

2023

Year in
REVIEW



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

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OFFICE OF ENVIRONMENTAL MANAGEMENT (EM)



EM Senior Advisor William "Ike" White presents at EM-Los Alamos Environmental Management Cleanup Forum at historic Fuller Lodge as part of Oppenheimer-themed events in Los Alamos.

For nearly 35 years, the Department of Energy (DOE) Office of Environmental Management has tackled one of the largest environmental cleanup efforts in the world. Today, EM is delivering cleanup results and putting tools in place to enable continued progress with a focus on the future of local communities, tribes and the nation.

With the launch of the Integrated Waste Treatment Unit in 2023, EM is now treating more tank waste than ever before in Idaho as well as at Hanford and Savannah River. Cleanup commitments were met with some delivered early including demolition work in Nevada and spent nuclear fuel transfers in Idaho. Whether drawing down inventories of transuranic waste at Los Alamos, treating billions of gallons of contaminated groundwater across the country or progressing key demolitions at sites like Oak Ridge and West Valley, EM reduced risk and advanced key priorities in 2023.

As cleanup advances towards some of the toughest work, EM is leveraging opportunities to address remaining challenges, solve problems and maintain progress.

In 2023, priorities were achieved to position EM sites for the future. Key milestones were met at the Waste Isolation Pilot Plant as part of an overarching effort to ensure safe successful shipping and disposal operations for years to come. The Hanford Site is one step closer to solidifying tank waste in glass with the heatup of the first Waste Treatment and Immobilization Plant melter. New disposal facilities that will enable future cleanup advanced at several sites this year.

Along with capabilities and infrastructure, EM is looking at additional tools and technologies to ensure long-term success that includes targeted research and development investments, updated planning tools, and continuous evaluation of treatment and disposal options to accelerate cleanup.

EM progress is also driven by a highly skilled workforce. Throughout the year, EM partnered with the Energy Communities Alliance and the Energy Facilities Contractors Group to build a next-generation workforce by developing early career professionals into the leaders of tomorrow and bringing new workers into the fold. Long-term projections developed in 2023 provide an opportunity to shape workforce development initiatives and EM is ending the year better prepared through grant awards to Minority Serving Institutions, job fairs, and meetings in communities that know the workforce best.

“In achieving the vast majority of 2023 priorities, boosting engagement with those most impacted by the environmental legacy of the past and implementing a forward-thinking approach, EM delivered a set of results this year that addresses the challenges of today and creates opportunities that will benefit generations to come.”

- EM Senior Advisor William "Ike" White



State, government and contractor officials take part in the EMDF groundbreaking along with (right to left) EM Senior Advisor William “Ike” White, U.S. Representative Chuck Fleischmann, and EM Oak Ridge manager Jay Mullis.

Partnering with communities, consulting with tribal nations, strengthening relationships with regulators and increasing communication with stakeholders has been a priority as EM reinvigorated engagement throughout 2023. From hosting listening sessions in New Mexico, to reaching conceptual agreement with the state of Washington on a path forward at Hanford, to achieving alignment on common goals, EM is fostering cleanup solutions as well as a shared vision for the future.

EM progress is opening opportunities for clean energy development, supporting national security priorities, enabling scientific research and boosting community efforts to build strong economies and grow jobs. In 2023, these types of opportunities were a driving force behind the EM mission from work at Oak Ridge enabling construction to start on a new national security facility, to maturation of cleanup at the Savannah River Site leading to a greater role for the National Nuclear Security Administration, to the transfer of land to communities in Ohio for local economic development.

EM is building on these efforts and looking to the future in a broader way than ever before. EM is focused not only on getting the job done but also in meeting sustainability goals like shifting to more

electric vehicles and exploring clean energy production opportunities through Secretary Jennifer M. Granholm’s new Cleanup to Clean Energy Initiative.

By delivering on 2023 priorities, EM is advancing the cleanup mission in a safe and effective manner, positioning sites for continued success and leveraging opportunities for the future.



EM Principal Deputy Assistant Secretary Jeffrey Avery (center) and other EM officials stopped at the Sedan Crater at the Nevada National Security Sites while visiting EM worksites.

IDAHO CLEANUP PROJECT

“I am so proud of the sustained high performance of the Idaho Cleanup Project crews this year, particularly in the areas of TRU shipments, Accelerated Retrieval Project demolition, and Naval Reactors demolition and dismantlement. Most notably, in 2023, we celebrated the spent nuclear fuel wet-to-dry campaign nine months ahead of the 1995 Idaho Settlement Agreement milestone and initiated sodium-bearing waste processing operations at the IWTU after 11 years of commissioning. I continue to be impressed with the effort and dedication of my combined federal and contractor team.”

– Connie Flohr, Manager, Idaho Cleanup Project

HIGHLIGHTS

- Began treatment of sodium-bearing waste, treating 68,000 gallons of liquid waste from underground storage tanks.
- **Completed transfer of all spent nuclear fuel from wet-to-dry storage—an EM 2023 priority.**
- Began construction of a new disposal cell at the Idaho CERCLA Disposal Facility.
- Began Naval Reactors Facility demolition and dismantlement of two historic and defueled naval nuclear propulsion plants.
- Removed three additional Accelerated Retrieval Project structures from the Subsurface Disposal Area.
- Realized the 7,000th TRU waste shipment from Advanced Mixed Waste Treatment Project to the Waste Isolation Pilot Plant.

LIQUID WASTE TREATMENT & DISPOSAL

Since operations began at the Integrated Waste Treatment Unit (IWTU) in April, 68,000 gallons of radioactive sodium-bearing liquid waste has been converted to a more stable, granular solid for packaging in stainless steel canisters and storage in concrete vaults.

The facility will treat 900,000 gallons of radioactive liquid waste over a three-to-seven-year period, accounting for outages to conduct regular maintenance on the facility.

TRANSFERRING SPENT NUCLEAR FUEL

A key milestone was completed with the transfer of all spent nuclear fuel from wet-to-dry storage nine months ahead of schedule.

Over the last 20 years, thousands of spent nuclear fuel assemblies with over 263,000 pounds of heavy metals were transferred from wet storage to dry storage facilities at the Idaho Nuclear Technology and Engineering Center, the Naval Reactors Facility, and the Materials and Fuels Complex. The now-empty spent nuclear fuel storage basin—one of the largest in the world—will remain open until completion of the remaining mission work.

IDAHO CERCLA DISPOSAL FACILITY

With the Idaho CERCLA Disposal Facility (ICDF) more than 80% full, expansion began on a new disposal cell of the largest landfill at the Idaho National Laboratory (INL) site, increasing total disposal capacity to 1.06 million cubic meters. This cost-effective disposal solution will extend the life of the facility by 25 years and increase its capacity threefold. The ICDF new



Crews pose in front of the last spent fuel cask in recognition of meeting the wet-to-dry milestone.



Crews at IWTU survey control room monitors as the facility treats sodium-bearing waste.

disposal cell is projected to start accepting waste in 2026.

DISMANTLEMENT AND DEMOLITION

Dismantlement and demolition of two defueled reactor vessel prototypes and associated buildings at the Naval Reactors Facility got underway in 2023.

Crews began work at S1W, the Submarine 1st Generation Westinghouse prototype, by dismantling hull and engine components, and deactivating the reactor compartments and associated systems by removing shielding components.

Activities also began at the Aircraft Carrier 1st Generation Westinghouse prototype where demolition of several ancillary buildings provided needed space to support equipment staging for future work inside the prototype.

SUBSURFACE DISPOSAL AREA

Four Accelerated Retrieval Project enclosures in the Subsurface Disposal Area (SDA) underwent decontamination and dismantling, leaving only four waste storage buildings standing, which will be removed in 2024.

Once demolition is completed an earthen cover will be installed over the entire 97-acre SDA.

TRANSURANIC WASTE

The INL's Advanced Mixed Waste Treatment Project (AMWTP) achieved its 7,000th transuranic (TRU) waste shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico, traveling over 9 million road miles—enough distance to make several roundtrips to the moon.

Over 70% of all TRU waste shipments received at WIPP came from AMWTP. Continued cooperation will be essential as several thousand waste containers slated for disposal at WIPP remain at AMWTP.



Excavators make progress on Cell 3, a new disposal cell at the ICDP.

OAK RIDGE OFFICE OF ENVIRONMENTAL MANAGEMENT (OREM)

“Our progress in 2023 has reshaped the landscape, created new opportunities, and positioned Oak Ridge for a better future. Our employees removed contaminated facilities, continued reducing the site’s inventory of nuclear waste, and we’re transferring cleaned land that can benefit the region in the years ahead.”

– Jay Mullis, Manager, Oak Ridge Office of Environmental Management

HIGHLIGHTS

- **Completed demolition on the Low Intensity Test Reactor—an EM 2023 priority.**
- **Began early site preparation for the Environmental Management Disposal Facility—an EM 2023 priority.**
- Transferred 376 acres of land for economic development.
- Released two draft Records of Decision about groundwater for public comment.
- Broke ground on the K-25 Viewing Platform.
- Forged new partnerships to aid workforce development.



Crews safely take down the Low Intensity Test Reactor in ORNL's central campus.

CLEARING AWAY THE OLD AND MAKING WAY FOR THE NEW

The Oak Ridge Office of Environmental Management completed an EM 2023 priority by finishing demolition on the Low Intensity Test Reactor. This is the second reactor teardown in the heart of the Oak Ridge National Laboratory (ORNL) site in a year, clearing high-risk buildings that have been shut down for decades, and opening land for future research missions.

BUILDING FOR THE FUTURE

OREM achieved an EM 2023 priority by breaking ground and beginning early site preparations on the Environmental Management Disposal Facility (EMDF). With OREM’s current onsite disposal facility nearing full capacity, EMDF is essential to maintain its cleanup momentum.

Construction also progressed on the Mercury Treatment Facility at Y-12. Crews finished the framework on the treatment plant and the foundation for the headworks facility. When operational, this facility will allow OREM to address Y-12’s large, mercury-contaminated facilities and sources of mercury in the soil by preventing releases into the nearby creek.

USHERING IN THE NEXT CHAPTER AT THE EAST TENNESSEE TECHNOLOGY PARK

Planning took a major step forward when regulators approved proposed plans for addressing groundwater at the East Tennessee Technology Park (ETTP).



Aerial photo of the ETTP, where OREM has recently transferred 376 additional acres for economic development.

Those plans chart OREM's path to complete cleanup and achieve its ultimate vision of transforming ETTP into a multi-use industrial center, national park and conservation area for the community.

Progress toward this end-state use was realized by transferring 376 acres for economic development, bringing the total to more than 1,600 acres. Three thousand acres are in a conservation easement and more than 100 acres are set aside for historic preservation.

Construction also started on the new K-25 Viewing Platform that will provide new perspective and aid historic interpretation efforts for visitors.

STRENGTHENING AND EQUIPPING THE FUTURE WORKFORCE

Through expanding partnerships with colleges and universities, Oak Ridge attracted its largest summer intern program on record, with 40 students from 14 schools across the country. The newest agreement

with Tennessee Tech University is creating more career opportunities for students and helping the school launch a new nuclear engineering degree.



Chemical operator apprentices from Roane State Community College work to support OREM's operations at the Liquid and Gaseous Waste Operations.

EM LOS ALAMOS FIELD OFFICE (EM-LA)

“We met all fiscal year regulatory milestones, exceeded transuranic waste shipment goals, furthered soil remediation at Aggregate Areas, and completed field work at the Middle DP Road Site—a major project and a high priority for Los Alamos County. Of key importance is the progress we made in obtaining robust and diverse stakeholder participation for the development of the EM-LA Strategic Vision. I look forward to creating a long-term vision for the future legacy cleanup projects and continuing to enhance our engagement in New Mexico.”

- Michael Mikolanis, Manager, Environmental Management Los Alamos Field Office

HIGHLIGHTS

- Met all fiscal year 2023 milestones under the 2016 Compliance Order on Consent with the New Mexico Environment Department early or on time.
- **Exceeded the TRU waste shipment goal for planned shipments to the Waste Isolation Pilot Plant—an EM 2023 priority.**
- Initiated size-reduction activities for corrugated metal pipes containing cemented TRU waste at Technical Area 54, Area G.
- Finished investigation and remediation of contaminated soils at North Ancho Canyon and Threemile Canyon Aggregate Areas.
- Completed field work at the Middle DP Road Site, a project critical to economic development for Los Alamos County.
- Awarded deactivation and decommissioning contract for Ion Beam Facility and initiated first phase of project.
- Conducted 30 EM-LA Strategic Vision sessions with pueblos, stakeholders and the public for remaining legacy cleanup projects.

INVESTIGATING AND REMEDIATING LEGACY WASTE

Progress was made with two soil and debris cleanup campaigns, in and around canyons and watersheds, from legacy operations across the Los Alamos National Laboratory (LANL) site.

Investigation and field work was completed in North Ancho Canyon (Southern External Boundary Campaign) and Threemile Canyon (Pajarito Watershed Campaign). Work is currently underway at three additional areas.



An excavation crew removes contaminated soil from legacy Los Alamos National Laboratory operations in North Ancho Canyon.

PRIORITIZING TRU SHIPMENTS TO WIPP

EM-LA completed 59 transuranic (TRU) shipments to the Waste Isolation Pilot Plant (WIPP)—exceeding a 2023 fiscal year goal of 40 shipments. The shipments included more than 111 cubic meters of TRU waste.



TRU waste shipments readied for transportation to WIPP for permanent disposal.

REDUCING BELOW-GROUND WASTE

The retrieval of the 158 buried corrugated metal pipes (CMPs) at Technical Area 54, Area G continued while size-reduction operations commenced. Size-reduction consists of the cutting of the CMPs into five sections in order to fit into standard waste boxes for shipment to WIPP.

Prior to cutting, each pipe is 20 feet long, 30 inches wide, weighing between 10,000 and 14,000 pounds. Twenty-four CMPs have been retrieved and 17 CMPs have been size-reduced.

DEVELOPING EM-LA STRATEGIC VISION

A long-term strategic vision is being developed for the remaining legacy cleanup projects at the LANL site. EM-LA met with approximately 170 participants representing 20 groups, including pueblos, stakeholders and the public. Nearly 2,000 comments were received and will inform the model used to develop the strategic vision document.



Waste Retrieval Operations crew prepare a CMP filled with cemented TRU waste for size-reduction using a 10-ton electric hoist mounted on a gantry and pipe rollers in Dome 375 at Technical Area 54.



Waste Retrieval Operations crew guide a cut section of CMP filled with cemented TRU waste into a standard waste box in preparation for shipment and permanent disposal at WIPP.

HANFORD SITE

“Our team delivered a tremendous year of historic achievements in 2023. Each of our contractor partners accomplished important cleanup objectives, many requiring years of dedicated effort. This was another year of ‘firsts’ in our mission to immobilize and dispose of waste from our large underground tanks. We heated up the first melter at our Waste Treatment and Immobilization Plant and filled the first container with clean test glass. Our team also continued to deliver taxpayer value by progressing projects that reduce risks to our workforce, our community, and the environment of the Pacific Northwest. We are poised for another exciting year of ‘firsts’ in 2024, and I’m grateful for the opportunity to work with such a talented team of professionals and for the broad support we receive from beyond the borders of our immense site on a mission of national prominence.”

– Brian Vance, Manager, Office of River Protection and Richland Operations Office

HIGHLIGHTS

- Heated up the first melter and poured the first test glass at the Waste Treatment and Immobilization Plant (WTP).
- Progressed preparations to start heating up the second melter in January 2024.
- **Pretreated more than 800,000 gallons of tank waste cumulatively that is staged to feed to the WTP when hot commissioning of melters begins—an EM 2023 priority.**
- **Treated more than 2 billion gallons of contaminated groundwater for the ninth consecutive year—an EM 2023 priority**
- Demolished a nuclear facility used to transfer radioactive sludge out of a reactor basin into safer storage away from the nearby Columbia River.

PREPARING FOR NEXT PHASE IN TANK WASTE TREATMENT ERA

The Hanford Site made history by pouring the first test glass from the first of two 300-ton melters at the Waste Treatment and Immobilization Plant (WTP), marking another important step in commissioning the plant as Hanford prepares to immobilize millions of gallons of radioactive and chemical waste from large underground tanks for safe disposal.

Hanford made great strides in continuing to treat tank waste to be fed to the WTP when immobilization in glass begins with a cumulative total of 800,000 gallons treated at the Tank-Side Cesium Removal (TSCR) System.

The site continued important progress by readying multiple facilities to work as one system under the Direct-Feed Low-Activity Waste Program to support 24/7 operations to treat tank waste beginning in calendar year 2025.

Another highlight was reaching a conceptual agreement with the state of Washington and U.S. Environmental Protection Agency in Holistic Negotiations on revising plans for managing the tank waste that upholds the agencies’ shared commitment to a safe, effective and achievable path forward.



In a historic moment in the Hanford Site cleanup mission, workers monitored from a control room as the first molten test glass was poured into a stainless-steel container at the WTP.



Workers move ion exchange columns filled with radioactive cesium and solids from the TSCR System on a storage pad.

PROTECTING THE ENVIRONMENT, PRIORITIZING RISK REDUCTION, SAFETY AND SECURITY

Hanford demolished a nuclear facility used to transfer radioactive sludge out of a basin in the K West Reactor and into safer storage away from the nearby Columbia River. The site also sorted and moved radioactive debris in the 1.2-million-gallon basin into underwater bins to prepare the basin to be drained and filled with grout.

More than two billion gallons of groundwater was treated at Hanford in 2023, bringing the total to more than 32 billion gallons treated since DOE began removing contamination from groundwater in the mid-1990s, and significantly shrinking areas of groundwater contamination to enhance protection of the Columbia River.

ENSURING FUTURE SUCCESS

The One Hanford team remains focused on rightsizing and modernizing the site's infrastructure to ensure

Hanford's electrical distribution system, information technology systems, water and sewer systems, and roads continue to support safe and cost-efficient cleanup progress.



Hanford crews demolish the facility used to transfer radioactive sludge out of a nuclear fuel basin in the K West Reactor.

PORTSMOUTH/PADUCAH PROJECT OFFICE (PPPO)

“Marked by 20 years of collaborative spirit, the PPPO workforce tackles some of the toughest environmental issues with innovative approaches to cleanup providing our communities with opportunities for a vibrant, sustainable future of economic development and long-term revitalization.”

- Joel Bradburne, Manager, Portsmouth/Paducah Project Office

HIGHLIGHTS

- **Removed an additional 1 million pounds of hazardous R-114 refrigerant from the Paducah Site—an EM 2023 priority.**
- Completed waste placement of 163,000 cubic yards from the Portsmouth X-326 Process Building demolition in the On-Site Waste Disposal Facility.
- Completed the first phase of construction of the Portsmouth On-Site Waste Disposal Facility project.
- Completed demolition on 16 excess facilities at Paducah.
- Completed the Paducah C-209 Protective Forces facility and the C-105 Emergency Operations Center.
- Began the first offsite shipping of depleted uranium oxide from both the Portsmouth and Paducah depleted uranium hexafluoride, or DUF6, conversion plants via multi-car rail shipments for disposal at a licensed facility.

PORTSMOUTH DEACTIVATION AND DEMOLITION PROJECTS ADVANCE

Significant progress was made this year to deactivate and demolish the three massive process buildings at the Portsmouth Site. Project personnel closed out the X-326 Process Building demolition project with

final disposition of more than 135,000 cubic yards of generated debris in the On-Site Waste Disposal Facility (OSWDF).

At the X-333 Process Building, 88% of deactivation activities have been completed that will prepare building for pre-demolition in 2024.



During deactivation workers remove thousands of components from the X-333 building in preparation for future demolition.

PORTSMOUTH ON-SITE WASTE DISPOSAL FACILITY REACHES A MAJOR MILESTONE

At the OSWDF, a covering was placed on the first three waste cells holding debris generated from the X-326 Process Building. This initial OSWDF project was completed 22 months ahead of schedule and \$30 million under budget, earning the project the DOE Project Management Excellence Award. Construction activities on the next phase of the project began and include three additional cells of the OSWDF in preparation for future X-333 Process Building demolition debris.

PADUCAH PROCESS BUILDING DEACTIVATION ADVANCES

The Paducah Site is advancing the C-333 Process Building deactivation that will lead to the site's future transformation. A first-of-its-kind technology was deployed with the Large Item Neutron Assay System (LINAS) to scan and measure the neutron particles emitted from uranium deposits inside large equipment removed from the process building. Measurements will determine how the equipment will be disposed.



Process gas equipment is scanned in LINAS chamber as technicians finalize methods for measuring deposits from past operations.

HAZARDOUS MATERIAL REMOVAL CLEARS PATH FOR CLEANUP

Another key element in deactivation and demolition is the removal of site hazards, such as the 8 million pounds of R-114, a hazardous, ozone-depleting refrigerant. The halfway point in this campaign was reached with disposition of 1 million pounds of R-114, meeting an EM 2023 priority.



Paducah Site maintenance mechanics remove the last 1-ton chlorine cylinder from the C-611 Water Treatment Plant, a significant reduction of hazards at the site.

DUF6 CONVERSION PLANT SHIPPING PROGRAM

At DUF6 PPPO plants in Portsmouth, Ohio and Paducah, Kentucky, 638 DUF6 cylinders were processed this year, bringing the total cylinders processed to date to 7,200 with 59,800 cylinder remaining. The project also made significant progress in establishing a new oxide shipping program using a multi-car train to transport an initial 300 cylinders to a disposal facility in Texas and paving the way for construction of the new shipping facilities at each site.



The inaugural multi-car oxide shipment safely leaves the Portsmouth Site for the disposal facility in Texas.

WASTE ISOLATION PILOT PLANT (WIPP)

“WIPP continues to make history by permanently disposing of the nation’s transuranic waste left over from decades of vital nuclear defense activities. In 2023 we doubled our number of shipments, and the amount of waste emplaced all while continuing to improve WIPP’s infrastructure. WIPP employees are among the best of the best, and I’m proud to lead this team.”

– Mark Bollinger, Manager, Carlsbad Field Office

HIGHLIGHTS

- Began transuranic, or TRU, waste emplacement in Panel 8 of the WIPP underground.
- **Received 473 waste shipments from generator sites—an EM 2023 priority.**
- **Completed sinking the Utility Shaft to reach the final depth of 2,275 feet—an EM 2023 priority.**
- **Began commissioning the new Safety Significant Confinement Ventilation System—an EM 2023 priority.**
- Received New Mexico Environment Department approval for new 10-year operating permit.
- Continued mining three access drifts on the West Mains toward the future location of Panels 11 and 12.
- Successfully completed transition to a new management and operations contract.

MULTIPLE INFRASTRUCTURE PROJECTS ADVANCE

Filters and fans were installed in the two primary buildings of the Safety Significant Confinement Ventilation System (SSCVS), the largest containment fan system in the DOE complex. The SSCVS will significantly increase airflow to the WIPP underground, which is critical for safe underground operations.

Working in tandem with the SSCVS, the site’s largest Utility Shaft with a diameter of 26 feet reached its final depth of 2,275 feet, and mining crews began cutting horizontal drifts from the shaft to connect it with the WIPP underground.



EM Principal Deputy Assistant Secretary Jeffrey Avery (left) is shown the 1,000-horsepower fan motor on a tour of the New Filter Building.



Workers emplace TRU waste containers in Room 2 of Panel 8 in the WIPP underground.

SHIPMENTS AND EMPLACEMENTS RAMP UP

WIPP doubled shipments and waste emplacement in fiscal year 2023, receiving 473 shipments and emplacing 700 columns of waste in disposal rooms.

MINING TO THE WEST

WIPP miners continued work on the West Mains, cutting passageways, or drifts, to connect the existing mine to the Utility Shaft and future panels 11 and 12.

Since work began on the three drifts and side cuts, miners have chewed through 175,296 tons of rock.

UPGRADING AGING INFRASTRUCTURE

Aging infrastructure continues to receive upgrades to ensure the WIPP facility can continue to safely operate for decades to come. Work advanced on the site's fire protection infrastructure project and is now near 85% complete to replace an aging system installed more than 30 years ago.



Waste handlers in WIPP's Panel 7 use a push-pull device on a forklift to lift and slide a container into place.



When Utility Shaft crews reached repository depth, horizontal excavation began to connect the shaft with the WIPP mine.

WEST VALLEY DEMONSTRATION PROJECT (WVDP)

“Our dedicated workforce continues to deconstruct the Main Plant Process Building in a manner that is protective of the workforce, the public and the environment. Our WVDP team has demonstrated that commitment by their recent recognition as a Voluntary Protection Program Star site and VPP Recertification. I’m proud to be a part of a team that prides itself on delivering results. I look forward to continuing our work together.”

- Bryan C. Bower, Project Director, West Valley Demonstration Project

HIGHLIGHTS

- Demolished and disposed of 9,000 tons of Main Plant Process Building waste.
- Completed the construction of the new guard house facility.
- Shipped two-of-seven Chemical Process Cell degraded containers.

DISPOSING MAIN PLANT PROCESS BUILDING WASTE

More than 9,000 tons of debris from the demolition of the Main Plant Process Building were disposed, meeting an EM 2023 priority.

Crews packaged and shipped by rail more than 500 waste containers for safe disposal off-site. Each container was loaded with an average of 38,000 pounds of debris.

COMPLETING CONSTRUCTION OF THE NEW GUARD HOUSE

A new guard house was constructed to better serve current and future on-site security needs, providing a more spacious facility with updated offices, modern equipment and storage.

The former guard house, built in the early 1980s when cleanup at the site first began, has outgrown

its current capabilities. The new facility will enhance security presence and effectiveness and improve officer and employee safety.

SAFELY SHIPPED DEGRADED CONTAINERS

Crews safely processed, over-packed, and shipped two-of-seven degraded Chemical Process Cell (CPC) waste containers off-site for disposal. Both containers had a combined weight of 169,000 pounds.



Main Plant Process Building deconstruction of the hot cells, which were used during spent fuel reprocessing operations.

SAVANNAH RIVER SITE (SRS)

“From tackling one of the largest environmental cleanup efforts in the world to stepping up clean energy goals with our zero-emissions vehicles, the work accomplished at the Savannah River Site has been impressive. We started construction of the Advanced Manufacturing Collaborative facility and continue to make progress on the disposal of legacy liquid waste with the construction of SDU 8. It’s truly taken a team effort from multiple individuals and organizations to realize our progress and successes. Protecting and improving the environment as well as building collaborations to advance DOE missions are top priorities for us.”

– Mike Budney, Manager, Savannah River Operations Office

HIGHLIGHTS

- Transported first shipment of downblended plutonium from K Area for offsite disposal.
- **Crews placed the last piece of structural steel on the 60,000-square foot Advanced Manufacturing Collaborative being constructed on the University of South Carolina Aiken campus—an EM 2023 priority.**
- Converted 18.5% of the site’s gasoline powered light duty fleet to electric vehicles.
- **Completed construction of Saltstone Disposal Unit 8—an EM 2023 priority.**
- Began acceptance of highly enriched uranium-235 from L Basin as part of the Accelerated Basin De-Inventory campaign.
- Achieved record production at the Salt Waste Processing Facility treating nearly 3.2 million gallons in 2023 and more than 7 million gallons of salt waste in just over three years of operations.
- The Savannah River National Laboratory completed the installation of a long-term monitoring system designed to move from reactive to proactive monitoring at SRS.

CATALYZING CLEAN ENERGY INDUSTRIES THROUGH FEDERAL SUSTAINABILITY

SRS supported the Administration’s Executive Order, “Strengthening American Leadership in Clean Cars and Trucks,” by committing to utilizing electricity to power a fleet of nearly 1,000 vehicles at the site and converting over 18.5%, or 115, of the site’s approximately 600 light duty vehicles.

INNOVATING CLEANUP WITH ADVANCED MATERIALS MANAGEMENT

SRS safely executed and delivered on its 2023 operational commitments to package, ship, store, and process and disposition nuclear materials.

H Canyon discarded 400 kg of uranium to the high-level waste tanks, 50 kg above goal, as part of the new Accelerated Basin De-Inventory mission and progress was made in planning for the production



The first shipment of downblended surplus plutonium from K Area leaves SRS.

of High Assay Low Enriched Uranium (HALEU). The canyon also achieved fiscal year goals for dissolution of High Flux Isotope Reactor (HFIR) and Material Test Reactor fuel.

HFIR core resin removal was completed via a uniquely designed vacuuming system at the L Area Disassembly Basin.

Workers at the K Area completed 111 downblends of surplus plutonium, exceeding expectations by 10%, and making an initial 13 shipments of transuranic waste to the Waste Isolation Pilot Plant for disposal.

All federal facility agreement and Resource Conservation Recovery Act permit commitments and milestones were achieved on or ahead of schedule, marking the 30th consecutive year of meeting all milestones and commitments. The Lower Three Runs Remediation project completed with the removal of contaminated sediments from the stream bed and implementation of Land Use Controls with the installation of 53 signs along 24 square miles.

COMPLETING CONSTRUCTION OF DISPOSAL UNIT

Construction was completed on the newest mega-size Saltstone Disposal Unit (SDU) 8 at SRS meeting an EM priority. SDU 8 was authorized to begin operations, marking the last step before it begins receiving decontaminated material for disposal, three years

ahead of schedule. Mega-sized SDUs can hold up to 33 million gallons of saltstone, achieving \$500 million in cost savings over the life of the SRS liquid waste program.

OPTIMIZING SALT PROCESSING

Several process optimizations were implemented to improve the efficiency and resiliency of equipment inside the Salt Waste Processing Facility, such as more effective flushing of key equipment and reducing the amount of titanium buildup.

SAVANNAH RIVER NATIONAL LABORATORY ADVANCES ENVIRONMENTAL MONITORING & MISSIONS

SRNL completed installation of the Advanced Long-Term Environmental Monitoring System (ALTEMIS) sensor network in the SRS F-Area Seepage Basin for long-term monitoring and data collection.

Using artificial intelligence and machine learning, ALTEMIS will provide monitoring capability for use throughout the DOE complex to predict future contaminant flow by tracking and predicting contaminant migration.

Continued construction of the Advanced Manufacturing Collaborative and completed installation of the structural steel in November to meet EM's calendar year 2023 priority.



SDU 8 project team members stand in front of the newest mega-size disposal unit completed at SRS.

SMALL SITE PROGRESS

“Even with the challenges that remain in the cleanup mission, EM is in a strong position for the future because of our dedicated workforce. With so many accomplishments at each site across the EM complex, it is a true testament to the work ethic and steadfast posture of our federal and contractor employees. With 2023 coming to a close, we are excited about the future as EM continues to turn challenges into opportunities to succeed and advance the EM mission.”

- Greg Sosson, Associate Principal Deputy Assistant Secretary for Field Operations, EM-Headquarters

HIGHLIGHTS

- The EM Nevada Program completed demolition of four ancillary structures located at the Test Cell C Facility at Area 25 of the Nevada National Security Sites—an EM 2023 priority.
- A cumulative 14 million tons, about 88% of the uranium mill tailings at the Moab Site, was safely transported to the Crescent Junction disposal site—an EM 2023 priority.
- Initiated demolition of Building 251, the high-risk Heavy Element Facility at the Lawrence Livermore National Laboratory site by removing hazards and waste—an EM 2023 priority.
- The Energy Technology Engineering Center removed 24,000+ gallons of contaminated groundwater at the Former Sodium Disposal Facility at the Santa Susanna Field Laboratory site.

EM NEVADA DEMOLITION, GROUNDWATER & WASTE DISPOSITION ACHIEVEMENTS

After months of preparatory work and hazard reduction activities, the EM Nevada Program completed a scheduled demolition and an EM 2023 priority at the Test Cell C (TCC) Facility at the Nevada National Security Sites (NNSS) with the safe demolition of four ancillary structures that were part of the now inactive Nuclear Rocket Development Station.



An aerial look at the demolition of ancillary structures at TCC early in the demolition work and following completion of the work.

The Underground Test Area (UGTA) team continued conducting sampling and well site cleanup for the EM Nevada groundwater program. The team achieved a major milestone at the final groundwater region of four at the NNSS, Pahute Mesa, where the UGTA team advanced to the “model evaluation” stage. This marks a significant step towards achieving regulatory closure at Pahute Mesa.

Nearly 600k cubic feet of low-level (LLW) and mixed low-level waste (MLLW) were disposed of at the Area 5 Radioactive Waste Management Complex, which accepts LLW and MLLW from federal U.S. sites involved in nuclear research, development and testing, and ongoing national security and science missions.

MOAB COMPLETES KEY PROJECTS

Moab Uranium Mill Tailings Remedial Action Project successfully completed several key projects this year including demolishing the last remaining legacy building from the Atlas Minerals Corporation, decommissioning 14 autoclaves, and safely transporting the tailings, debris, and contaminated soils and asbestos waste to the Crescent Junction disposal site. Also completed was the final expansion of the Crescent Junction site disposal cell.

Quarterly public meetings provided stakeholders with the opportunity to engage in the development of the end-state vision for the Moab Site.



EM Moab staff celebrate the 14-million-ton milestone at the site.

LLNL SETS THE STAGE FOR NEXT PHASE OF D&D WITH ABATEMENT AND HAZARD REMOVAL

EM’s partnership with the Lawrence Livermore National Laboratory (LLNL) and the U.S. Army Corps of Engineers continues to pave the way for new

facilities at the lab’s one-square-mile footprint. Work focused heavily on deactivation and decontamination preparations for four buildings and slab demolition projects in 2024.

ETEC FOCUSES ON PRESERVATION EFFORTS AND GROUNDWATER MEASURES

Energy Technology Engineering Center (ETEC) continued cleanup efforts at the Santa Susana Field Laboratory (SSFL) site with a focus on groundwater interim measures, biological and cultural preservation, and ongoing soils planning with the state of California.

EM continued interim groundwater measures, removing a program total of 24,000+ gallons of contaminated groundwater at the site. In 2023 ETEC removed 8,500+ gallons of contaminated groundwater, analyzed over 100 groundwater samples, and used five wells to extract the groundwater at the Former Sodium Disposal Facility to better understand the groundwater remediation needed at ETEC. Volatile organic compound impacted groundwater concentrations were reduced by ~95%, from 10,000 parts per billion in 2017 to less than 500 parts per billion.

EM engaged with tribal cultural representatives to review groundwater interim measures and, as part of cultural preservation efforts, participated in SSFL Sacred Sites Council meeting where tribal leaders provided guidance regarding areas of cultural importance to senior leaders from the state of California and other site cleanup parties. Staff biologists continue to monitor and ensure that work at the site preserves the unique environment at SSFL, including local wildlife and plants, such as the endangered Braunton’s milk-vetch.



Braunton’s milk-vetch, an endangered short-lived perennial plant in the pea family, is being monitored by biologists to ensure its preservation on the SSFL site.

ACRONYMS

ALTEMIS	Advanced Long-Term Environmental Monitoring System	LLW	low-level waste
AMWTP	Advanced Mixed Waste Treatment Project	MLLW	mixed low-level waste
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	NNSS	Nevada National Security Sites
CMPs	corrugated metal pipes	OREM	Oak Ridge Office of Environmental Management
CPC	Chemical Process Cell	ORNL	Oak Ridge National Laboratory
DOE	U.S. Department of Energy	OSWDF	On-Site Waste Disposal Facility
EM	Office of Environmental Management	PPPO	Portsmouth/Paducah Project Office
EMDF	Environmental Management Disposal Facility	SDA	Subsurface Disposal Area
EM-LA	Environmental Management Los Alamos	SDU	Saltstone Disposal Unit
ETEC	Energy Technology Engineering Center	SSFL	Santa Susana Field Laboratory
ETTP	East Tennessee Technology Park	SRS	Savannah River Site
HALEU	high-assay low-enriched uranium	SSCVS	Safety Significant Confinement Ventilation System
HFIR	High Flux Isotope Reactor	TCC	Test Cell C
ICDF	Idaho CERCLA Disposal Facility	TRU	transuranic
INL	Idaho National Laboratory	TSCR	Tank-Side Cesium Removal System
IWTU	Integrated Waste Treatment Unit	UGTA	Underground Test Area
LANL	Los Alamos National Laboratory	WIPP	Waste Isolation Pilot Plant
LINAS	Large Item Neutron Assay System	WTP	Waste Treatment and Immobilization Plant
LLNL	Lawrence Livermore National Laboratory	WVDP	West Valley Demonstration Project



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