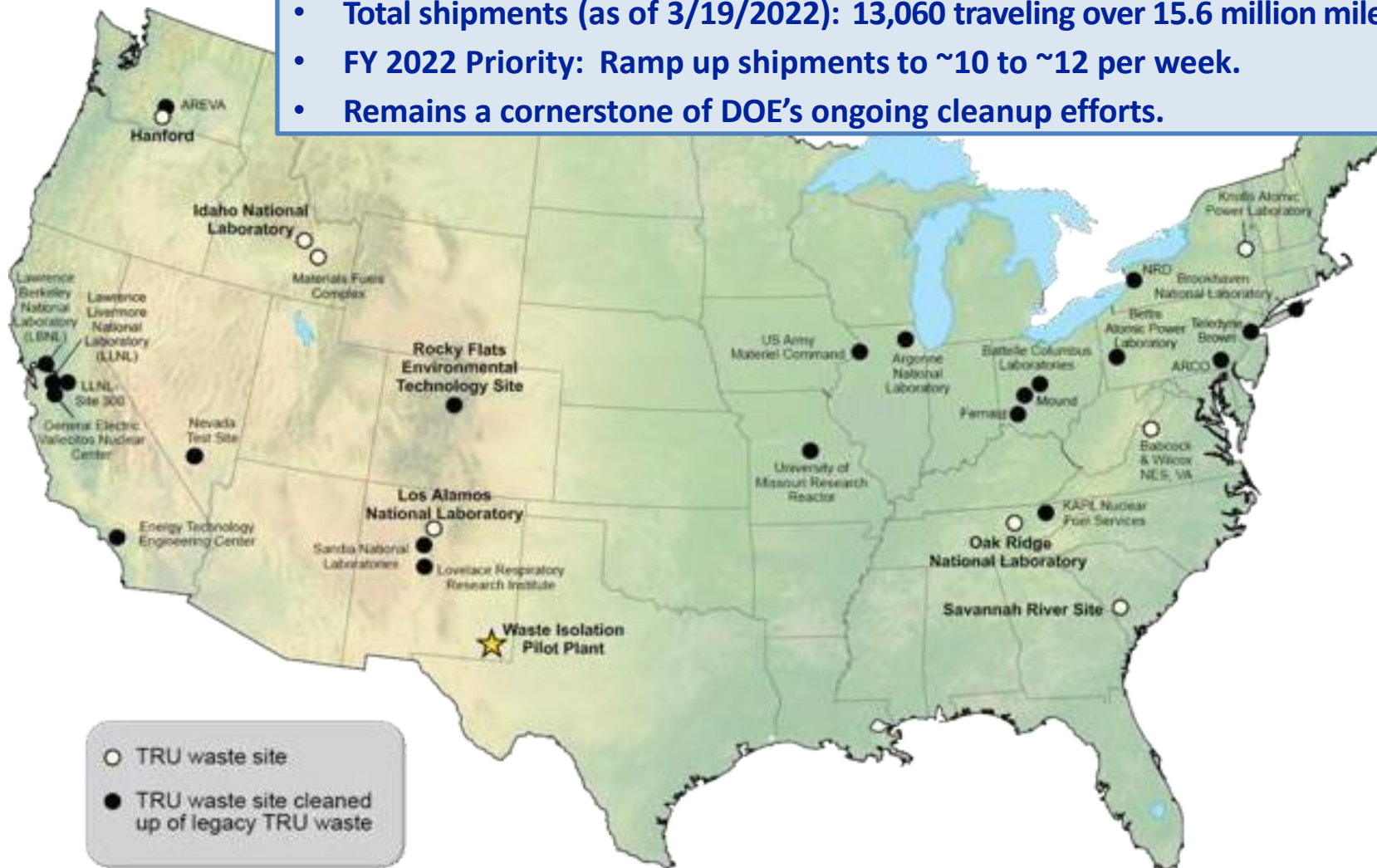


Greater-than-Class C (GTCC) Low-Level Radioactive Waste Disposal

- U.S. Nuclear Regulatory Commission (NRC) issued draft Regulatory Basis in July 2019 that analyzed:
 - 1) which GTCC waste streams could be safely disposed in a near-surface facility;
 - 2) what type of regulatory changes should be considered; and 3) does disposal of GTCC waste present a hazard such that NRC should retain authority or delegate to an Agreement State.
- NRC staff submitted recommendations to the Commission in October 2020 on the path forward for the update to 10 CFR Part 61, *Licensing Requirements for Land Disposal of Radioactive Waste*, and whether to consolidate rulemaking with draft Regulatory Basis.
- DOE continues to monitor NRC developments and the Energy Policy Act of 2005 requirement to “await action by Congress.”

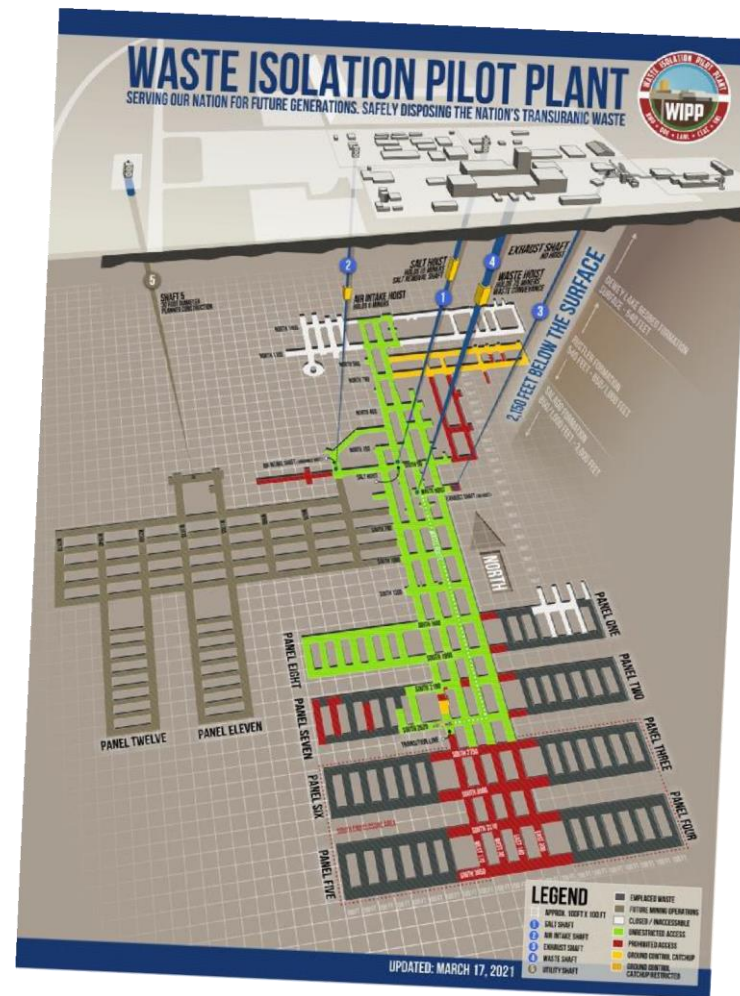
National TRU Program (NTP) Priorities

- Total number of TRU waste sites cleaned up to date: 22
- Total shipments (as of 3/19/2022): 13,060 traveling over 15.6 million miles.
- FY 2022 Priority: Ramp up shipments to ~10 to ~12 per week.
- Remains a cornerstone of DOE's ongoing cleanup efforts.



Waste Isolation Pilot Plant (WIPP) Priorities

- **Worker Safety:** Initiated routine operation of the 700-C ventilation in January 2022; supports ground control and increased workforce safety.
- **Mine Capacity and Waste Emplacements:** Completed Panel 8 mining – outfitting and certification underway; continuing to optimize waste shipments to meet generator site cleanup goals.
- **Upgrade Infrastructure:** Progress continues on safety significant confinement ventilation system; utility shaft; and numerous general plant projects to upgrade WIPP facility infrastructure and plant systems.

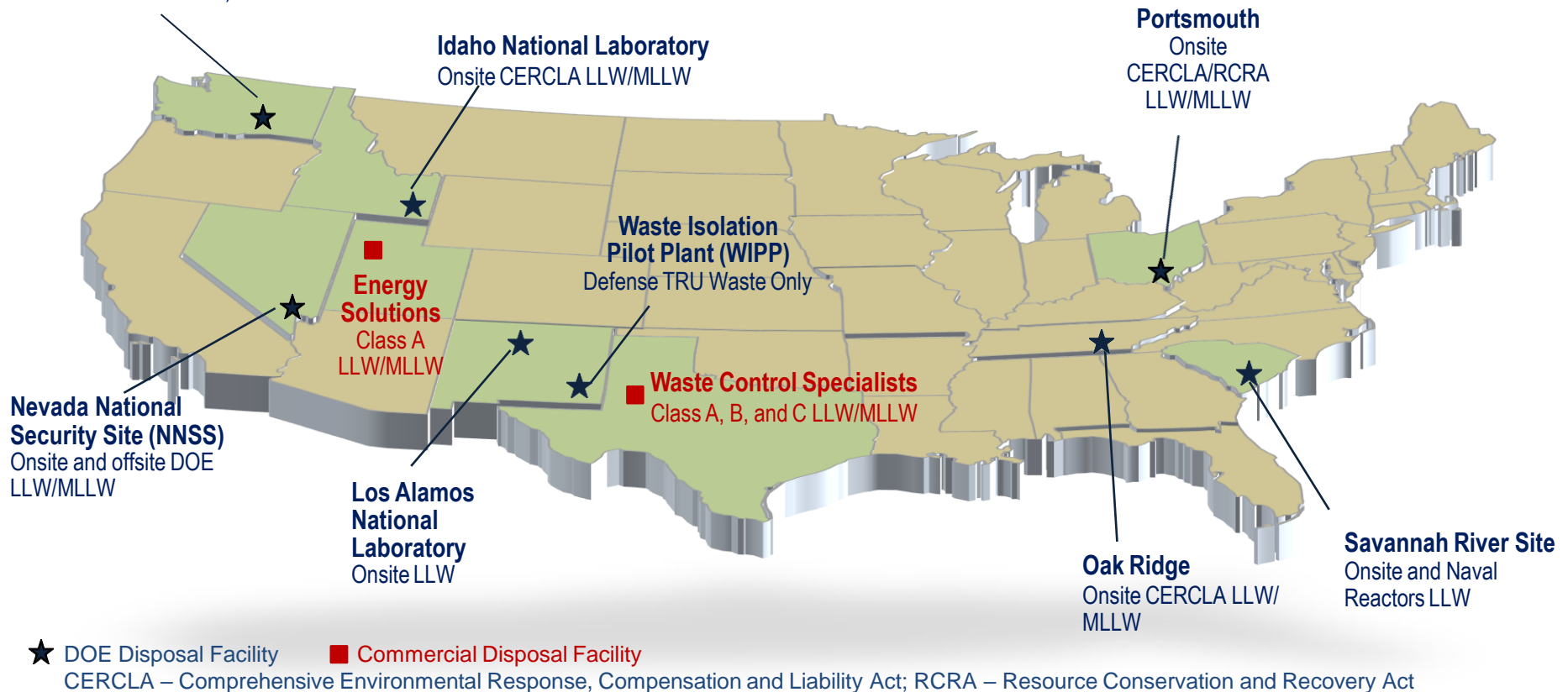


Operating DOE & Commercial LLW Disposal Facilities Used by DOE

Hanford Site

- Onsite LLW/MLLW and Naval Reactors LLW
- Integrated Disposal Facility awaiting commissioning (onsite vitrified low-activity waste and LLW)

- All waste is disposed in accordance with each waste disposal facility's WAC.
- Each waste disposal site is licensed to dispose of specific waste types (see map below for examples).



- Inventories of depleted uranium (DU) oxide are stored at DOE's Portsmouth and Paducah sites, resulting from conversion of legacy DU hexafluoride at DOE's conversion facilities.
- DOE's near-term plan is to focus on DU oxide disposal at approved commercial sites:
 - Waste Control Specialists (WCS) is currently licensed.
 - *EnergySolutions* of Utah is preparing a license application.
- DOE successfully completed a pilot shipment of one railcar containing six cylinders of DU oxide to disposal at WCS in September 2020.
- Disposal rate/timing is dependent on appropriations, FY22 budget recently approved included "an additional \$5M for treatment and shipping of cylinders."

Low-Level Waste Disposal Facility Federal Review Group (LFRG)

- DOE implements *Atomic Energy Act* in part through DOE Order 435.1, *Radioactive Waste Management*, and the associated Manual.
- LFRG oversees DOE 435.1 requirements for DOE's LLW disposal facilities.
- LFRG recently reviewed technical basis documents (e.g., Composite Analysis) at Hanford and Idaho.
- FY 2021/2022 reviews are ongoing/planned at LANL (Area G), Hanford (Burial Grounds Performance Assessment), and SRS (E-Area).

At the Portsmouth On-Site Waste Disposal Facility, placement operations continue as a landfill compactor compresses debris from the X-326 demolition project.



- Safely conducted more than 4,000 hazardous materials shipments.
- Trained 1,031 first responders in 67 courses through the Transportation Emergency Preparedness Program (TEPP).
- Completed 57 Packaging Certification Program docket.

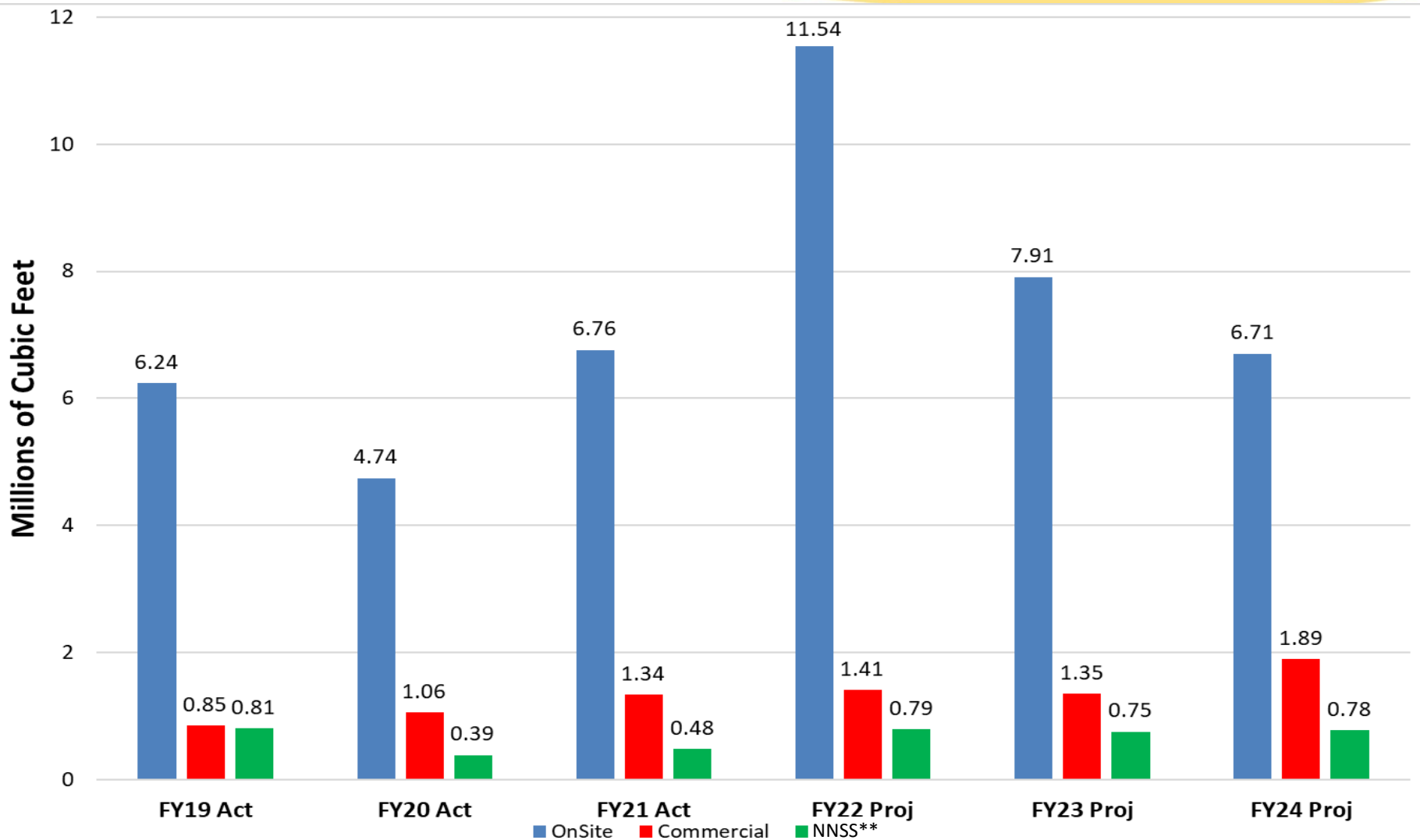
***Projected year-end numbers for FY 2021**



Offloading TN RAM transportation cask containing Oak Ridge National Laboratory LLW at Nevada National Security Site Area 5

- Managed by EM/HQ personnel; coordinated with other DOE programs.
- Data call to all DOE sites occurs in the first quarter of each fiscal year.
- Compiled data provided to Florida International University for entry into EM Waste Information Management System (WIMS).
- WIMS provides stakeholder accessible forecast data by fiscal year.
- Current WIMS forecast data for NNSS disposal:
 - FY 2022 – 0.79 million ft³
 - FY 2023 – 0.75 million ft³
 - FY 2024 – 0.78 million ft³
- Site inputs represent planned and budgeted program activities at the end of September 2021.
- Out-year data reflects uncertainty due to site funding adjustments, federal budget process, DOE priorities.

Complex-wide LLW/Mixed Low-Level Waste (MLLW) Disposal Volume by Disposal Location



**"NNSS" represents waste generated outside of Nevada that was disposed at NNSS

Onsite Waste Disposal Facility at Piketon, Ohio

**Video of a Shipment to DOE/EM's Portsmouth
Site, Onsite Waste Disposal Facility**

EM's 2023 Congressional Budget Request \$7.643B

Special Nuclear
Materials & Spent
Nuclear Fuel
\$ 508M / 7%

TRU & Solid
Waste
\$ 986M /
13%

Soil &
Groundwater
\$ 535M / 7%



Radioactive Tank Waste
\$ 2,661M / 35%

Facility D&D
\$1,511M / 20%

Site Services
\$ 1,442M / 19%

EM Sites	Special Nuclear Materials & Spent Nuclear Fuel	Radioactive Tank Waste	TRU & Solid Waste	Facility D&D	Soil & Groundwater	Site Services	FY 23 (\$M)
Savannah River	✓	✓	✓	✓	✓	✓	1,724
River Protection		✓				✓	1,604
Richland			✓	✓	✓	✓	917
Idaho	✓	✓	✓			✓	391
Oak Ridge	✓		✓	✓	✓	✓	612
Portsmouth	✓			✓		✓	560
Paducah	✓			✓		✓	282
Carlsbad			✓			✓	463
Los Alamos			✓	✓	✓	✓	332
West Valley			✓	✓		✓	94
All Others			✓	✓	✓	✓	664

Questions?