Waste Management Mid-Fiscal Year 1998 Progress Report

June 1998

Mission

The mission of the Waste Management program is to protect people and the environment from the hazards of chemical and radioactive waste by providing an effective and efficient system that minimizes, treats, and stores all of these wastes and disposes most of the wastes as soon as possible.

Featured on the front cover: Aerial of the Waste Isolation Pilot Plant (WIPP), geologic repository for transuranic waste, outside Carlsbad, New Mexico.

Foreword

Department of Energy
Washington, DC 20585

June 1998

The Waste Management Program continues to show significant progress in the management of the Department's radioactive and hazardous wastes. This report lays out our FY 1998 Performance Commitments, shows our progress against these commitments, and highlights important accomplishments and initiatives taking place at Headquarters and the Field.

One of the program's most significant accomplishments has been Secretary of Energy Peña's notification to Congress last month that the Waste Isolation Pilot Plant (WIPP) located near Carlsbad, New Mexico, is ready to begin disposal operations. Secretary Peña's action followed the U.S. Environmental Protection Agency's certification that WIPP meets all Federal disposal standards for transuranic waste. This first-of-a-kind deep geologic repository for defense-generated transuranic waste is the result of 24 years of DOE dedication to this project and marks a historic milestone in our nation's efforts to clean up the environmental legacy of the Cold War.

While the Department continues to make strides in the Waste Management program, we are continuing to deal with a number of significant challenges -- in particular, assuring that adequate resources and technical solutions are available to meet the numerous compliance-driven requirements at our sites while maintaining a safe workplace and protecting the environment. Whether the issue is transferring high-level waste liquids from single-shell tanks to double-shell tanks at Hanford or shipping low-level waste across the country, our goal remains to do our work safely.

As we strive to carry out the Program's mission, we are continually focused on the initiative to accelerate cleanup and close sites across the environmental complex in accordance with the Environmental Management's cleanup strategy, Accelerating Cleanup: Paths to Closure. As the Waste Management team continues to pursue its priorities and goals for FY 1998 in alignment with this strategy, we remain committed to making progress in the areas of waste minimization, storage, treatment, and disposal of waste in a manner that protects workers, the public, and the environment.

Mark W. Frei
Acting Deputy Assistant Secretary
for Waste Management
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I. FY98 Performance Commitments

For FY98, the Secretary of Energy's agreement with the President includes making progress on the treatment, storage, and disposal of radioactive wastes. The Office of Waste Management is measuring its performance on volumes of waste treated and disposed in FY98.

The key performance commitments for FY98 are:

Operational

- Declare the Waste Isolation Pilot Plant (WIPP) geologic repository open for disposal of transuranic wastes and maximize timely shipment of waste from DOE sites.
- Ship between 388 and 592 cubic meters of transuranic (TRU) waste to WIPP for disposal from three DOE sites (the Los Alamos National Laboratory, the Rocky Flats Environmental Technology Site, and the Idaho National Engineering and Environmental Laboratory).
- Close one high-level waste tank at the Savannah River Site.
- Produce 288 canisters of vitrified high-level waste for future repository disposal.[1]
- Dispose of 4,000 cubic meters of mixed low-level waste.
- Dispose of 30,000 cubic meters of low-level waste.

Programmatic

- Award the Oak Ridge Transuranic Waste Treatment Privatization contract.
- Authorize commencement of the Tank Waste Remediation System contract Phase 1B at Hanford site in Washington.
- Award the Carlsbad Area Office Contact-Handled Transuranic Waste Transportation Privatization Contract.

1 The Waste Management Program, located in the Office of Environmental Management, is responsible for the storage and treatment of high-level waste so that it is in "road ready" condition for disposal. Within the Department of Energy, the disposal of both high-level waste and the Department's spent nuclear fuel, as well as spent nuclear fuel in the commercial sector, is the responsibility of the Office of Civilian Radioactive Waste Management.

II. FY98 Performance Measures

Table 1. High-level Waste Canister Production

FY 1998 Secretary's Agreement with the President:

Produce 288 canisters of vitrified High-level Waste for future repository disposal

FY 1998 Mid-Year Performance	
Defense Waste Processing Facility Savannah River Operations Office	130 canisters
West Valley Demonstration Project Ohio Operations Office	38 canisters
Total	**168 canisters**

Table 2. Mixed Low-level Waste Disposal

(Volume in cubic meters)

FY 1998 Secretary's Agreement with the President:

Dispose approximately 4,000 cubic meters of Mixed Low-level Waste

FY 1998 Mid-Year Performance		
Operations Office	**Treat**	**Dispose On-site or Commercial**
Albuquerque	54	62
Chicago	16	0
Idaho	99	0
Nevada	6	0
Oak Ridge	923	1,049
Oakland	63	31
Ohio	0	0
Richland	6	0
Rocky Flats	2,649	2,649
Savannah River	122	0
Total	**3,938**	**3,791**

Table 3. Low-level Waste Disposal

(Volume in cubic meters)

FY 1998 Secretary's Agreement with the President:

Dispose of approximately 30,000 cubic meters of Low-level Waste

FY 1998 Mid-Year Performance		
Operations Office	**Dispose On-site or Commercial**	**Shipped to DOE Site for Disposal**
Albuquerque	592	97
Chicago	194	96
Idaho	1,431	0
Nevada	4,278	0
Oak Ridge	965	0
Oakland	103	951
Ohio	0	1,526
Richland	1,340	0
Rocky Flats	0	786
Savannah River	1,268	0
Total	**10,171**	**3,456**

III. Mid-FY98 Accomplishments

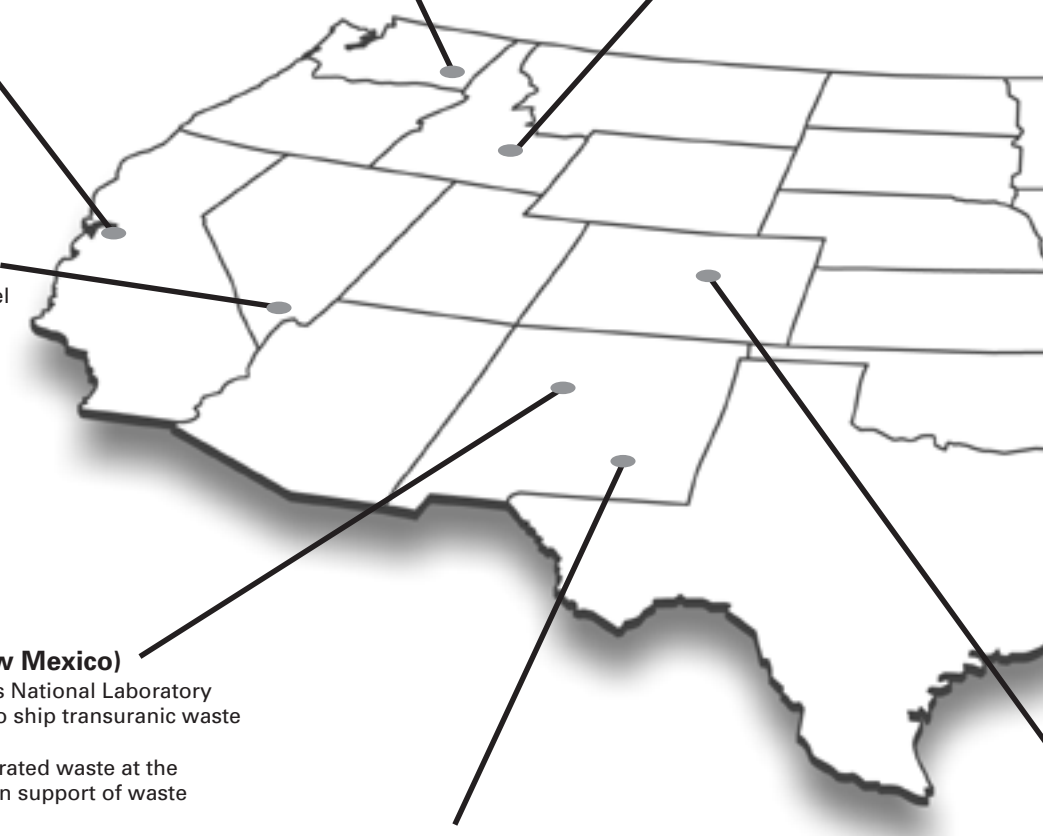
The Waste Management Program's key accomplishments during FY 1998 are:

Richland Operations Office (Washington)

- Completed the 6.2 mile cross-site transfer line between tank farms ahead of schedule to support disposal of high-level waste.
- Demonstrated readiness to deliver waste to privatization contractor.
- Processed the one billionth liter of wastewater through 300 Area Treated Effluent Disposal Facility.
- Obtained Certification from the Idaho National Environmental Engineering Laboratory's Waste Experimental Reduction Facility to incinerate 80 drums of mixed waste. This is the first mixed waste incinerated for Hanford.
- Completed a Tri-Party Agreement milestone critical to DOE's waste treatment plans by initiating startup of the most complex and extensive ventilation upgrades in the history of Hanford's tank farms.

Oakland Operations Office (California)

- Began operations at Lawrence Livermore National Laboratory's Expedited Technology Demonstration Project to test the molten salt oxidation technology for the treatment of mixed waste.



Nevada Operations Office (Nevada)

- Disposed of 4,278 cubic meters of low-level waste.
- A Joint Federal/State Oversight of Low-Level Waste Disposal Program Agreement was negotiated with the State of Nevada.

Albuquerque Operations Office (New Mexico)

- Received certification for the Los Alamos National Laboratory from the Carlsbad Area Office and EPA to ship transuranic waste to the Waste Isolation Pilot Plant.
- Transferred responsibility of newly generated waste at the Kansas City Plant back to the generator in support of waste minimization and cost reduction.

Carlsbad Area Office (New Mexico)

- Issued Record of Decision for transuranic waste disposal at WIPP based on the *Waste Isolation Pilot Plant Disposal Phase Supplemental Environmental Impact Statement*.
- Released a Request for Proposal for the transport of contact-handled transuranic waste from Department of Energy sites to WIPP.
- Completed Operational Readiness Review declaring that the WIPP has achieved a state of readiness to dispose of contact-handled waste and start up the facility.
- Awarded Sandia National Laboratories a subcontract for performing NRC testing on the HALFPACK transuranic waste shipping container designed to reduce shipment volumes and transportation costs.

Idaho Operations Office (Idaho)

- Completed calcining the last 720 cubic meters of non-sodium bearing waste four months ahead of the Idaho Settlement Agreement milestone.
- Began calcining sodium-bearing waste three years before the Settlement Agreement milestone date of June 1, 2001.
- Received certification from the Carlsbad Area Office to ship transuranic waste to the Waste Isolation Pilot Plant. EPA certification is in process.

Chicago Operations Office (Illinois)

- Completed design of the Waste Management Facility upgrade at Argonne National Laboratory-East.

West Valley Demonstration Project (New York)

- Produced 38 canisters towards FY98 goal of 88.
- Completed conceptual design of Canister Load-Out Facility.
- Initiated start up of the new, high-efficiency Liquid Waste Effluent Treatment Facility.

Headquarters (Washington, DC)

- Issued Record of Decision for the treatment and storage of transuranic waste based on the Waste Management Programmatic Environmental Impact Statement.
- Issued a Notice of Intent to conduct a policy analysis on the use of commercial disposal services for low-level and mixed low-level wastes.
- Issued DOE's 1998 Inventory of Federal Agency Hazardous Waste Activities in accordance with Resource Conservation and Recovery Act requirements.
- Initiated discussions with the National Governors' Association on feasible and cost-effective options for disposing mixed low-level and low-level waste.
- Developed initial disposition maps to show the planned pathways to move waste or materials from inventory or generation through required processing to treatment or stabilization and on to final disposition.

Savannah River Operations Office (South Carolina)

- Closed second high-level waste tank.
- Produced 130 canisters towards the FY98 goal of 200 at the Defense Waste Processing Facility.
- Completed vitrification of 1 million pounds of glass on November 3, 1997, at the Defense Waste Processing Facility.
- Established a Savannah River systems engineering team to evaluate a path forward for the separation of high-activity waste from the high-level waste salts.
- Received approval for the High-Level Waste Removal Plan and Schedule from the South Carolina Department of Health and Environmental Control. This allows possible use of Type 1 tanks and yields operational flexibility within the tank farms.

Oak Ridge Operations Office (Tennessee)

- Issued the Broad Spectrum Procurement Request for Proposals in January 1998 for the treatment of mixed low-level waste.
- Completed transfer of W-22 tanks sludge to Melton Valley Storage Tanks in February 1998.

Rocky Flats Environmental Technology Center (Colorado)

- Received certification for the Rocky Flats Environmental Technology Site (RFETS) from the Carlsbad Area Office to ship transuranic waste to the Waste Isolation Pilot Plant. EPA certification is in process.
- Shipped more than 5,100 cubic meters of low-level, mixed low-level, and hazardous waste off-site for disposal.
- Packaged more than 5,700 containers of non-radioactive and more than 6,000 containers of radioactive waste chemicals. Shipped off-site over 3,300 containers of waste chemicals for disposal.
- Eliminated backlog waste chemicals from three facility groups in compliance with the Resource Conservation and Recovery Act standards for chemicals.

IV. Mid-FY98 Program Results

In FY 1998, DOE's Waste Management Program continues to reduce risks, reduce fixed costs, meet regulatory commitments, and work collaboratively with regulators and stakeholders. The Program's focus remains on moving more waste from storage into treatment and disposal, and seeking a more integrated system of treatment, storage, and disposal. Resulting cost efficiencies will be applied to accelerating cleanup and site closures across the EM complex. In support of these ongoing efforts, the Waste Management Program has established key performance objectives for FY 1998. The status of these key waste management objectives is:

Focus the Waste Management Program on resolution of the most significant environmental risks.

Treat high-level waste stored at SRS to produce 200 canisters of solidified waste for disposal ..... *on schedule*

Close the second high-level waste storage tank at SRS ..... *complete*

Treat high-level waste stored at WVDP to produce 88 canisters of solidified waste for disposal ..... *on schedule*

Complete Phase I of WVDP ..... *on schedule*

Complete TWRS Privatization authorization to proceed ..... *scheduled for July 1998*

Initiate the Sealed Radioactive Source Recovery Program ..... *full initiation delayed due to budget constraints in FY98*

Complete calcining the existing INEEL non-sodium bearing high-level waste ..... *complete*

Reduce waste management mortgage and support costs to provide resources for expanded program scope and risk reduction.

Implement the EM Privatization Program for selected waste management projects by awarding waste management services procurements:

- Transuranic waste treatment at Oak Ridge ..... *scheduled for July 1998*
- Transuranic waste transportation for contact-handled transuranic waste ..... *scheduled for August 1998*

Improve business management practices through program assessments, cost analyses, and benchmarking:

- Prepare joint EM-HR DOE benchmarking initiative ..... *no longer being pursued*
- Complete DOE benchmarking initiative ..... *no longer being pursued*

Perform Hazardous Waste Cost Analysis ..... *Phase I complete*

Issue FY 1997 Performance Measures Report ..... *being combined with 98 report and issued in FY98*

Develop Radiological Control Criteria to facilitate the safe and cost effective management of very low activity mixed waste and conduct multi-attribute utility analysis ..... *criteria on schedule, analysis delayed*

Evaluate FY 1997 Waste Management Re-engineering pilot projects ..... *complete*

Ensure Waste Management programs have an adequate regulatory framework to meet environmental, safety and health requirements.

Issue DOE Order 435.1:

- Issue draft for public comment ..... *scheduled for July 1998*
- Issue final ..... *on schedule*

Propose closing Recommendation 96-1 to the DNFSB ..... *being re-evaluated*

Implement DNFSB Recommendation 95-2 ..... *on schedule*

Incorporate pollution prevention, including waste minimization, recycling, and reuse of materials into the Waste Management Program.

Review site waste minimization activities and issue policy guidance ..... *complete*

Conduct a pilot project on recycling of radioactive scrap metal for high-level waste canisters ..... *on hold due to budget constraints*

Work in partnership with regional and national regulators and stakeholder groups to explain the Waste Management Program and identify innovative strategies to reduce the risks and costs.

Continue partnership with the National Governors' Association and other stakeholder groups to reach agreement on:

Waste Management treatment and disposal system configuration ..... *ongoing*

Environmental Management (EM) Paths to Closure ..... *ongoing*

Work with regulators and stakeholders to ensure compliance with environmental requirements and agreements ..... *ongoing*

Deploy technologies that will significantly benefit waste management operations in the next decade.

Increase program participation in the development and deployment of new technologies ..... *ongoing*

Establish a Waste Management system configuration that supports the Accelerating Cleanup: Paths to Closure goals.

Issue the Waste Management Programmatic EIS Records of Decision for:

Transuranic Waste Treatment ..... *complete*

Hazardous Waste Treatment ..... *scheduled for July 1998*

High-level Waste Storage ..... *being re-evaluated*

Mixed Low-level/Low-level Waste Treatment and Disposal ..... *being re-evaluated*

Issue Request for Proposal for low-level and mixed low-level waste disposal ..... *pending results of policy analysis*

Begin disposal of transuranic waste from LANL, INEEL, and RFETS at WIPP *FY98*

Obtain Site Certifications and ready transuranic waste for disposal at WIPP ..... *on schedule*

Ship transuranic waste to WIPP for disposal:*

Rocky Flats Environmental Technology Site - 126 cubic meters *FY98*

Los Alamos National Laboratory - 194 cubic meters *FY98*

Idaho National Engineering and Environmental Laboratory - 68 cubic meters *FY98*

Dispose of 30,000 cubic meters of low-level waste ..... *on schedule*

Dispose of 4,000 cubic meters of mixed low-level waste ..... *on schedule*

* *Quantities are limited to shipment of non-mixed transuranic waste only.*

V. Spotlight on Waste Management Program

Complex-wide Integration

The Waste Management Program continues to lead EM's efforts to integrate from a complex-wide perspective. The goal is to achieve efficiencies by using unique site capabilities for the benefit of the entire complex. Integration can be achieved by eliminating redundant facilities, using available capacity, taking advantage of the collective learning curve, applying successes nationwide, employing innovative technologies, and using national procurements. Because of the interdependence of sites and the transfers of waste and nuclear materials, consensus needs to be reached with states, Tribal nations, local governments, and stakeholders for integration to occur.

In fiscal year 1998, efforts are focused on several areas:

- Showing planned pathways to move waste or materials from inventory or generation, to treatment or stabilization, and on to final disposal.
- Linking waste disposition to science and technology.
- Integrating transportation systems analysis to provide the means to move waste and nuclear materials.
- Evaluating and developing other integration opportunities within the EM program.

Radioactive Source Recovery Program

The Radioactive Source Recovery Program (RSRP) is responsible for sealed sources which exceed the U.S. Nuclear Regulatory Commission limit for commercial disposal as low-level waste and are currently in the possession of the private sector and other Government agencies. A sealed source is radioactive material that is encased in a capsule designed to prevent leakage or escape of the material, while at the same time providing a useful form to make use of the radiation or heat generated by the source. In FY 1998, the RSRP program at the Los Alamos National Laboratory (LANL) is conducting an operational pilot project to test and evaluate procedures for receiving sealed sources from the private sector. The first candidates of the pilot program have been selected based on input provided by the U.S. Nuclear Regulatory Commission. Forty sources are scheduled to be received in FY 1998. The pilot program will test the concept of a consolidated approach to packaging, collecting, sorting, and shipping a limited number of sources to LANL. This approach is expected to reduce receiving and processing costs, and facilitate coordination among the Department of Transportation, the Nuclear Regulatory Commission, state agencies, and the licensees themselves.

Broad Spectrum Procurement

On January 16, 1998, the Oak Ridge mixed low-level waste Broad Spectrum Procurement (BSP) Request for Proposal was issued for the treatment of excess capacity mixed low-level waste that DOE presently does not have the capability to treat. The maximum volume of waste estimated to be treated over a five-year period using the BSP is approximately 36,500,000 kilograms. Awarding the Broad Spectrum Procurement will help DOE consolidate treatment efforts, support accelerated cleanup plans, and realize cost efficiencies. The contracts are expected to be awarded in early summer 1998.

Re-engineering Waste Management

Waste Management's re-engineering effort returns the responsibility for newly generated waste to the generator to encourage waste minimization and reduce costs. To date, responsibility for newly generated waste has been returned to the mission program for the Kansas City Plant, Savannah River Site, FERMI National Accelerator Lab, Stanford Linear Accelerator Lab, and Argonne National Laboratory-West. Additional transfers will occur in FY 1999 and FY 2000. Transfer of funds, accountability, and responsibility for newly generated waste to the generators will be essentially completed by FY 2000.

Deploy Technologies

One of the key performance objectives established for the Waste Management program in FY 1998 is the deployment of technologies that will significantly benefit Waste Management operations in the next decade. Current innovative technologies under consideration include: waste minimization technologies, such as

recycling radioactively contaminated metals; applying a robotic dismantlement system in lieu of manual labor at the Los Alamos National Laboratory, which reduces risk and has potential for cost savings; developing and demonstrating the Redzone robotic system for tank heals cleanup at the West Valley Demonstration Project; and robotics end-effectors for waste retrieval from high-level waste tanks. The Waste Management program participates in a cooperative process designed to ensure that innovative technologies are developed to meet programmatic needs.

TRU RODs

DOE issued two Records of Decision (RODs) necessary for disposal of transuranic (TRU) waste at the Waste Isolation Pilot Plant (WIPP). The first ROD, based on the *WIPP Disposal Phase Supplemental Environmental Impact Statement*, laid out the decision to dispose of defense transuranic waste at WIPP, treat transuranic waste, if required, to meet the WIPP Waste Acceptance Criteria, and transport transuranic waste by truck but reserving the option to use commercial rail in the future.

The second ROD, based on the *Waste Management Programmatic Environmental Impact Statement*, laid out the decision to treat and store existing or future-generated transuranic waste on the site where it was generated prior to sending it to WIPP. The exception to this decision is transuranic waste from Sandia National Laboratories, which will be sent to Los Alamos for treatment and storage prior to disposal at WIPP. These decisions establish the disposition paths for the treatment, storage, and disposal of transuranic waste in the waste management complex.

Developing Options for the Disposal of Mixed Low-level and Low-level Waste

The Department issued a Notice of Intent in March to seek public comment on a proposed policy analysis regarding low-level and mixed low-level waste. Comments were invited on the Department's current policy regarding the disposal of low-level and mixed low-level waste at existing, licensed commercial facilities under DOE Order 5820.2A and on various proposals from the private sector that could potentially affect that policy. These public comments will assist the Department in determining whether to continue or change its existing policy.

It is important for DOE, in collaboration with its stakeholders, to develop feasible and cost-effective options for disposing mixed low-level and low-level waste. Access to disposal is on the critical path to closure for several DOE facilities, as described in the Draft Accelerating Cleanup: Paths to Closure report. In many instances, new storage facilities will be required unless disposal is made available. Construction of such facilities is inconsistent with the programmatic goal of cleanup and closure.

The Waste Management Programmatic Environmental Impact Statement, issued in May 1997, described the preferred alternative for mixed low-level and low-level waste disposal as the selection of 2 or 3 disposal sites from the 6 LLW disposal sites currently available. However, DOE is committed to working with its stakeholders before identifying its preference. To initiate discussions, the Waste Management Program proposed options for disposal of mixed low-level waste and low-level waste at the March meeting of the National Governors' Association. Before making any decisions, the Waste Management Program will evaluate the alternatives against criteria such as environmental and health impacts, cost effectiveness, transportation risk, mission compatibility, and equity. The Waste Management Program will also combine the evaluation of disposal options with the treatment preferred alternative to complete the waste management programmatic picture. These evaluations will ultimately lead to Records of Decision for mixed low-level and low-level waste treatment and disposal.

WIPP Update:

WIPP Ready to Begin Disposal Operations

On May 13, 1998, the Secretary of Energy notified Congress that the Waste Isolation Pilot Plant is ready for disposal operations. This first-of-a-kind deep geologic repository, located near Carlsbad, New Mexico, is critical to helping resolve the challenge of cleaning up defense-related radioactive waste throughout the weapons complex. Initial operations will include disposal of *non-mixed* transuranic waste [transuranic waste that does not contain hazardous waste regulated by the Resource Conservation and Recovery Act (RCRA)] until such time as the State of New Mexico issues the RCRA Part B permit.

VI. Future Outlook

The primary focus of Environmental Management's Waste Management Program continues to be moving more waste from storage into treatment and disposal. To accomplish this, the Program will continue to eliminate urgent risks; protect the health and safety of workers and the public; meet regulatory commitments; work collaboratively with regulators and stakeholders; reduce costs; minimize waste generation; focus technology development on risk and cost reduction; and seek a more integrated system of treatment and disposal. The Waste Management Program will also apply any cost efficiencies achieved to accelerating cleanup and site closures across the Environmental Management complex.

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