Department of Energy
Five Year Plan
FY 2008 - FY 2012

Environmental Management

February 2007 **Office of the Chief Financial Officer**

Table of Contents[1]

[1] Lawrence Berkeley National Laboratory (LBNL) is not included in DOE-EM Five Year Plan FY 2008 – FY 2012. LBNL site is expected to be transferred to National Nuclear Security Administration (NNSA) by FY2008.

EM Five Year Plan FY 2008 - 2012

Introduction

The purpose of the EM Five Year Plan is to describe EM's planned strategies, funding and accomplishments over the next five years. This plan summarizes EM progress to date, presents EM performance measures, discusses assumptions and the EM decision-making process, and provides estimated EM funding over the FY 2008-2012 time period. Following this summary are sections that provide detailed information on each site including planned accomplishments at the target funding scenario.

EM's five year planning targets are significantly different from the funding targets that appeared in the FY 2007-2011 Five Year Plan. Site planning allocations that formed the basis for the planned accomplishments contained in this Plan were based on a number of factors, such as risk-based priorities, baseline requirements, contract funding requirements, and equity. EM is in the process of independently auditing its cost and schedule baselines. EM continues to refine its out-year planning based on maturing and evolving scope and requirements, audited baselines and cost estimating, and regulator and stakeholder input. As a result, EM anticipates that strategic planning will become an even more useful tool for the program.

Five-Year Funding Profile[23]

Site/Program	FY 2007 Request	FY 2008 Target	FY 2009 Target	FY 2010 Target	FY 2011 Target	FY 2012 Target
Closure Sites[1]						
Ashtabula	295	295	0	0	0	0
Columbus	0	1,200	1,000	1,000	1,000	1,000
Fernald	268,789	2,609	2,019	1,200	1,200	0
Miamisburg	46,069	33,383	32,462	31,734	27,079	24,024
Rocky Flats	7,000	6,150	6,304	6,462	6,623	0
Major Sites						
Carlsbad	217,602	224,666	215,700	218,179	220,091	220,161
Idaho	519,604	509,426	442,831	455,758	470,394	477,823
Oak Ridge	494,224	428,180	466,462	488,473	493,131	493,525
Paducah Gaseous Diffusion Plant	140,483	134,042	151,168	144,729	136,592	137,544
Portsmouth Gaseous Diffusion Plant	239,177	238,848	254,986	284,963	253,970	261,766
Richland	917,395	974,719	934,677	1,084,938	1,095,000	1,100,000
River Protection	964,127	963,443	961,022	1,042,836	1,090,000	1,183,308
Savannah River	1,248,020	1,355,490	1,281,361	1,400,000	1,517,706	1,457,706
NNSA Sites						
Lawrence Livermore National Laboratory	11,580	8,680	0	0	0	0
Los Alamos National Laboratory	91,627	141,372	144,497	165,593	172,604	181,467
Nevada Test Site	79,668	81,106	79,619	83,428	84,067	83,865
NNSA Service Center	1,622	1,511	1,206	1,206	1,206	1,206
Pantex	23,726	12,411	0	0	0	0
Separations Process Research Unit	24,500	27,585	32,756	32,756	32,756	23,861
Site Support[2]	370	370	237	238	238	238
All Other Sites						
Argonne National Laboratory	10,726	2,437	459	0	0	0
Brookhaven National Laboratory	28,272	23,699	20,885	7,614	7,468	7,572
Energy Technology Engineering Center	16,000	13,000	12,534	0	0	0
Inhalation Toxicology Laboratory	2,931	427	100	100	100	0
Moab	22,865	23,952	30,513	31,307	32,121	32,956
Site Support[3]	160	160	72	71	72	71
Stanford Linear Accelerator Center	5,720	5,900	4,883	4,541	381	0
West Valley Demonstration Project	75,000	55,995	75,000	75,000	74,750	74,750
Headquarters Support						
Technology Development & Deployment	21,389	21,389	41,344	46,344	46,344	46,343
Program Direction	291,216	309,760	320,973	332,799	344,557	356,517
Headquarters Operation[4]	57,881	53,146	53,930	54,731	55,550	56,297
D&D Fund Deposit	452,000	463,000	405,000	25,000	0	0
D&D Fund Deposit Offset	-452,000	-463,000	-405,000	-25,000	0	0
EM Total	**5,828,038**	**5,655,351**	**5,569,000**	**5,996,000**	**6,165,000**	**6,222,000**

Key:

[1] Fernald includes PBS CBC-0100-FN, OH-FN-0020, PBS OH-FN-0030, and PBS OH-FN-0101. Miamisburg includes PBS CBC-0100-MD, PBS OH-MN-0030, and PBS OH-MB-0100. Rocky Flats includes PBS CBC-0100-RF and PBS RF-0030.

[2] Includes PBS VL-FOO-0013B-D and PBS VL-FOO-0100-D.

[3] Includes PBS CBC-CA-0013B-N and PBS CBC-CA-0100-N.

[4] Includes PBS HQ-MS-0100 and PBS HQ-UR-0100.

---

[2] Site allocations include safeguards and security funding.

[3] The Administration determines the details of its appropriations request one year at a time. Each year, the Administration works to develop the detailed estimates for the budget year for individual programs. Before the Budget is printed, OMB's computer generates formulaic amounts for the out-years (FY 2009 – 2012) by account that hit overall targets for defense, homeland security, and non-security spending, so that the Administration can calculate the deficit path. These mechanistic, computer-generated account data for the out-years do not represent the President's proposed levels for these individual programs. The FY 2009 and subsequent years' requests involve policy and funding questions that have not yet been answered. As a result, the out-year numbers in these plans represent placeholders, pending budget decisions in future years.

Mission
The mission of EM is the safe and successful cleanup of the Cold War legacy brought about from five decades of nuclear weapons development and government-sponsored nuclear energy research. In order to execute the mission, EM has ranked in priority order those activities with the greatest risk reduction. Safety remains the utmost priority. EM is committed to its safety principles and will continue to maintain and demand the highest safety performance to protect the workers and the communities where EM operates.

During FY 2008 to FY 2012 timeframe, EM will implement the following risk reduction activities in priority order:

- Stabilizing radioactive tank waste in preparation for treatment;
- Storing, stabilizing, and safeguarding nuclear materials and spent nuclear fuel;
- Disposing transuranic, low-level, and other solid wastes;
- Remediating major areas of our large sites; and
- Decontaminating and decommissioning excess facilities.

Overlaid on these activities are other equally crucial priorities. Priorities important not only to the success of the cleanup objectives, but also important to the communities and states in which our sites are located. EM will endeavor to discharge our responsibilities within the resources afforded the cleanup program with the goal of accomplishing the following objectives.

- Establishing a disposition capability for radioactive liquid tank waste and spent nuclear fuel;
- Securing and storing nuclear material in a stable, safe configuration in secure locations to protect national security;
- Transporting and disposing of transuranic and low-level wastes in a safe and cost effective manner to reduce risk;
- Remediating soil and groundwater in a manner that will assure long-term environmental and public protection; and
- Decontaminating and decommissioning facilities that provide no further value to reduce long-term liabilities while remediating the surrounding environment.

These objectives have served the program well to reduce risk and complete site cleanup. For instance, in 2006, the EM program was successful in completing the cleanup at Fernald and Rocky Flats, along with these other sites: Columbus, Lawrence Livermore National Laboratory-Main Site, and Kansas City Plant. In addition, despite numerous regulatory and technical challenges, EM has made significant cleanup progress at its larger sites, such as:

- Stabilizing and packaging for disposition all plutonium residues and metals of oxides (Rocky Flats, Savannah River Site, Hanford);
- Producing well over 2,000 cans of vitrified high-level waste from highly radioactive liquid wastes. (Savannah River Site, West Valley Demonstration Project);
- Retrieving and packaging for disposal over 2,100 metric tons of spent nuclear fuel from K-basins on the Hanford site to protect the Columbia River;

- Characterizing, certifying, and shipping close to 40,000 cubic meters of transuranic waste from numerous sites to the Waste Isolation Pilot Plant for permanent disposal;
- Disposing of close to one million cubic meters of legacy low-level waste and mixed low-level waste;
- Eliminating 11 of 13 high-risk material access areas through material consolidation and cleanup;
- Cleaning up the Melton Valley area at the Oak Ridge Reservation and completing the decontamination and decommissioning of three gaseous diffusion plants at the Oak Ridge Reservation (K-29, 31, 33); and
- Disposing of over 8,500 tons of scrap metal from Portsmouth, Ohio.

However, even with these numerous accomplishments, EM has experienced some setbacks. As with many complex and diversified programs, the challenges behind achieving highly visible and significant results are not always apparent. At the core of these setbacks are unrealized assumptions, assumptions that failed to be fulfilled or were overcome by events. For example, EM based its accelerated cleanup plans on such optimistic assumptions as:

- Receiving approval from State regulatory officials to implement the most cost-effective disposition of EM waste and materials;
- Performance-based acquisition strategies and other initiatives would greatly improve the cost efficiency of performing cleanup work; and
- A defined scope for the EM program. No additional work scope or requirements would be added.

These assumptions have not lasted the test of time. For example,

- Regulatory permit and inter-site waste and material shipment approvals have been delayed or yet to be received leading to increased cost and schedule delays at several sites.
- Acquisition strategies did not take into account that ultimately, the government bears the risk should contractors fail to meet milestones and contractual obligations. Early cleanup performance estimates relied on optimum cleanup performance.
- New scope and requirements have also been added to the EM program. These include:
    - Design Basis Threat requirements that require augmentation of safeguard and security assets and physical improvements to facilities at Hanford, Savannah River Site, Portsmouth, and Paducah
    - The need for a Plutonium Vitrification Facility at the Savannah River Site
    - More robust design criteria for the Salt Waste Processing Facility at the Savannah River Site
    - Decision to remove the mill tailings pile from the Moab Site, rather than leave it in place
    - Increased cleanup and decontamination and decommissioning scope at the Los Alamos National Laboratory as a result of the new consent order
    - Increased pension and benefit liabilities at the closure sites
    - D&D of the Portsmouth and Paducah Gaseous Diffusion Plants

- EM has been designated as the organization to take on additional radiologically-contaminated cleanup work scope from other programs, for example:
    - D&D of additional excess and unwanted science and nuclear security facilities at the Oak Ridge National Laboratory and Y-12
    - D&D of facilities at Argonne, Brookhaven, and other Office of Science national laboratories
    - D&D of excess facilities at the Idaho National Laboratory from the Office of Nuclear Energy.

EM will be assessing these excess radiologically-contaminated facilities for possible inclusion its near-term planning. Factors leading to the incorporation of new scope for excess facilities in near-term planning might be highly contaminated facilities posing significant risks to workers or facilities most efficiently addressed at the same time as near by in-scope decommissioning efforts. Excess facilities will be prioritized and addressed accordingly, as cleanup completions allow.

EM's continuing analyses of its environmental liabilities and estimates-at-completion have surfaced significant uncertainty in its ability to deliver cleanup as currently planned and/or expected. Including performance issues, technical and regulatory issues, emerging scope being included in site cleanup baselines, potential scope (primarily D&D of excess facilities not yet included in EM baselines), programmatic risk, litigation and other factors, EM further believes that its total life-cycle cost estimate could increase by $50 billion. Of this increase, approximately $10 billion is attributable to new scope not in EM's previous baseline and $40 billion is associated with existing scope.

Focus on Project Management and Acquisition Strategies

EM is increasing its attention to project management. As of January 2007, approximately 88 percent of EM project baselines were validated and under configuration control. EM is regularly reviewing project performance, schedules, and costs on a quarterly basis which shows continued focus on project management. As of January 2007, based on dollar value, 73 percent of all near-term baselines have been validated. Additionally, 96 percent of validated baselines are currently operating within an acceptable performance range. However, when calculated on a dollar value basis, the acceptable performance drops to 44 percent. The drop is due to delays in the large dollar value Waste Treatment Plant and its corresponding impact on Tank Farm operations. EM is implementing and integrating both industry-standards and DOE-directed project management systems. EM is increasing its emphasis on identification and management of risks and their potential impacts to planned performance. EM is instituting safety reviews earlier in the design process and providing an additional level of oversight for selected projects. EM is placing more emphasis on technology solutions and has taken steps to combine our engineering and technology offices to bring about timely solutions to our highest priority issues.

In addition, instrumental in refining the technical and business approaches to project management are the senior leadership and staff. EM is ensuring that leaders, project managers, and staff are trained to meet its project management and mission objectives. EM is committed to enhancing the experience level of its personnel for the important work that lies ahead.

Another tool assisting EM project management is the cleanup contracts. The contracts define EM work scope and also set expectations and standards, which in turn delineate the operating principles and requirements. EM's goal is to ensure that the site contracts, integrated with project management principles, risk management, and performance plans, are designed to drive outstanding performance and accountability. EM is ensuring a competitive and open selection of the most appropriate contract type and fee earning method corresponding to the scope of work and the business case analysis. EM will prioritize activities to ensure that each contract provides the best performance in meeting programmatic objectives.

Finally, EM will strive for constant, real-time feedback of lessons learned to improve project planning and execution. Only through a formal lessons learned process will EM achieve successful execution and completion of our cleanup program.

Benefits

EM's mission is to clean up the environmental legacy of nuclear weapons production and nuclear energy research. Through its focused, project management approach, EM is remediating sites and reducing the risks to future generations. EM's goal is to continue to reduce the environmental liability associated with the EM program, consistent with the ideals previously discussed above.

Strategic Themes and Goals GPRA Program Goals

The Department's Strategic Plan identifies five Strategic Themes (one for nuclear, energy, science, management, and environmental aspects of the mission) plus 16 Strategic Goals that tie to the Strategic Themes. The three EM appropriations (Defense Environmental Cleanup, Non-Defense Environmental Cleanup, and Uranium Enrichment Decontamination and Decommissioning Fund) support the following strategic theme and strategic goal:

Strategic Theme 4, Environmental Responsibility: Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production.

Strategic Goal 4.1, Environmental Cleanup: Complete cleanup of nuclear weapons manufacturing and testing sites across the United States; completing cleanup of 100 contaminated sites by 2025[4].

The programs funded within the Defense Environmental Cleanup, the Non-Defense Environmental Cleanup, and the Uranium Enrichment D&D Fund have one Program Goal that contributes to the General Goals in the "goal cascade." This goal is:

Program Goal 4.1.53.00 (Environmental Management): EM is targeting 95 geographic sites to be completed by the end of FY 2012[5]

[4] In the FY 2007 Congressional Budget Request, EM identified a goal of completing 101 sites by the end of FY 2025. The goal has been modified to 100 sites to reflect that completion of Savannah River Site is now scheduled for FY 2031.

[5] In the FY 2007 Congressional Budget Request, EM identified site completion targets of 83 by FY 2006 and 95 by FY 2012. EM completed cleanup of 81 sites by the end of FY 2006. In addition, completion of physical work at the Miamisburg Site in Ohio was completed in 2006, except for Congressionally directed work at OU-1.

Contributions to Strategic Goals

Integral to meeting the Strategic Goal 4.1 is the completion of 95 contaminated geographic sites by the end of 2012. EM's Program Goal contributes directly to the Department's ability to meet its Strategic Goal 4.1 through the establishment of "interim" goals for the FY 2006 and FY 2012 time periods.

The EM program is now aligned to achieve the objectives of the above goals. Annual progress towards meeting these goals is demonstrated by EM's 16 corporate performance measures. Each site establishes annual targets for specific corporate performance measures that are applicable to that site's scope of work. The corporate measures for a site collectively represent the totality of EM risk reduction activities that must be achieved to complete site cleanup.

Target Funding Scenario

Even with the improvements described above and the additional funding provided by the FY 2008 to FY 2012 formulaic targets, EM believes there are major uncertainties regarding its ability to comply with current requirements in its environmental cleanup agreements and with other requirements. These uncertainties primarily reflect the $6.4 billion (+109 percent) increase cost estimate and eight-year schedule delay for the Hanford Waste Treatment Plant.

Most existing cleanup commitments, scope, and schedule are part of enforceable DOE regulatory/compliance agreements (e.g., Resource Conservation and Recovery Act compliance agreements; Comprehensive Environmental Remediation, Compensation, and Liability Act decisions; settlement agreements; and court orders). These agreements generally contain legally enforceable milestones. While some degree of flexibility exists within the regulatory framework to negotiate new milestone dates, the Department cannot unilaterally alter or defer milestones without potentially becoming subject to regulatory actions including actions seeking fines and penalties.

EM's priorities are as follows in priority order of risk reduction:

- Requisite safety, security and services across EM cleanup sites;
- Radioactive tank waste storage, treatment, and disposal;
- Spent nuclear fuel storage, receipt, and remediation;
- Solid waste (transuranic, and low-level waste/mixed low-level waste) treatment, storage, and disposal;
- Special nuclear materials storage, processing, and disposition;
- High priority groundwater remediation;
- Soil and groundwater remediation; and
- Decontamination and decommissioning of contaminated facilities.

Based on these priorities, EM's target funding level will fund the following activities:

- Design Basis Threat (2005) compliance except at Hanford (which is assumed to be shipping material off-site)
- Pension/medical benefits and liabilities/long-term stewardship – pension/medical benefits at all sites and post-closure costs at Rocky Flats and Fernald.

- Tank farm operations – Hanford, Idaho, Savannah River Site
- Special nuclear material storage, surveillance, and disposition – Savannah River material processing in H-Canyon and on-site consolidation and plutonium vitrification design and long-lead procurement, Hanford plutonium and unirradiated category 1 and 2 nuclear fuel to the Savannah River Site (if a consolidation decision is made), Idaho uranium to off-site, Oak Ridge Building 3019 U-233 Disposition
- Spent nuclear fuel receipt, storage, and cleanup – Hanford K-Basin sludge, Idaho, Savannah River Site
- Waste treatment projects –
  - Operations – Defense Waste Processing Facility; Idaho Advanced Mixed Waste Treatment, Oak Ridge TSCA Incinerator, Portsmouth/Paducah DUF6 conversion
  - Design/construction – Hanford Waste Treatment Plant, Savannah River Salt Waste Processing Facility, Idaho Sodium-Bearing Waste Treatment Facility
- Waste disposition projects –
  - Waste Isolation Pilot Plant – priority: Idaho/Los Alamos transuranic waste: limited contact-/remote-handled shipments
  - Low-level waste/Mixed low-level waste disposal – Hanford, Nevada, Idaho, Savannah River Site, Oak Ridge (Comprehensive Environmental Response, Compensation, and Liability Act disposal only at Oak Ridge)
- Uranium/Thorium payments for mill tailings site cleanup
- Technology development and deployment – in support of high-level waste, soil and groundwater remediation, and near-term closure assistance
- Consistent with EM risk-reduction priorities, at target, perform only minimal waste retrieval, soil/groundwater remediation and minimal D&D of excess facilities
- Site completions, with an additional eleven sites projected to be completed in the 2007 to 2009 timeframe. This includes: Miamisburg[6]; Sandia National Laboratory; Argonne National Laboratory – East; Ashtabula; Brookhaven National Laboratory; Lawrence Berkeley National Laboratory; Energy Technology Engineering Center; Lawrence Livermore National Laboratory-Site 300; Inhalation Toxicology Laboratory; Pantex Plant; and the Stanford Linear Accelerator Center.

Annual Performance Results and Targets

EM has developed 16 corporate performance measures to enable the program to monitor annual and life-cycle progress towards meeting the Department's Strategic Goal 4.1 and EM's Program Goal. These corporate performance measures are:

1. Certified DOE storage/treatment/disposal 3013 containers (or equivalent) of plutonium metal or oxide packaged ready for long-term storage;
2. Certified containers of enriched uranium packaged ready for long-term storage;
3. Plutonium or uranium residues packaged for disposition (kg of bulk material);
4. Depleted and other uranium packaged for disposition (metric tons).
5. Liquid waste eliminated (millions of gallons);

[6] Miamisburg cleanup completed in FY 2006 except for Operable Unit 1 remediation per Congressional direction. Operable Unit 1 remediation expected to be complete in FY 2007.

6. Number of liquid tanks closed;
7. Canisters of high-level waste packaged for final disposition;
8. Spent nuclear fuel packaged for final disposition (metric tons of heavy metal);
9. Transuranic waste shipped for disposal at the Waste Isolation Pilot Plant (cubic meters);
10. Low-level waste/mixed low-level waste disposed (cubic meters);
11. Number of material access areas eliminated;
12. Number of nuclear facilities completed;
13. Number of radioactive facilities completed;
14. Number of industrial facilities completed;
15. Number of geographic sites closed;
16. Number of release sites remediated.

Each of these 16 corporate performance measures is quantitative and focuses on the accomplishment of risk-reducing actions and life-cycle reduction. Each measure is tracked in the context of the total measure (life-cycle) necessary to complete each site as well as the EM program as a whole. The corporate measures are under configuration control, thereby establishing performance expectations and accountability for those expectations within a given funding level. Through configuration control, EM is able to make corporate decisions that will keep the program on track, monitor and control costs and schedules, and manage site closure expectations. In addition to the corporate measures, performance is also tracked through the establishment of baselines, which are used to demonstrate whether a project and site are on track to achieve agreed upon performance expectations. Recently, the corporate performance measures have been updated to be consistent with current approved baselines. As part of this effort, performance measure annual targets and life-cycle estimates have been updated to better reflect current project baselines. Current progress against each of the 16 corporate performance measures is available on the EM web site at www.em.doe.gov.

EM Annual Performance Targets

A subset of the 16 corporate performance measures EM uses to track program performance: eight corporate measures in addition to an efficiency measure. These measures represent the broad scope of cleanup challenges the program faces in completing its mission. These targets and EM's actual performance are reported in the annual Performance and Accountability Report (PAR).

Measures	FY 2008 Cumulative Targets	FY 2009 Results	FY 2010 Results	FY 2011 Results	FY 2012 Results
Strategic Goal 4, Environmental Management					
GPRA Unit Program Goal 04.1.53.00, Environmental Management					
Plutonium and Uranium Residues Packaged for Disposition	**One Measure Complete**				
Transuranic Waste (TRU) Shipped for Disposal at WIPP	Ship for disposal at WIPP a cumulative total of 54,466 cubic meters of transuranic waste.	Ship for disposal at WIPP a cumulative total of 68,295 cubic meters of transuranic waste.	Ship for disposal at WIPP a cumulative total of 82,665 cubic meters of transuranic waste.	Ship for disposal at WIPP a cumulative total of 94,467 cubic meters of transuranic waste.	Ship for disposal at WIPP a cumulative total of 105,901 cubic meters of transuranic waste.
Liquid Waste Tanks Closed	Not an PAR measure in FY 2008.	Not an PAR measure in FY 2009.	Not an PAR measure in FY 2010.	Not an PAR measure in FY 2011.	Not an PAR measure in FY 2012.
High-Level Waste Cannisters Packaged	Package a cumulative total of 2,861 canisters of high-level waste.	Package a cumulative total of 3,047 canisters of high-level waste.	Package a cumulative total of 3,233 canisters of high-level waste.	Package a cumulative total of 3,419 canisters of high-level waste.	Package a cumulative total of 3,605 canisters of high-level waste.
Release Sites Completed	Complete a cumulative total of 6,781 release sites.	Complete a cumulative total of 7,072 release sites.	Complete a cumulative total of 7,260 release sites.	Complete a cumulative total of 7,537 release sites.	Complete a cumulative total of 7,893 release sites.
Enriched Uranium Packaged for Disposition	Package for disposition a cumulative total of 7,192 containers of enriched uranium.	Package for disposition a cumulative total of 7,413 containers of enriched uranium.	Package for disposition a cumulative total of 7,413 containers of enriched uranium.	Package for disposition a cumulative total of 7,413 containers of enriched uranium.	Package for disposition a cumulative total of 7,413 containers of enriched uranium.
Combined Radioactive and Nuclear Facility Completions	Complete a cumulative total of 419 combined nuclear and radioactive facilities.	Complete a cumulative total of 460 combined nuclear and radioactive facilities.	Complete a cumulative total of 487 combined nuclear and radioactive facilities.	Complete a cumulative total of 543 combined nuclear and radioactive facilities.	Complete a cumulative total of 619 combined nuclear and radioactive facilities.
Efficiency Measure: Cost and Schedule Variance of Selected Projects	No greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control.	No greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control.	No greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control.	No greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control.	No greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control.

Site Specific Descriptions and Accomplishments

This section contains descriptions of sites where EM cleanup activities are occurring. For each site the following information is provided:

Five Year Funding Profile
Site Details:

- Site Overview
- Site Description
- Site Cleanup Strategy/Scope of Cleanup
- Site Completion (End State)
- Regulatory Framework
- Critical Uncertainties and Assumptions
- Interdependencies
- Contract Synopsis
- Cleanup Benefits

Outyear Accomplishment Priorities and Assumptions by Year

The sites are categorized as follows:

EM Closure Sites
Major EM Sites
NNSA Sites
All Other Sites

EM Closure Sites[7]

Ashtabula Closure Project

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
295	295	0	0	0	0

Site Details

Site Overview

The mission of the Ashtabula Closure Project was to safely remediate the privately owned RMI Titanium Company Extrusion Plant (formerly known as Reactive Metals, Inc.) to allow the Ohio Department of Health and Ohio Environmental Protection Agency to release the site back to the RMI Titanium Company.

The Ashtabula Closure Project consisted of remediation of facilities, disposition of equipment, and remediation of affected land areas and groundwater. Facility decommissioning was primarily accomplished by demolition and disposal of debris in off-site disposal facilities. Contaminated soil, asphalt, and concrete were shipped to a low-level waste disposal site for burial. Groundwater remediation was accomplished through source-term removal to on-site release limits. The project end-state of the site was completed December 2006. At the end of the project, 35 facilities were demolished or free-released. Approximately 42,000 m^3 of low-level and mixed low-level waste consisting of soil, concrete, and asphalt was remediated as part of the cleanup effort. All legacy waste and all equipment formerly used during production were shipped for disposal to commercial licensed disposal facilities.

Site Description

The Ashtabula Closure Project was located one mile south of Lake Erie approximately 50 miles northeast of Cleveland, Ohio.

Site Cleanup Strategy/Scope of Cleanup

The site of the former Reactive Metals, Inc. extrusion plant was remediated per a Nuclear Regulatory Commission (NRC) approved, Ohio Department of Health (ODH) adopted, Decommissioning Plan. Completion will allow the Ohio Department of Health to release the site to the owner, the RMI Titanium Company and terminate their radioactive materials license.

The scope of the Ashtabula Closure Project included environmental restoration for three release sites contaminated by Weapons Program activities from 1962 to 1988. The three release sites were: Buildings and Equipment; Solid Waste Management Unit soil and groundwater; Non-Solid Waste Management Unit soil. The Buildings and Equipment release site was accomplished

[7] EM Closure Sites include Ashtabula Closure Project, Columbus Closure Project, Fernald Closure Project, Miamisburg Closure Project and Rocky Flats Closure Project.

principally by demolition or free-release of 35 site buildings and disposal of remediation waste, including equipment, as low-level waste. The Solid Waste Management Unit release site was accomplished by bioremediation followed by soil excavation, and shipment of the remaining radioactively contaminated soil to a disposal site. Remediation of the non-Solid Waste Management Unit soils, including soil beneath site facilities, was accomplished principally by excavation and shipment to a disposal site. Non-Solid Waste Management Unit soils were estimated at 27,000 tons. Bulk waste shipment of all remediation waste, including contaminated soil, will be primarily via railroad gondola cars. Interim support facilities were provided during remediation.

Site Completion (End State)

With the exception of Area C-West, owned by the City of Ashtabula, all land involved with the Ashtabula Closure Project was owned by the RMI Titanium Company. Upon Ohio Department of Health regulatory release of the site license, following completion of remediation activities, the property will be returned to the site owner. All property was remediated for "Free and Unrestricted Use." The Department of Energy accepted completion of the site in December 2006. The Ohio Department of Health terminated the site license in the January 2007, thus achieving project end state.

The Records Management function will transition to Legacy Management beginning in FY2008. Groundwater monitoring and analysis is no longer necessary following project completion and responsibility for the site will be returned to its owner.

Regulatory Framework

The Site Treatment Plan provided information pertaining to treatment and disposal of Ashtabula Closure Project Mixed Waste to meet the requirements of the Federal Facility Compliance Act. The scope and planned actions necessary to remove the Extrusion Plant Site from service, remediate the site, and release the site for unrestricted use (termination of the RMI Titanium Company's Nuclear Regulatory Commission license) is being conducted per the requirements of Title 10 Code of Federal Regulations Part 40.

Critical Site Uncertainties and Assumptions

None - final site remediation was accomplished on schedule in December 2006.

Interdependencies

None.

Contract Synopsis

RMI Titanium Company, the site owner, was responsible for performing site cleanup activities through 2003. In December 2003, DOE chose to terminate the contract with the RMI Titanium Company to support comprehensive evaluation of the work to be performed and how it could most efficiently be accomplished. DOE chose to complete Ashtabula Closure Project remediation through a competitively bid cost-plus-incentive-fee task order awarded under the EM Indefinite Delivery/Indefinite Quantity contract (small business). The new closure contract was awarded in September 2005.

Cleanup Benefits

Work associated with final remediation and completion of DOE's responsibilities at the Ashtabula Closure Project was completed by the end of 2006 and was remediated to satisfy provisions of the Ohio Department of Health Decommissioning Plan. The site was released back to the RMI Titanium Company in January 2007.

Columbus

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
0	1,200	1,000	1,000	1,000	1,000

Site Details

Site Overview

The Columbus Closure Project, formerly known as the Battelle Columbus Laboratories Decommissioning Project, is a radioactive decontamination project at facilities owned by the Battelle Memorial Institute in central Ohio. The project initially addressed 15 buildings and associated grounds at two separate research facilities. Cleanup of Battelle's King Avenue site was completed in 2000, and the remaining activities are focused on Battelle's former nuclear sciences research park in rural Madison County, Ohio at the West Jefferson North site.

The end-state for the site was defined in a series of contractual agreements between the Department and Battelle. This end-state is also embodied in a Decommissioning Plan prepared by Battelle Memorial Institute and approved by the U.S. Nuclear Regulatory Commission, the principal regulatory authority for the cleanup (Battelle Memorial Institute, 1993). The Decommissioning Plan described the project's technical basis for release of buildings, materials and grounds.

Completion of the West Jefferson site accelerated cleanup consisted of four primary objectives: 1) decontamination and demolition of three large buildings: JN-1, High Energy Hot Cell Facility (20,200 square feet); JN-2, Critical Assembly Building (13,000 square feet), and JN-3, Reactor Building (10,000 square feet); 2) cleanup of related external areas (contaminated filter beds and buried utilities); 3) waste management activities (packaging, transportation, and disposal of transuranic waste, low-level waste and contaminated soils and debris); and 4) surveillance and maintenance (phased out as site hazards are reduced). The end-state objective was to safely remediate Battelle facilities to levels of residual contamination allowing future use of the site without radiological restrictions by the end of FY 2006 which was achieved. All future use decisions will be made by the site owner, Battelle.

Site Description

The Battelle West Jefferson facility is located approximately 10 miles west of Columbus, Ohio.

Site Cleanup Strategy/Scope of Cleanup

The West Jefferson facility was remediated per a Nuclear Regulatory Commission approved decommissioning plan which allowed the Nuclear Regulatory Commission license currently held by Battelle to be terminated upon completion. The scope of the Columbus Closure Project was to remove radioactive materials and contamination to levels that will allow future use of Battelle buildings and grounds without radiological restrictions, as defined in project procedures and

Nuclear Regulatory Commission requirements. DOE and Battelle mutually agreed that demolition of buildings JN-1, JN-2, and JN-3 is a cost-effective way of meeting their responsibilities for these three buildings.

Site Completion (End State)

Physical completion of the Columbus Closure Project was achieved in June 2006. DOE and Battelle agreed that the pre-conditions for termination of the Nuclear Regulatory Commission license was met in December 2006, and NRC license termination and final project completion was achieved in January 2007. As a general end-state, areas where buildings have been demolished or contaminated materials have been excavated, backfilled, compacted to a degree that enables future construction, and covered with grass. Known contamination was removed in accordance with project release criteria. Exceptions, such as decontaminating or excavating areas to below release criteria or partially excavating areas above release criteria were made on a case-by-case basis by mutual agreement between DOE and Battelle.

Regulatory Framework

The Site Treatment Plan provided details of the planned treatment and disposal of Columbus Closure Project Mixed Waste to meet the requirements of the Resource Conservation and Recovery Act Federal Facility Compliance Act.

Critical Site Uncertainties and Assumptions

Physical completion of the Columbus Closure project was reached in January 2007.

Interdependencies

None.

Contract Synopsis

Between FY 1987 and FY 2003, Battelle performed as the prime contractor for the cleanup, and contributed a 10 percent cost share. In FY 2003, DOE chose to complete the remediation through a competitively bid cost-plus-incentive-fee contract. The new closure contract awarded in FY 2004 mandates adherence to the approved Decommissioning Plan, the established release criteria, and the end-state for the site. Additionally, DOE is responsible for facilitating off-site disposition of transuranic waste.

Cleanup Benefits

The site was remediated to support Nuclear Regulatory Commission license termination for Battelle, the site owner.

Fernald Closure Project

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
268,789	2,609	2,019	1,200	1,200	0

Site Details

Site Overview

In 1952 Fernald began its uranium production mission as the Feed Materials Production Center in support of the nation's weapons program. During 37 years of operation, 462 million pounds of pure uranium metal products were produced for use in the production reactors at DOE's Hanford and Savannah River facilities. When operations ceased in 1989, there were 31 million pounds of uranium product present on site, 2.5 billion pounds of waste, and 2.75 million cubic yards of contaminated soil and debris. In addition, a 223-acre portion of the underlying Great Miami Aquifer was found to be affected by uranium at levels above drinking water standards.

In 1992 the site was renamed the Fernald Environmental Management Project and the mission was formally changed to environmental restoration under the Comprehensive Environmental Response, Compensation, and Liability Act. To facilitate restoration, the Comprehensive Environmental Response, Compensation, and Liability Act work scope for the 1,050-acre facility was divided into five operable units: the waste pits (Operable Unit 1); other waste units (Operable Unit 2); the Production Area facilities and legacy-waste inventories (Operable Unit 3); Silos 1 through 4 (Operable Unit 4); and contaminated environmental media including soil, sediment, and groundwater (Operable Unit 5). Since 1992, Comprehensive Environmental Response, Compensation, and Liability Act remedial investigations and feasibility studies have been completed for each of the operable units, and final Records of Decision to establish cleanup levels and document the cleanup remedies have been signed for each by DOE, United States Environmental Protection Agency, and Ohio Environmental Protection Agency.

The contractor declared physical completion at Fernald in October 2006. The DOE has completed their physical acceptance review, and final acceptance occurred in January 2007.

Site Description

The Fernald Closure Project environmental restoration site encompasses 1,050 acres in southwestern Ohio, which is divided into five operable units: the waste pits (Operable Unit 1); other waste units (Operable unit 2); the Production Area facilities and legacy waste inventories (Operable Unit 3); Silos 1 through 4 (Operable Unit 4); and contaminated environmental media, including soil, sediment and groundwater (Operable Unit 5).

Site Cleanup Strategy/Scope of Cleanup

The Fernald wastes included process-generated waste (the most radioactive and/or hazardous waste on-site) from multiple sources. These multiple sources include Silos 1 and 2 that contain radium-bearing residues from the uranium extraction of pitch-blend ores, Silo 3 that contains

radium-bearing cold metal oxides, and the waste pits that contain low-level radioactive waste. In addition to these sources, millions of cubic feet of containerized waste material from the uranium metals production. The strategy to remediate these sources included characterization, treatment, packaging, transportation, and final disposition. Following the completion of these activities, all process-generated waste and related structures are dispositioned/demolished.

Ultimately, approximately 975 acres of the 1,050-acre property will be restored to beneficial use as an undeveloped park, and approximately 75 acres will be dedicated to the footprint of the On-Site Disposal Facility (OSDF). Contaminated portions of the aquifer will be restored to beneficial use as a drinking water supply, and long-term stewardship actions will be put in place consistent with the final land use.

Site Completion (End State)

The contractor declared physical completion in October 2006, and project end-state was achieved in January 2007. The final remedial actions included: facility decontamination and dismantlement; on-site disposal of the majority of contaminated soil and decontamination and dismantlement debris; off-site disposal of the contents of the two K-65 Silos (Silos 1 and 2), Silo 3, waste pit material, nuclear product inventory, low-level waste, mixed waste, and limited quantities of soil and decontamination and dismantlement debris not meeting on-site waste acceptance criteria; and treatment of contaminated groundwater to restore the Great Miami Aquifer.

Regulatory Framework

In 1986 DOE/U.S. Environmental Protection Agency and the Ohio Environmental Protection Agency signed the Comprehensive Environmental Response, Compensation, and Liability Act Federal Facility Agreement. It was further agreed that DOE would undertake particular activities to bring Fernald Closure Project into compliance with the Clean Air Act and Resource Conservation and Recovery Act.

Critical Site Uncertainties and Assumptions

DOE's plan for Fernald silos residues (wastes) is as follows. Silo 1 and 2 waste was shipped to Waste Control Specialists, LLC, Texas for storage pending ultimate disposal. Silo 3 waste was shipped to going to Energy Solutions (formerly known as Envirocare), Utah for disposal.

There is a $206 million 1986 Natural Resources Damages (NRD) lawsuit claiming that DOE damaged the groundwater. The site has completed remediation activities per Comprehensive Environmental Response, Compensation, and Liability Act requirements. A trial date was set for June 2006. The Judge in the case postponed the trial date indefinitely and encouraged the parties to settle. This issue should be resolved before FY 2008.

Interdependencies

In FY 2007 the site will transfer to the Office of Legacy Management for long-term monitoring and maintenance.

Contract Synopsis

Fluor Fernald is the prime contractor comprised of four teaming partners: Fluor Daniel, Inc, Jacobs Engineering, Duratek, and Nuclear Fuel Services. In November 2000, the Department of

Energy and Fluor Fernald entered into a closure contract that incentivized Fluor Fernald to reduce the cost and schedule of the Fernald site cleanup.

FY 2007 is the last year of the Fluor Fernald contract; however, Fluor Fernald declared physical completion on October 29, 2006, with final contract fee and post-closure liabilities due in FY 2007.

Cleanup Benefits

Work associated with final remediation and completion of the Fernald site was completed in January 2007. Ultimately, approximately 975 acres of the 1,050-acre property will be restored to beneficial use as an undeveloped park, and approximately 75 acres will be dedicated to the footprint of the On-Site Disposal Facility. Contaminated portions of the aquifer will be restored to beneficial use as a drinking water supply, and long-term stewardship actions will be put in place consistent with the final land use. Upon acceptance of the physical completion by DOE, the site will be transferred to the Office of Legacy Management for long-term monitoring and maintenance in FY 2007.

Miamisburg Closure Project

Five Year Funding Profile

(thousands of dollars)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
46,069	33,383	32,462	31,734	27,079	24,024

Site Details

Site Overview

In June 2002, DOE, the Ohio Environmental Protection Agency and the United States Environmental Protection Agency signed a letter of intent formalizing an agreement with DOE to accelerate the Miamisburg Closure Project cleanup. The primary goal addressed in the agreement signed by DOE and the regulators was to accelerate cleanup activities such that the site could achieve closure by 2006. On December 5, 2002, DOE awarded a new Cost-Plus-Incentive-Fee Miamisburg Closure Project Closure Contract which had a target completion date of March 31, 2006 (the current amended target completion date is September 30, 2006, while the actual date of physical completion was July 31, 2006).

Site Description

The Miamisburg Mound plant was built in the late 1940s to support research and development, testing, and production activities for DOE's defense nuclear weapons complex and energy research programs. The plant's mission involved production of components, which contained plutonium-238, polonium-210, tritium, and large quantities of high explosives. This mission continued until 1994, when these activities were transferred to other DOE facilities.

The Miamisburg Closure Project site is located in Miamisburg, Ohio, ten miles southwest of Dayton and 31 miles north of Cincinnati.

Site Cleanup Strategy/Scope of Cleanup

Solid waste stabilization and disposition activities include the collection, storage, and disposition of waste, primarily waste generated from contaminated soil cleanup and waste from the decontamination and demolition of site buildings. Soil and building contamination is dominated by residual spread of thorium and plutonium. However, other radionuclides such as radium, actinium and cesium are found in lesser amounts. Solid waste stabilization and disposition activities at the Miamisburg Closure Project involve the management of low-level waste, low-level mixed waste, transuranic waste, hazardous waste, and solid waste streams. This includes interim waste storage, shipment of waste to federal and commercial disposal facilities, and, in some cases, minor treatments. Transuranic waste was shipped to the Savannah River Site pursuant to an agreement between the Department of Energy and the State of South Carolina. All legacy transuranic waste was dispositioned by the end of FY 2003. The site contractor declared physical completion in July 2006, and final site remediation is projected in 2007.

Site Completion (End State)

The site contractor declared physical completion of the Miamisburg Closure Project in July 2006, and DOE is completing their physical acceptance review. DOE is projecting physical acceptance in second quarter FY 2007. The DOE Office of Legacy Management will assume full operational responsibility for the site in FY 2008 following completion and acceptance of the following DOE Office of Environmental Management work scope:

- Operable Unit 1 (Historic Landfill) meets the requirements under Comprehensive Environmental Response, Compensation, and Liability Act and has been accepted by the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency. However, Congress subsequently has directed exhumation of Operable Unit 1 at a cost not to exceed $30,000,000. Subsequently, a competitive procurement took place in FY 2006 and the EM Consolidated Business Center awarded an Indefinite Delivery/Indefinite Quantity contract in October 2006. The scope of work is expected to complete in FY 2007.

- Potential Release Site 441 (rail load out area) was scheduled for completion in FY 2006, but was delayed to allow support for rail shipment of material exhumed from Operable Unit 1. This scope is included in the Indefinite Delivery/Indefinite Quantity contract for the Operable Unit 1 exhumation and is planned to complete in FY 2007.

- DOE will complete the Record of Decision for Parcel 6/7/8 before declaring EM completion by FY 2008.

The Office of Legacy Management accepted custodianship of the site in October 2006. Funding for the long-term stewardship and post-retirement worker benefits will transfer with the enactment of the FY 2008 budget request.

Regulatory Framework

In 1993 DOE/U.S. Environmental Protection Agency and the Ohio Environmental Protection Agency signed the Federal Facility Agreement.

Critical Site Uncertainties and Assumptions

As a result of Congressional action in FY 2006, additional environmental closeout activities associated with Operable Unit 1 are being developed. Implementation of the Operable Unit 1 environmental closeout will continue into FY 2007 and will delay closure.

Interdependencies

Off-site shipment of Operable Unit 1 waste will continue without obstruction.

Contract Synopsis

DOE has a cost-plus-incentive-fee closure contract with CH2M Hill Mound, Inc. with an actual completion date of July 2006, and will be completed in early 2007. The contract provided significant incentive to the contractor to complete closure early while maintaining high safety standards, reducing risk, saving the taxpayer money through various means (mortgage reduction,

process efficiencies, implementation of new technologies, etc.), and remaining in compliance with all regulatory and enforceable milestones.

The new Indefinite Delivery/Indefinite Quantity contract with Accelerated Remediation Company (ARC) for the Operable Unit 1 and Potential Release Site 441 was awarded in October 2006, and is planned to complete in December 2007.

Cleanup Benefits

Successful site cleanup, closure and turnover of 24 buildings and 306 acres to the Miamisburg Mound Community Improvement Corporation (MMCIC) are expected to occur in 2007. The long-term stewardship mission at Miamisburg Closure Project will be conducted by DOE's Office of Legacy Management following completion of site cleanup and when funding is provided to Legacy Management upon enactment of the FY 2008 budget request.

Rocky Flats Closure Project

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
7,000	6,150	6,304	6,462	6,623	0

Site Details

Site Overview

The mission of the Rocky Flats Field Office is to oversee the cleanup and closure of the Rocky Flats Environmental Technology Site. This mission encompasses the management of the site waste and special nuclear materials and their removal from the site; the deactivation, decommissioning and demolition of the site facilities; and cleanup, closure and conversion of the site to beneficial use in a manner that is safe, environmentally and socially responsible, physically secure, and cost-effective.

Site Description

The Rocky Flats Environmental Technology Site is located about 10 miles northwest of Denver, Colorado, on about 11 square miles at the base of the Rocky Mountains. The Atomic Energy Commission established the Rocky Flats Plant in 1951with a mission to manufacture nuclear weapons components from materials such as plutonium, beryllium, and uranium. When operations ceased, large amounts of plutonium, plutonium compounds, and metallic residues remained at the various site facilities. Significant volumes of hazardous and radioactive waste generated during production operations were also present throughout numerous buildings and soil was contaminated, resulting in the site being placed on the National Priorities List. In 1991, EM acquired the Rocky Flats Plant and the site transitioned to a new mission: cleaning up the contamination and waste from past production activities. It was at this time that the Rocky Flats Plant became the Rocky Flats Environmental Technology Site. By the end of 2005, all site facilities were demolished, all waste was removed, and contamination was reduced to regulatory agreed upon levels. The site will transition to a National Wildlife Refuge under a Memorandum of Understanding with the U.S. Department of Interior. In FY 2007, the long-term stewardship mission at the site has been transferred to the Office of Legacy Management.

Site Cleanup Strategy/Scope of Cleanup

All cleanup activities at the Rocky Flats Site were completed in FY 2006. In FY 2007, the final Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision will be filed completing the regulatory activities at the site. Contract close out will be addressed on an accelerated pace and regulatory closeout activities will dominate site activities.

Site Completion (End State)

The final Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision will be filed completing the regulatory activities at the site. Contract closeout will be addressed on an accelerated pace and regulatory closeout activities will dominate site activities.

Regulatory Framework

In 1996 DOE, U.S. Environmental Protection Agency and Colorado Department of Public Health and Environment signed the Rocky Flats Cleanup Agreement.

Critical Site Uncertainties and Assumptions

Project completion at the Rocky Flats Site occurred in FY 2006.

Interdependencies

The site will transition to a National Wildlife Refuge managed by the U.S. Department of Interior. The long-term stewardship mission at the site has been transferred to the Office of Legacy Management.

Contract Synopsis

On February 1, 2000, Kaiser-Hill Company, LLC and the Rocky Flats Field office signed the Rocky Flats Closure Contract. This is a cost-plus-incentive-fee contract which incentivized Kaiser-Hill to reduce the cost and schedule of the Rocky Flats site cleanup.

Cleanup Benefits

The site will transition to a National Wildlife Refuge.

Major Sites

Carlsbad

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
217,602	224,666	215,700	218,179	220,091	220,161

Site Details

Site Overview

The Carlsbad Field Office, located in Carlsbad, New Mexico, was created to serve as the focal point for the nation's transuranic waste management efforts since transuranic waste is currently stored at many DOE sites across the country. The Carlsbad Field Office has the responsibility for management of the National Transuranic Waste Program, whose mission is the implementation and management of a national system that safely and cost-effectively provides for the certification, transportation, and disposal of defense-generated transuranic waste. The Waste Isolation Pilot Plant is the center of the National Transuranic Waste Program and is managed by the Carlsbad Field Office. This plant, near Carlsbad, New Mexico, is the Nation's only mined geologic repository for the permanent disposal of defense-generated transuranic waste. The waste disposal area is 2,150 feet (almost one-half mile) below the surface located in 200-million year old stable salt beds. The transuranic waste that is eligible for disposal at the Waste Isolation Pilot Plant must ultimately be transported from all the generator sites to this repository for receipt, handling, and disposal.

Site Description

The Waste Isolation Pilot Plant was the world's first permitted deep geologic repository for the permanent disposal of radioactive waste. It is located in Eddy County in southeastern New Mexico, 26 miles southeast of Carlsbad. The Plant's total land area consists of 10,240 acres (16 square miles) with the fenced surface portion of the active site being about 35 acres in size. It is located in an area of low population density, and the area surrounding the facility is used primarily for grazing, and development of potash, oil, salt, and natural gas resources.

Site Cleanup Strategy/Scope of Cleanup

The Waste Isolation Pilot Plant is an operating facility, supporting the cleanup of transuranic waste from waste generator and storage sites. It is not a cleanup site.

Site Completion (End State)

EM's end state for Waste Isolation Pilot Plant is the cessation of disposal activities for legacy and newly generated transuranic waste from the DOE complex by 2030. Decommissioning of the surface facilities and permanent closure of the underground will be completed in 2035, at which time passive institutional controls will be constructed.

Regulatory Framework

Authorized by Congress in 1979, the Waste Isolation Pilot Plant was constructed during the 1980's. In the Waste Isolation Pilot Plant Land Withdrawal Act of 1992, Congress established regulatory conditions and standards covering everything from limits on the kinds and quantities of waste DOE could place in the repository. The plant operates under a Resource Conservation and Recovery Act, Part B, Hazardous Waste Permit issued by the New Mexico Environment Department in October 1999. The Environmental Protection Agency issued regulatory standards for waste containment in 40 CFR 191. Then the Environmental Protection Agency formulated Waste Isolation Pilot Plant-specific criteria in 40 CFR 194 that required DOE to demonstrate that the Waste Isolation Pilot Plant would meet its containment standards. The Environmental Protection Agency initially certified the Waste Isolation Pilot Plant's compliance with these regulations on May 18, 1998, and recertified compliance on March 29, 2006.

The Waste Isolation Pilot Plant has four primary regulators, responsible for the following areas: 1) the Environmental Protection Agency regulates repository certification and radionuclide regulation in accordance with the Waste Isolation Pilot Plant Land Withdrawal Act of 1996, as amended and the regulation of polychlorinated biphenyls; 2) the New Mexico Environment Department regulates the Resource Conservation and Recovery Act hazardous constituents, water discharge, air emissions, and ground water; 3) the Nuclear Regulatory Commission certifies Type B transportation packaging; 4) and the Department of Transportation regulates highway transportation and Type A transportation packaging.

Agreements with States at the Waste Isolation Pilot Plant's generator sites may impact the Waste Isolation Pilot Plant. For instance, the *Idaho Settlement Agreement* contains transuranic waste shipment milestones for the Idaho National Laboratory and the *Letter of Intent for Meeting Environmental Responsibilities at New Mexico DOE Facilities* commits to accelerated cleanup of transuranic waste at Sandia National Laboratories and the Los Alamos National Laboratory in the State of New Mexico.

Critical Site Uncertainties and Assumptions

The Waste Isolation Pilot Plant's key uncertainty listed in the FY 2007 budget submission was obtaining permit approval for remote-handled transuranic waste disposal from the New Mexico Environment Department. The remote-handled permit modification is needed to allow the Waste Isolation Pilot Plant to manage, store, and dispose of this waste at the Waste Isolation Pilot Plant. At the New Mexico Environment Department's request, the remote-handled permit modification was combined with the Section 310/311 permit modification. Congress added Section 311 to the 2004 Energy and Water Development Appropriations Act and Section 310 to the 2005 Consolidated Appropriations Act and directed DOE to submit a request to the New Mexico Environment Department to make changes in waste analysis activities and the Waste Isolation Pilot Plant facility monitoring. Section 310/311 provisions will reduce the DOE life-cycle costs for transuranic waste characterization/confirmation overall. The combined permit modification will facilitate cost-effective, safe cleanup and disposal of the Nation's defense-generated transuranic waste. The New Mexico Environment Department approved the permit modification October 16, 2006, which became effective on November 16, 2006. The first receipt of remote-handled transuranic waste occurred January 2007.

Interdependencies

The Waste Isolation Pilot Plant is dependent on the waste generator/storage sites to provide waste for certification and disposal. The Waste Isolation Pilot Plant is also dependent on its regulators and their decisions that impact operations, certification of the Waste Isolation Pilot Plant, permit modifications, licenses, shipping, and transportation. The Carlsbad Field Office also works with DOE sites that have remote-handled transuranic waste to coordinate shipping and disposal.

Contract Synopsis

The Carlsbad Field Office currently has four major contracts in place. The Management and Operating Contract for the Waste Isolation Pilot Plant was extended through September 2010. Specific performance incentives were included in the negotiated extension. A technical assistance contract for implementing the independent DOE quality assurance program for the National Transuranic Waste Program through August 2010 was awarded on August 11, 2005. In addition, two new contracts for continuation of transportation carrier services will be awarded in FY 2007.

Cleanup Benefits

The Waste Isolation Pilot Plant is crucial to DOE completing its cleanup/closure mission for transuranic waste. It is the only authorized disposal site for transuranic defense waste. Because the temporary storage facilities located across the United States were never intended to become permanent disposal sites, the Waste Isolation Pilot Plant has become the essential element in reducing the risks to public health, workers, and the environment.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008 to FY 2012, Carlsbad's target level funding will help the Department transport and dispose of both RH and CH TRU waste from the DOE complex, by maintaining WIPP as an operating facility and funding the levels of TRU shipments indicated in each fiscal year's accomplishments above.

FY 2008 Accomplishments

- Provide contact-handled (CH) transuranic waste (TRU) disposal throughput capability and average 21 shipments per week
- Provide remote handled (RH) disposal throughput capability and average 5RH TRU waste shipments per week
- Provide inter-site shipments of TRU waste for final characterization for shipment to the Waste Isolation Pilot Plant (WIPP)
- Complete emplacement of contract-handled waste in Panel 4
- Provide mobile characterization services to Savannah River Site and Los Alamos National Laboratory with a one shift operations at a nominal capacity of 90 contract-handled drums per week

FY 2009 Accomplishments

- Provide CH disposal throughput capability and average 21 shipments per week
- Provide disposal throughput capability and average 5 RH TRU shipments per week

- Submit the second Compliance Recertification Application to the Environmental Protection Agency
- Submit the new RCRA Hazardous Waste Facility Permit application to the New Mexico Environment Department (NMED)

FY 2010 Accomplishments

- Provide CH disposal throughput capability and average 21 shipments per week
- Provide disposal throughput capability and average 5 RH TRU shipments per week

FY 2011 Accomplishments

- Provide CH disposal throughput capability and average 21 shipments per week
- Provide disposal throughput capability and average 5 RH TRU shipments per week
- Provide limited Centralized Characterization Project capability

FY 2012 Accomplishments

- Provide CH disposal throughput capability and average 21 shipments per week
- Provide disposal throughput capability and average 5 RH TRU shipments per week
- Provide limited Centralized Characterization Project capability
- Work on the third EPA Compliance Recertification, EPA plan change requests and NMED RCRA Permit modifications

Idaho

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
519,604	509,426	442,831	455,758	470,394	477,823

Site Details

Site Overview

Since its establishment in 1949, the Idaho National Laboratory Site has fulfilled numerous Department of Energy (DOE) missions including designing and testing of 52 nuclear reactors and reprocessing spent nuclear fuel to recover fissile materials. These activities have resulted in an inventory of high-level, transuranic, mixed low-level and low-level wastes, which are being disposed in accordance with applicable laws and regulations. The laboratory is also responsible for storing and dispositioning approximately 284 metric tons of spent nuclear fuel from a number of sources, including the Navy, foreign and domestic research reactors, and some commercial reactors, along with DOE owned fuel. In addition, the site is on the United States Environmental Protection Agency's National Priorities (Superfund) List, and environmental remediation activities are required at ten Waste Area Groups encompassing 100 operable units, including Naval Reactors Facility Waste Area Group 8 and Argonne National Laboratory-West Waste Area Group 9.

The Idaho National Laboratory's Environmental Management (EM) Program is responsible for managing a variety of radioactive and hazardous wastes that originate from those missions and from other DOE facilities. The EM program is treating, storing and disposing of a variety of waste streams, cleaning up the environment, removing or deactivating unneeded facilities, and will remove DOE's inventory of spent nuclear fuel and high-level waste from Idaho. The EM end-state vision consists of achieving the following:

- By 2012, the Idaho National Laboratory Site will have achieved significant risk reduction and will have placed materials in safe storage ready for disposal.
- By 2025, the Idaho National Laboratory Site will have completed all active cleanup work. This date has been extended from the 2020 date in the Performance Management Plan. The State and DOE are still discussing the extent of the work included in the Record of Decision on the Radioactive Waste Management Complex, which will be issued in mid FY 2008.
- By 2035, all spent nuclear fuel will be shipped offsite and high-level waste (calcine) will be ready to ship.

Site Description

The Idaho National Laboratory Site is located in southeast Idaho, near the northeast end of Idaho's Snake River Plain, which extends in a broad arc from the Idaho-Oregon border on the west to the Yellowstone Plateau on the east. In 1991, the Environmental Protection Agency designated the Snake River Plain Aquifer a sole-source aquifer.

Although the total land area is 890 square miles, most of the cleanup work at the Idaho National Laboratory Site is performed within the site's primary facility areas: Idaho Nuclear Technology and Engineering Center, Radioactive Waste Management Complex, Test Area North, and Reactor Technology Complex (formerly the Test Reactor Area).

Idaho Nuclear Technology and Engineering Center

The Idaho Nuclear Technology and Engineering Center is situated on 210 acres within a perimeter fence and approximately 55 acres located outside the fence. The Center was built in the 1950s to reprocess spent nuclear fuel to recover uranium. It consists of 290 facilities (approximately 1.2 million square feet). High-level waste calcine in bin sets, sodium-bearing waste within tanks and spent nuclear fuel in wet and dry storage represent the major cleanup activities in addition to remediation of two active Comprehensive Environmental Response, Compensation, and Liability Act Operable Units.

Radioactive Waste Management Complex

The Radioactive Waste Management Complex consists of 86 facilities and is a controlled area for management and disposal of solid radioactive wastes. It includes a 97-acre Subsurface Disposal Area within a security fence, buildings for Resource Conservation and Recovery Act compliant storage of hazardous transuranic waste, and administration and support buildings. The Subsurface Disposal Area is an unlined landfill that received radioactive waste from Idaho National Laboratory operations and other DOE sites, including large amounts of transuranic waste and alpha-contaminated mixed low-level waste from DOE's Rocky Flats facility in Colorado. The Subsurface Disposal Area will be remediated under a future Comprehensive Environmental Response, Compensation, and Liability Act action, although selected buried waste retrieval actions are underway, in agreement with the State of Idaho. The above-ground, stored transuranic waste is being treated at the Advanced Mixed Waste Treatment Facility and shipped to the Waste Isolation Pilot Plant for disposal. The Subsurface Disposal Area continues to receive low-level radioactive waste from Idaho National Laboratory Site operations.

Test Area North

The Test Area North area covers about 220 acres at the north end of the Idaho National Laboratory Site. Test Area North was established in the 1950s by the United States Air Force and the Atomic Energy Commission Aircraft Nuclear Propulsion Program to support nuclear-powered aircraft research. Upon termination of this research, the facilities were converted to support a variety of other DOE research projects. Some Comprehensive Environmental Response, Compensation, and Liability Act remediation and high-risk facility deactivations and demolitions remain.

Reactor Technology Complex

The Reactor Technology Complex covers about 102 acres in the southwest portion of the Idaho National Laboratory Site. The major mission of the Reactor Technology Complex is to conduct scientific and engineering experiments for both nuclear and non-nuclear programs. The Reactor

Technology Complex was established in the early 1950s with the development of the Materials Test Reactor followed by two other major reactors, the Engineering Test Reactor and the Advanced Test Reactor. The Advanced Test Reactor continues to operate today. Reactor disposition remains to be completed.

Site Cleanup Strategy/Scope of Cleanup

Over the past decade, the following considerable progress has been made toward addressing legacy waste and contamination at the Idaho National Laboratory Site:

- Of the 596 Comprehensive Environmental Response, Compensation, and Liability Act sites identified as being potentially contaminated, 75 percent have been cleaned up or determined not to pose any risk;
- Over eight million gallons of high-level liquid waste have been calcined (dried into a powdered form) into about 4,400 m^3 of calcine, reducing the volume of liquid waste remaining in the tank farm to approximately one million gallons of sodium-bearing waste, and emptying and cleaning seven of 11 tanks;
- Over 10,000 m^3 of stored transuranic waste has been shipped for permanent disposal at the Waste Isolation Pilot Plant in New Mexico;
- Over 44,000 m^3 of low-level and mixed low-level waste has been disposed.
- By weight, 92 percent of Idaho National Laboratory Site EM-owned spent nuclear fuel has been consolidated into dry storage;
- Substantial quantities of volatile organic compounds have been extracted and destroyed from the vadose zone beneath the Radioactive Waste Management Complex and Test Area North.

Site Completion (End State)

The following EM cleanup activities must be completed to reach the anticipated end-state for the Idaho National Laboratory Site in 2035:

Idaho Nuclear Technology and Engineering Center

- Demolish or disposition all excess facilities;
- Treat and dispose liquid sodium-bearing waste stored in underground tanks;
- Empty and disposition all Tank Farm Facility tanks;
- Ship all EM spent nuclear fuel to out of state disposition;
- Deactivate EM spent nuclear fuel wet storage basins (Chemical Processing Plant 603);
- Dispose or disposition all excess nuclear material;
- Complete Waste Area Group 3 remediation; Idaho will issue the last Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for release site 14 for the soil under buildings.
- Place calcine (4,400 cubic meters) in a condition that is road ready for shipment to out of state disposition.

Radioactive Waste Management Complex

- Retrieve stored remote-handled transuranic waste and treat at the Idaho National Technology and Engineering Center and package for shipment to Waste Isolation Pilot Plant;

- Demolish and remove facilities no longer needed;
- Complete remediation of buried transuranic waste, including exhumation and disposal as necessary per the Comprehensive Environmental Response, Compensation, and Liability Act;
- Complete and implement Final Comprehensive Record of Decision for Waste Area Group 7 (Operable Unit 7-13/14);
- Complete shipments of stored transuranic waste to the Waste Isolation Pilot Plant.

Test Area North

- Demolish all EM facilities (only facilities required for groundwater remediation remain);
- Complete all remediation of contaminated soils and tanks at Test Area North (Operable Unit 1-10);
- Continue Comprehensive Environmental Response, Compensation, and Liability Act remedial pump and treat activities (Operable Unit 1-07B).
- Waste Area Group 1 Records of Decision have all been issued; if there are future Comprehensive Environmental Response, Compensation, and Liability Act actions they will be covered under the site-wide Record of Decision 10-08, scheduled for FY 2010.

Reactor Technology Complex

- Demolish all EM-owned facilities;
- Disposition the Engineering Test Reactor and Materials Test Reactor; under Comprehensive Environmental Response, Compensation, and Liability Act currently in the engineering evaluation/cost analysis phase.

Regulatory Framework

There are three primary regulators of the Idaho National Laboratory Site: the United States Environmental Protection Agency, the United States Nuclear Regulatory Commission and the State of Idaho Department of Environmental Quality. The International Atomic Energy Agency also regulates/monitors via treaty. Several compliance agreements, amendments and consent orders executed between 1991 and 2000 govern cleanup work at the Idaho National Laboratory Site. Those agreements encompass the majority of the cleanup requirements and commitments. The five primary agreements are:

<u>Federal Facility Agreement and Consent Order – 1991</u>

In November 1989, the United States Environmental Protection Agency listed the Idaho National Laboratory Site on the Comprehensive Environmental Response, Compensation, and Liability Act National Priorities List. The resulting *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* between the DOE, the United States Environmental Protection Agency, and Idaho Department of Environmental Quality established a strategy and plan for cleanup at the Idaho National Laboratory Site. The agreement divides the Idaho National Laboratory Site into 10 waste area groups based on similar characteristics or geographic boundaries. Nine groups generally correspond to the Site's major facility areas. The tenth group assesses overall risk to the aquifer beneath the Site, addresses sites outside the boundaries of the Idaho National Laboratory Site's primary facility areas, and allows for inclusion of newly

identified release sites. These Waste Area Groups are further divided into operable units. Under the agreement, the DOE conducts an environmental investigation at each site that may be contaminated. At the end of each investigation, if it is determined the area needs cleanup, DOE presents for public comment a proposed plan that documents the results of the investigation and proposes alternative cleanup actions. After reviewing and addressing any comments, the DOE, the United States Environmental Protection Agency, and State of Idaho reach a final decision, which is documented in a Record of Decision. Cleanup design and construction can then begin.

Notice of Non-Compliance Consent Order – 1992

This consent order (between DOE, the State of Idaho Department of Environmental Quality, and the United States Environmental Protection Agency) establishes actions and milestones to resolve Resource Conservation and Recovery Act inspection issues including configuration of stored transuranic waste and high-level waste in the Idaho Nuclear Technology and Engineering Center tank farm.

Idaho Settlement Agreement – 1995

This agreement (between DOE, State of Idaho, and United States Navy) resolved a lawsuit regarding the receipt of spent nuclear fuel at the Idaho National Laboratory Site. The agreement specifies milestones toward the removal of all spent nuclear fuel and certain radioactive waste from Idaho National Laboratory Site by 2035. Some of the upcoming key milestones include:

- DOE shall issue a Record of Decision for the treatment of calcined wastes no later than December 31, 2009.
- DOE shall complete calcination of sodium-bearing liquid high-level wastes by December 31, 2012. Necessary discussions with the State regarding the use of steam reform technology (in lieu of calcination) in terms of the sodium-bearing waste initiative have been held. The State agrees with this path forward.
- DOE shall ship all transuranic waste to the Waste Isolation Pilot Plant or other such facility designated by DOE no later than December 31, 2018.
- DOE shall complete the transfer of all spent fuel from wet storage facilities by December 31, 2023.
- DOE shall treat all high-level waste so that it is ready to be moved out of the State of Idaho by 2035.
- DOE shall remove all spent fuel from Idaho by January 1, 2035.

Voluntary Consent Order – 2000

The *Consent Order* (Idaho Department of Environmental Quality 2000) is an enforceable agreement with the Idaho Department of Environmental Quality that governs resolution of self-disclosed Resource Conservation and Recovery Act issues, most of which were related to the closure of 912 tanks and tank systems.

Site Treatment Plan

In fulfillment of the 1992 Federal Facilities Compliance Act, the Idaho National Engineering Laboratory prepared the *Idaho National Engineering Laboratory Site Treatment Plan* to address the treatment and long-term storage of mixed low-level waste (radioactive waste mixed with hazardous chemicals). This enforceable plan was approved by the State of Idaho and is updated annually.

Section 3116 of the Ronald W. Reagan National Defense Authorization Act - The Federal Facility Agreement defines the enforceable commitments for completion of closure of non-compliant tanks at Idaho National Laboratory. Originally all tanks were to be closed in accordance with the waste incidental to reprocessing methodology in DOE Order 435.1. In October 2004, Congress passed the Ronald W. Reagan National Defense Authorization Act of FY 2005 (Public Law 108-375, 2004). Section 3116 of the National Defense Authorization Act allows the Secretary of Energy, in consultation with the Nuclear Regulatory Commission, to determine when waste from reprocessing of spent nuclear fuel is appropriate for onsite disposition as other than high level waste when certain criteria are met. In order to meet criteria established in the statue, DOE must remove waste to the maximum extent practical and submit waste determinations to Nuclear Regulatory Commission for review.

Critical Site Uncertainties and Assumptions

DOE will identify disposal pathways and schedules for liquid sodium-bearing waste, tank farm closure, calcined waste, spent nuclear fuel transfers and repackaging, and wastes with no existing path for disposal in time to meet key Idaho National Laboratory commitments. In addition, the remediation of the Subsurface Disposal Area (including the buried waste) at the Radioactive Waste Management Complex is dependent on the outcome of the Comprehensive Environmental Response, Compensation, and Liability Act process, as well as ongoing litigation between DOE and the State of Idaho.

Current cost estimates and schedules for the calcined waste support direct disposal to a monitored geological repository, presumably at Yucca Mountain pending license application submission. It should be noted that this calcine exhibits hazardous characteristics and contains listed hazardous wastes and therefore would not be approved for direct disposal at Yucca Mountain without Environmental Protection Agency delisting the Resource Conservation and Recovery Act hazardous high-level waste.

Interdependencies

The Idaho site's current interdependencies are the availability of shipping containers and trailers for transuranic waste (TRUPACT IIs) for the shipment of transuranic waste to the Waste Isolation Pilot Plant; the future availability of casks and transporters for the shipment of remote-handled transuranic waste; delivery of the remote-handled transuranic waste acceptance criteria; receiver sites for nuclear materials; availability of spent nuclear fuel data and inter-site coordination for foreign and domestic research reactor receipts; and, planned exchange of spent nuclear fuel with the Savannah River Site. The availability of a geologic repository is required for the off-site disposition of the high-level waste and spent nuclear fuel. This will require dependencies on exterior Federal and State regulators for review, approval, oversight and monitoring of the DOE repository shipping cask approval, construction/availability, shipping cask corridor approval, etc.

Contract Synopsis

In mid-2003, the Idaho National Laboratory Site was restructured into two distinct business units—one for cleanup activities and one for laboratory missions. This was done to allow each organization to focus on its distinct mission. The laboratory focuses on nuclear technology development, and the Idaho National Laboratory EM Program focuses on cleaning up historic contamination at the site. As of July 2006, the primary EM site contractors are Bechtel BWXT Idaho, LLC (operation of the Advanced Mixed Waste Treatment Project through April 30, 2008, which supports transuranic waste shipments to the Waste Isolation Pilot Plant), and the CH2M Hill Washington Group, which extends through September 30, 2012.

In March 2006, DOE terminated a contract with Foster Wheeler USA Corporation to build a facility that would repackage spent nuclear fuel into standard canisters to be shipped to a monitored geological repository. Alternate means for repackaging and shipping spent fuel to the geologic repository are under study.

The Idaho Operations Office conducted a competitive acquisition to select an Indefinite Delivery/Indefinite Quantity contractor to decontaminate and decommission equipment/facilities associated with an earlier buried waste retrieval project in Pit 9. The selection occurred in late November 2006.

Cleanup Benefits

Cleanup of the Idaho National Laboratory Site will reduce the risk of contamination of the Snake River Plain Aquifer from nuclear and hazardous waste. DOE will reduce the risk to workers, the environment, and the public by cleaning up, stabilizing, and disposing of waste. Cleanup will eliminate infrastructure costs by aggressively reducing footprint through consolidation of cleanup operations, primarily to the Idaho Nuclear Technology and Engineering Center, and inactivation and decommissioning of facilities at several other Idaho National Laboratory Site areas. Consolidating activities to the Idaho Nuclear Technology and Engineering Center significantly reduces infrastructure, surveillance and maintenance costs.

By 2009, the Idaho site will have packaged and shipped all nuclear material off-site. By 2012, the west side of the Tank Farm Facility will be closed, all remediation completed, and most facility demolition at two facility areas completed (Power Burst Facility and Test Area North). The remaining facilities will be in a cold, dark, and dry status, awaiting final disposition by 2012.

By 2009, all EM-owned spent nuclear fuel will be stabilized in interim dry storage. By 2012, the stored transuranic waste will have been packaged and shipped to the Waste Isolation Pilot Plant and the targeted transuranic waste from seven pits buried in the Subsurface Disposal Area will have been removed and shipped to the Waste Isolation Pilot Plant, the remote handled transuranic waste will be packaged and shipped to the Waste Isolation Pilot Plant, the liquid sodium bearing waste will have been stabilized and the remaining Tank Farm Facility tanks closed, and the EM footprint will have been consolidated to two facility areas.

Five Year Funding Profile by Major Project[8]

(dollars in thousands)

Project	TPC	TEC[9]	Prior Year	FY2008	FY2009	FY2010	FY2011	FY2012	Outyears
Sodium Bearing Waste Treatment Project	461,608	343,708	147,917	112,800	74,600	8,391	0	0	0

Sodium Bearing Waste Treatment Project

This project supports the equipment procurement, construction, construction management, quality assurance, and project management for the Sodium Bearing Waste Treatment Project. The design effort will develop the final detailed design of the treatment facility and establish the scope, schedule, and cost baselines for the project. The Sodium Bearing Waste Treatment Projects is one of several projects that are managed by under Idaho National Laboratory's Idaho Cleanup Project and are part of the process to close the Idaho Nuclear Technology and Engineering Center's Tank Farm Facility. In order for these projects to meet the cleanup schedule, they will be managed together and their activities coordinated under the Idaho Cleanup Project. The Sodium Bearing Waste Treatment Project supports the Department's EM mission of safely storing and treating liquid radioactive wastes. It supports the EM cleanup initiative and reduces risk to the environment. In addition, it supports several Federal Facilities Compliance Act commitments made with the State of Idaho.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008-2012, the INL site's target funding will help the Department make progress on nine of EM's corporate performance measures. In contributing to EM's measure #2, the INL site will package 441 containers of enriched uranium for long-term storage over the five years. For measure #5, the INL site will eliminate 900,000 gallons of liquid waste. For measure #6, the INL site will close 7 liquid tanks. For measure #9, the INL site will ship and dispose at the Waste Isolation Pilot Plant 32,838 cubic meters of transuranic (TRU) waste. For measure #10, the INL site will dispose of 29,158 of newly generated and 281,851 cubic meters of environmental and D&D generated low-level and mixed low-level waste. For measure #12, the INL site will complete 20 nuclear facilities. For measure #13, the INL site will complete 16 radioactive facilities. For measure #14, the INL site will complete 62 industrial facilities. For measure #15, the INL site will remediate 86 release sites.

FY 2008 Accomplishments

- Start and complete up to one-third of the Light Water Breeder Reactor/U-233 shipments to the Nevada Test Site.
- Continue providing safe storage of Navy spent nuclear fuel in Chemical Processing Plant-666. Begin transfer of Navy spent nuclear fuel from Chemical Processing Plant-666 to

[8] For the purpose of this FYP, "major projects" are defined as any projects with a construction project data sheet that exceeds $100 million in total project cost.
[9] Includes design and construction costs only. From page 142 of FY2008 Congressional Budget

the new dry storage facility at the Naval Reactor Facility. (The transfer will be funded using Navy funding in a reimbursable work agreement.)

- Continue National Spent Nuclear Fuel program long-term planning for geologic disposal of all DOE-owned spent nuclear fuel.
- Continue maintenance of Chemical Processing Plant building-666 and all wet stored fuel.
- Continue maintenance of Chemical Processing Plant building-603 and all dry stored fuel.
- Complete Fermi fuel transfers.
- Planning will continue in FY 2008 for the exchange of spent nuclear fuel with the Savannah River Site. Aluminum clad spent nuclear fuel will be shipped from Idaho National Laboratory to the Savannah River Site and stainless steel-clad nuclear fuel will be shipped from the Savannah River Operations Office to the Idaho National Laboratory.
- Continue with program activities that support waste characterization, packaging, and transportation of remote-handled (approximately 140 m^3) transuranic waste to the Waste Isolation Pilot Plant.
- Treat and ship approximately 7,400 m^3 of stored transuranic waste to the Waste Isolation Pilot Plant.
- Continue disposition of low and mixed low-level waste at the Radioactive Waste Management Complex disposal pits.
- Continue sodium-bearing waste treatment facility construction, including efforts to gain necessary regulatory approvals for sodium bearing waste treatment and disposal.
- Waste Area Group 7 (Radioactive Waste Management Complex): Complete operable unit 7-13/14 Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision and begin remedial action.
- Waste Area Group 1 (Test Area North): Continue groundwater treatment and monitoring.
- Waste Area Group 2 (Test Reactor Area); Waste Area Group 4 (Central Facility Area); Waste Area Group 5 (Power Burst Facility/Auxiliary Reactor Area); and Waste Area Group 6 (Experimental Breeder Reactor/BORAX): maintenance of remedies.
- Continue Engineering Test Reactor (Test Reactor Area 642) cubicle demolition, canal grouting and equipment removal.
- Issue Chemical Processing Plant-640 Engineering Evaluation/Cost Analysis for decontamination and dismantlement.
- Complete Chemical Processing Plant-603A basin disposition.
- Close four 300,000 gallon empty tanks in the tank farm.
- Exhume and ship 1,450 cubic meters of buried transuranic waste to WIPP.
- Continue processing transuranic waste from other sites through the Advanced Mixed Waste Treatment Project and shipment for disposal at WIPP.
- Award new Advanced Mixed Waste Treatment Project contract.
- Continue shipping remote handled Transuranic waste to WIPP.

FY 2009 Accomplishments

- Complete un-irradiated nuclear material transfers off-site
- Complete WAG 3-14 work package and WAG 10-08 documents that support the Record of Decision
- Treat and ship approximately 7,400 m^3 of stored transuranic waste to the Waste Isolation Pilot Plant

- VCO activities will be in compliance with State negotiations
- Continue waste management operations including ICDF
- Complete all 3,178 EM fuel handling unit transfers from wet to dry storage
- Continue transuranic waste exhumation and shipping from WAG 7
- Continue Engineering Test Reactor and Materials Test Reactor D&D
- Continue processing transuranic waste from other sites thru the Advanced Mixed Waste Treatment Project and shipment for disposal at WIPP
- Continue Navy spent nuclear fuel transfers from Chemical Processing Plant 666 to dry storage. (The transfer will be funded using Navy funding in a reimbursable work agreement.)
- Cease disposal of low-level waste at the Radioactive Waste Management Complex
- Complete all shipments of remote-handled transuranic waste to WIPP

FY 2010 Accomplishments

- Complete Subsurface Disposal Area retrieval actions, if consistent with WAG 7 ROD
- Continue Tank Farm Closure
- Treat and ship approximately 7,400 m^3 of stored transuranic waste to the Waste Isolation Pilot Plant.
- VCO activities will be in compliance with State negotiations
- Complete sodium-bearing waste treatment construction and start operations
- Complete Engineering Test Reactor D&D; continue MTR D&D.
- Continue transuranic waste exhumation and shipping from WAG 7
- Continue processing transuranic waste from other sites through the Advanced Mixed Waste Treatment Project and shipment for disposal at WIPP
- Continue Navy spent nuclear fuel transfers from Chemical Processing Plant 666 to dry storage. (The transfer will be funded using Navy funding in a reimbursable work agreement.)
- Cease disposal of remote-handled low-level waste at the Radioactive Waste Management Complex

FY 2011 Accomplishments

- Complete Tank cleaning and closure activities
- Complete CPP-603A demolition; continue MTR D&D.
- Start sodium bearing waste shipments to WIPP, if permit is approved.
- Treat and ship approximately 7,400 m^3 of stored transuranic waste to the Waste Isolation Pilot Plant
- Continue Tank Farm Closure
- VCO activities in accordance with State negotiations
- Begin Power Burst Facility planning and D&D field work
- Continue processing transuranic waste from other sites thru the Advanced Mixed Waste Treatment Project and shipment for disposal at WIPP
- Begin spent nuclear fuel exchange with Savannah River Site.
- Continue Navy spent nuclear fuel transfers from Chemical Processing Plant 666 to dry storage. (The transfer will be funded using Navy funding in a reimbursable work agreement.)

- Develop and issue a request for proposal for the follow-on Idaho Cleanup Project post 2012 contract.
- Start CPP 601/1640 Fuel Reprocessing Complex D&D

FY 2012 Accomplishments

- Treat and ship approximately 7,400 m^3 of stored transuranic waste to the Waste Isolation Pilot Plant.
- Begin installing interim cap on subsurface disposal area in accordance with record of decision
- Complete WAG 7 Transuranic waste exhumation (2.8 acres of targeted waste)
- Continue 601/640 Fuel Reprocessing Complex D&D
- Continue Tank Farm Closure
- Continue VCO activities in accordance with State negotiations
- Complete Materials Test Reactor and Power Burst Facility D&D.
- Continue sodium bearing waste shipments to WIPP, if permit is approved.
- Continue processing transuranic waste from other sites thru the Advanced Mixed Waste Treatment Project and shipment for disposal at WIPP
- Complete Navy spent nuclear fuel transfers from Chemical Processing Plant 666 to dry storage. (The transfer will be funded using Navy funding in a reimbursable work agreement.)
- Continue spent nuclear fuel exchange with Savannah River Site.

Oak Ridge

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
494,224	428,180	466,462	488,473	493,131	493,525

Site Details

Site Overview

The cleanup program mission in Oak Ridge will be complete when cleanup has safely reduced risks to the public, workers, and the environment at the East Tennessee Technology Park, Oak Ridge National Laboratory (Bethel Valley and Melton Valley), Y-12 National Security Complex, Bear Creek Valley, and Off-site Areas. These risks include potential exposure to contamination and industrial hazards resulting from decades of uranium enrichment, research, and nuclear weapons-related operations.

Site Description

The Oak Ridge Reservation is in east Tennessee and is comprised of three facilities: the East Tennessee Technology Park; the Oak Ridge National Laboratory; and the Y-12 Plant. These facilities are described in detail below. In addition, there are some private properties that are not located on the Oak Ridge Reservation (the Atomic City Auto Parts Site and the David Witherspoon Sites) that are being cleaned up under the auspices of the Oak Ridge program.

Oak Ridge - East Tennessee Technology Park

The East Tennessee Technology Park site occupies approximately 2,000 administrative acres adjacent to the Clinch River, approximately 13 miles west of Oak Ridge, Tennessee. It was originally built as a uranium enrichment facility for defense programs. The majority of the 125 major buildings on the site have been inactive since uranium enrichment production ceased in 1985.

Oak Ridge National Laboratory

Activities carried out at the 3,300-acre Oak Ridge National Laboratory historically have supported both the defense production operations and civilian energy research effort. Cleanup addresses contamination from a variety of research and development activities, which were supported by multiple DOE programs over a long period of time. Significant waste management activities took place within the Melton Valley area of the Laboratory. The Oak Ridge National Laboratory currently conducts applied and basic research in energy technologies and the physical and life sciences. Cleanup includes environmental remediation, decontamination and decommissioning of hazardous and radioactively contaminated facilities, and disposition of legacy low, mixed low-level, and transuranic waste.

Oak Ridge - Y-12

The Y-12 site is approximately 811 acres and is located about two miles southwest of Oak Ridge, Tennessee. The Y-12 site originally was a uranium processing facility and now

dismantles nuclear weapons components and serves as one of the nation's storehouses for special nuclear materials. The Y-12 site has numerous operable units within three areas: Chestnut Ridge, Upper East Fork of Poplar Creek, and Bear Creek Valley. The types of contamination include radioactive, hazardous, and mixed wastes. The sanitary landfills for all of the Oak Ridge Reservation are located at Y-12. The Environmental Management Waste Management Facility (a Comprehensive Environmental Response, Compensation and Liability Act disposal facility supporting the cleanup) is located in Bear Creek Valley of the Y-12 area.

Site Cleanup Strategy/Scope of Cleanup

The Oak Ridge cleanup strategy is a risk-based approach that focuses first on those contaminant sources that are the greatest contributors to risk. The overall strategy is based on surface and groundwater considerations, encompassing watersheds that feed the Clinch River and are impacted by the DOE sites. Key Records of Decision have been signed for these watersheds. Final Records of Decision will be necessary for all watersheds to deal with the remaining ecological and groundwater concerns.

While risk reduction is the major cleanup driver, other factors that must be considered to achieve risk reduction are execution logic and mortgage reduction. The reduction of mortgage costs provides a dramatic benefit when allowed to reinvest the saved funds into accelerating follow-on risk reduction activities. This ultimately will reduce the amount and duration of funding needed.

Having established the risk-based prioritization for the work, a number of substantive changes to work practices have also been implemented that will facilitate work execution. These changes can be categorized as either improved work flow or alternative technical approaches, and these are considered to be enabling innovations for the plans to complete cleanup.

Site Completion (End State)

At the end of cleanup, planned by 2015, the Oak Ridge National Laboratory will continue to operate as a world-class research facility. In addition, Y-12 will continue to operate, fulfilling its national security mission. The East Tennessee Technology Park will be available for use as a private-sector industrial park.

Short-Term Projects

Melton Valley: Melton Valley remedial action project under the Comprehensive Environmental Response, Compensation, and Liability Act was completed in FY 2006. Melton Valley remediation involved both containment and treatment of contaminants. Specific activities included: (1) hydrologic isolation of burial grounds and seepage pits, (2) in situ stabilization of liquid waste trenches, (3) demolition of surface structures, (4) removal of impoundments, (5) removal or isolation of contaminated soil, (6) retrieval of transuranic waste, (7) plugging and abandonment of hydrofracture wells, (8) removal or grouting of inactive waste pipelines, (9) shipment of spent nuclear fuel to the Idaho National Laboratory, and (10) stabilization of inactive waste tanks. Because a majority of the waste will remain in Melton Valley, the area will have access restrictions. A future Record of Decision will be generated to address the remaining groundwater, sediment and ecological concerns within the area after the remediation efforts completed have a chance to show the expected positive cleanup results.

***East Tennessee Technology Park**:* This project addresses decommissioning of facilities and remedial actions for contaminated sites at the East Tennessee Technology Park. Site closure was scheduled for FY 2008 but will now be accomplished by FY 2010. There are approximately 2,200 acres with potential contamination, including known groundwater contaminant plumes from former burial grounds and contaminated soils, resulting in approximately 167 known release sites to be remediated. In addition, there are approximately 500 facilities, including 125 major buildings that require decommissioning. The strategy is to complete targeted remedial actions in Zone 1 (1,400 acres located outside the fenced Main Plant area) and facility decommissioning and then follow with a comprehensive remedial action for the Main Plant area Zone 2 (800 acres inside the Main Plant area inside fence). This includes the Three-Building Decontamination and Decommissioning Recycle subproject which was completed in FY 2005. This subproject decontaminated and decommissioned over 110 acres in three former gaseous diffusion process buildings. An additional site-wide Record of Decision is also being prepared to address any groundwater, surface water, and ecological concerns at the site. This document will also address the long-term stewardship concerns and requirements for the site. Site closure assumes the demolition of K-25, K-27, and K-29 gaseous diffusion process buildings. The K-31 and K-33 buildings are assumed to remain for transfer under the site industrial closure plan.

Y-12: Specific high-risk reduction actions are planned for completion by FY 2008. These include mitigation of off-site mercury surface water releases and the excavation of uranium hot spots and hydraulic isolation of other contaminant sources in the Boneyard/Burnyard burial grounds.

The short-term scope of this work reduces worker risk at the Y-12 National Security Complex; designs, builds, and operates the on-site Environmental Management Waste Management Facility; and performs surveillance and maintenance of surplus facilities at the Y-12 National Security Complex. Additional source Records of Decision will be necessary for this area as well as a final Record of Decision addressing the groundwater concerns of the site.

Bethel Valley at Oak Ridge National Laboratory: Specific high-risk reduction actions include completing an engineering evaluation to identify further sources of groundwater contamination; completing the Corehole 8 (Tank W-1A) removal action; disposition of the excavated highly contaminated sediment from surface impoundments in the center of the Oak Ridge National Laboratory; and remediation of the Hot Storage Garden to ensure worker safety.

***Offsite Areas**:* This project reduces risk and cleans up three privately owned properties that were contaminated due to the sale of contaminated materials from the DOE to private companies. DOE is responsible for the cleanup of these sites under the Tennessee Superfund law. The three sites are the Atomic City Auto Parts Site in Oak Ridge and the David Witherspoon, Inc. 901 and 1630 sites in Knoxville. The properties, which cover 64 acres combined, are in residential and commercial areas and are accessible to the public. Primary contaminants include uranium, polychlorinated biphenyls, and heavy metals. The Atomic City Auto Parts Site was completed in FY 2005. Oak Ridge plans to complete both the Witherspoon sites by FY 2009. The cleanup actions at these sites consist of removing, treating, and disposing of contaminated materials, equipment, soil, and sediment; demolishing facilities; and remediating groundwater actions.

Longer Term Projects

All of the remaining actions to complete the EM mission are summarized below.

Y-12: The remaining source cleanup activities, including facility deactivation and decommissioning and soil/sediment removal and groundwater concerns, will be completed after FY 2008. Surveillance and maintenance activities for the Y-12 National Security Complex, and the coordination of environmental monitoring throughout the Oak Ridge Reservation to assess the effectiveness of cleanup actions, are included in the scope. By 2015, all cleanup actions at the Y-12 National Security Complex, Chestnut Ridge and Bear Creek Valley (including the White Wing Scrap Yard) are planned to be completed, allowing for the continued use of the site as DOE industrial/waste management facilities.

Oak Ridge National Laboratory: Cleanup of all remaining contaminated areas at the Oak Ridge National Laboratory will be completed by FY 2015, including the decontamination and decommissioning of remaining inactive facilities, capping of buried waste areas, bioremediation of groundwater contamination, contaminated soil/sediment removal and disposition of U-233 stored in Building 3019.

Molten Salt Reactor Experiment: The removal of the Molten Salt Reactor Experiment fuel salts is nearing completion, which will also be followed by a Record of Decision addressing the demolition of this reactor facility.

Long-Term Stewardship: The Comprehensive Environmental Response, Compensation, and Liability Act process will determine any necessary final actions for groundwater in the five watersheds subsequent to completion of the actions described above. Most of the major remedial actions on the Reservation will require the need for extensive monitoring and long-term stewardship actions, including surveillance and maintenance of installed structures and systems.

Most of the contaminated sites, media, and facilities left standing never will be remediated sufficiently to permit unrestricted use of soil, groundwater, and surface water due to factors such as technical impracticability, public and worker risk and environmental damage, and costs. Since residual contamination will remain in most cases, DOE is committed to conduct activities to assure that remedies remain protective.

Regulatory Framework

Cleanup of the Oak Ridge Reservation is primarily governed by three regulatory agreements/compliance orders. The first, the *Federal Facility Agreement for the Oak Ridge Reservation*, was signed by DOE, the United States Environmental Protection Agency, and the Tennessee Department of Environment and Conservation and implemented on January 1, 1992, to establish a procedure framework and schedule for developing, implementing, and monitoring appropriate site response actions under the Comprehensive Environmental Response, Compensation, and Liability Act. This agreement establishes major milestones to complete cleanup of offsite locations by 2010 and all active remediation activities on the Oak Ridge Reservation by 2015. It is expected that there will be a few Comprehensive Environmental Response, Compensation, and Liability Act decision documents following 2015 to finalize the

need for no further action and reduction of established monitoring and land use controls for the reservation.

In conjunction with the Federal Facility Agreement, DOE, the Environmental Protection Agency and the Tennessee Department of Environment and Conservation signed the *Oak Ridge Accelerated Cleanup Plan Agreement* on June 18, 2002. The purpose of this Agreement was to describe a streamlined decision-making process to facilitate the accelerated implementation of cleanup activities, to resolve the current Oak Ridge Reservation Federal Facility Agreement milestone dispute, and to establish future actions needed to complete the plan for accelerated cleanup.

The second, the *Oak Ridge Reservation Compliance Order*, was signed on September 26, 1995 by DOE and the Tennessee Department of Environment and Conservation, to enforce treatment of mixed low-level wastes under the Resource Conservation and Recovery Act. This order establishes milestones to complete treatment of all Oak Ridge mixed low-level wastes by 2012.

The third, the *Oak Ridge Reservation Polychlorinated Biphenyl Federal Facilities Compliance Agreement*, was signed by DOE and the Environmental Protection Agency on October 28, 1996, to establish a framework for treatment of polychlorinated biphenyl-contaminated wastes under the Toxic Substances Control Act. This agreement establishes milestones to complete treatment of all Oak Ridge polychlorinated biphenyl-contaminated wastes by 2010.

Critical Site Uncertainties and Assumptions

One project uncertainty for Oak Ridge is whether the Waste Isolation Pilot Plant will accept remote-handled transuranic waste from Oak Ridge on the planned schedule in the baseline. Another uncertainty is the disposition strategy for the U-233 stored in Building 3019, a new mission for EM established by Congressional direction in FY 2006. Other uncertainties include: final agreement with the regulators on the extent of remediation to be accomplished under future Records of Decision and cleanup plans; the extent of reindustrialization of the decontaminated K-31 and K-33 gaseous diffusion plant buildings (which will determine the amount of decontamination and decommissioning; cost, and schedule, to be ultimately carried out at the East Tennessee Technology Park). Finally, a significant uncertainty exists with regard to timing and cost for the ultimate cleanup of the remaining decontamination and decommissioning work scope at Y-12 and Oak Ridge National Laboratory that is not currently in the EM scope.

Interdependencies

The success of the Oak Ridge Environmental Management Program requires effective project interfaces, including:

Other DOE Sites: The Oak Ridge Toxic Substances Control Act Incinerator accepts waste from a number of other DOE sites throughout the DOE complex. In addition, interfaces exist with several waste disposal sites including the Hanford Site, the Nevada Test Site, Energy Solutions (formerly known as Envirocare), and the Waste Isolation Pilot Plant.

National Nuclear Security Administration (NNSA): NNSA owns some material at East Tennessee Technology Park that needs to be removed prior to the demolition of the K-25 Building. During the equipment removal in the K-25 and K-27 Buildings, visible highly enriched

uranium material will be removed and packaged to meet Nuclear Criticality Safety requirements. In addition, the NNSA performs landlord functions at Y-12.

United States Enrichment Corporation: United States Enrichment Corporation has a lease with DOE to access the K-l600 building and its centrifuge technology. The United States Enrichment Corporation is further developing the technology in order to construct a demonstration facility at Portsmouth. The oversight of this activity is through DOE-Oak Ridge Operations' Office of Nuclear Fuel Security and Uranium Technology.

Office of Science and Office of Nuclear Energy: Coordination with these offices is critical to transition material disposition activities for safe storage of the U-233 in Building 3019 at Oak Ridge to the Office of Environmental Management.

Contract Synopsis

Oak Ridge Reservation currently utilizes two different prime contracts to implement its cleanup strategy: (1) Oak Ridge Environmental Management Cleanup Contract; and (2) the Transuranic Waste Treatment Contract.

Oak Ridge Environmental Management Cleanup Contract: The Oak Ridge Closure Contract between DOE and Bechtel Jacobs Company, LLC was signed September 2003 with the singular focus of achieving well defined end states in the safest, most cost effective manner by September 2008. This contract is a cost-plus-incentive-fee contract with cost and milestone incentives.

Transuranic Waste Treatment Contract: A privatization contract was signed with Foster Wheeler Environmental Corporation in August 1998 for the treatment of remote-handled alpha low-level waste, and contact- and remote-handled transuranic waste. Foster Wheeler Environmental Corporation has constructed the Transuranic Waste Processing Facility and has completed the processing of remote-handled supernate low-level waste. Processing of contact-handled transuranic waste began in December 2005 with all work scheduled to be completed in 2012. The original fixed-price contract was converted on September 12, 2006 to a cost-plus-fixed-fee contract, which is more suitable for this project.

Cleanup Benefits

Near Term

Cleanup of Melton Valley Area was completed in FY 2006. The Melton Valley Area will be designated as a waste management area with access restrictions. The cleanup actions will ensure that the waste is contained; on-site surface water quality is improved to meet required standards; and off-site users of the Clinch River remain protected.

Longer Term

Closure of the East Tennessee Technology Park site is the next complex-wide opportunity for the EM Program to divest itself of a major liability. While risk reduction is the major driver of the plan, the rapid reduction of the East Tennessee Technology Park site mortgage costs to free the money for reinvestment in other near-term risk reduction projects is a benefit as well. In

addition, there will be benefits for the Oak Ridge community derived from completion of the cleanup of the site, which may be reused as a commercial industrial park.

The off-site work at the both the David Witherspoon, Inc. sites will be completed by FY 2009. Remedial action work will be initiated at the Y-12 National Security Complex, the Bear Creek Valley waste management area and Oak Ridge National Laboratory facility for Records of Decision approved and signed by the DOE and regulatory parties.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008-2012, Oak Ridge's target-level funding will help the Department make progress on five of EM's sixteen corporate performance measures. Oak Ridge will contribute to EM's measures #9 and #10 by making significant progress in shipping transuranic waste as well as low-level and mixed low-level waste for disposal. For measure #12, Oak Ridge will complete 2 nuclear facilities. For measure #13, Oak Ridge will complete over 25 radiological facilities. For measure #14, Oak Ridge anticipates completing over 200 industrial facilities. For measure #16, Oak Ridge will remediate over 70 release sites.

FY 2008 Accomplishments

- Continue processing of contact handled Transuranic (TRU) debris and remote-handled TRU Debris; begin remote-handled TRU sludge processing.
- Finalize design and start construction of U233 down-blending equipment and Building 3019 modifications, procure processing equipment, and begin the disassembly of equipment, clean-out of hot cells and laboratories in Building 3019 for the U233 Project.
- Incinerate 3.0M pounds of liquid and solid waste at the TSCA Incinerator.
- Continue ETTP PCB waste disposition activities.
- Continue K-25/K-27 Building D&D activities, including demolition of the K-25 west wing; continue foaming, removal and segmentation of process equipment in the K-25 east wing; and begin demolition of the K-25 east wing.
- Maintain safeguards and security, and conduct necessary surveillance and maintenance on ETTP defense and non-defense facilities and maintain other base operations activities at ETTP to provide infrastructure and support to the cleanup project.
- Conduct routine surveillance and maintenance of surplus facilities and remedial action sites at ORNL and Y-12.
- Continue to support the EM cleanup activities through waste acceptance and placement operations at the EMWMF and the Oak Ridge Reservation Landfills.
- Provide regulatory compliant operation of the ORNL Process Waste, liquid low-level waste, and Gaseous Waste Collection/Transfer systems.

FY 2009 Accomplishments

- Continue processing of contact-handled TRU debris, remote-handled TRU debris, and remote-handled sludge.
- Continue U-233 disposition activities in Building 3019 and complete Building 3019 clean-out.
- Conduct RCRA closure of the TSCA incinerator, if the decision is made to shut it down.
- Complete the remediation of the David Witherspoon Inc. 1630 Site.

- Start mercury contaminated areas remediation at Y-12.
- Continue K-25/K-27 Building D&D activities.
- Continue post-2008 acquisition planning for post-2008 Environmental Management work at the ORNL and Y-12. Initiate field actions for characterization and facility walk-down activities necessary to develop regulatory documents.
- Maintain safeguards and security, and conduct necessary surveillance and maintenance on ETTP defense and non-defense facilities and maintain other base operations activities at ETTP to provide infrastructure and support to the cleanup project.
- Conduct routine surveillance and maintenance of surplus facilities and remedial action sites at ORNL and Y-12.
- Continue to support the EM cleanup activities through waste acceptance and placement operations and capacity expansion at the EMWMF and the Oak Ridge Reservation Landfills.
- Start Y-12 Salvage Yard Scrap Removal.
- Provide regulatory compliant operation of the ORNL Liquid and Gaseous Waste Operations

FY 2010 Accomplishments

- Continue processing of contact-handled TRU debris, remote handled TRU debris, and remote-handled sludge.
- Continue U-233 disposition activities in Building 3019 and Complete Process Equipment Test Program
- Complete K-25/K-27 Building D&D activities.
- Continue mercury contaminated areas remediation at Y-12.
- Continue Y-12 Salvage Yard Scrap Removal.
- Begin Alpha-4 (Building 9201-4) D&D.
- Maintain safeguards and security, and conduct necessary surveillance and maintenance on ETTP defense and non-defense facilities and maintain other base operations activities at ETTP as necessary due to reduced target levels.
- Conduct routine surveillance and maintenance of surplus facilities and remedial action sites at ORNL and Y-12.
- Continue to support the EM cleanup activities through waste acceptance and placement operations and capacity expansion at the EMWMF and the Oak Ridge Reservation Landfills.
- Start D&D of small facilities (located at Bethel Valley) that house support systems for large buildings.

FY 2011 Accomplishments

- Continue processing of remote-handled TRU debris and remote-handled sludge.
- Continue U-233 disposition activities in Building 3019; complete facility modifications and conduct the Operational Readiness Review.
- Complete the West End Mercury Contaminated Area at Y-12
- Maintain safeguards and security, and conduct necessary surveillance and maintenance on ETTP defense and non-defense facilities and maintain other base operations activities at ETTP as necessary due to reduced target levels.

- Conduct routine surveillance and maintenance of surplus facilities and remedial action sites at ORNL and Y-12.
- Continue to support the EM cleanup activities through waste acceptance and placement operations and capacity expansion at the EMWMF and the Oak Ridge Reservation Landfills.
- Start the final expansion of EMWMF.
- Continue Y-12 Salvage Yard Scrap Removal.
- Provide regulatory compliant operation of the ORNL Liquid and Gaseous Waste Operations and the Oak Ridge Reservation Landfill.

FY 2012 Accomplishments

- Initiate operations for U-233 Disposition Project activities in Building 3019.
- Complete remediation of Y-12 Scrap Yard and Bear Creek Valley White Wing Scrap Yard
- Complete EMWMF Final Expansion
- Complete the D&D of two Isotope Circle facilities at ORNL.
- Maintain safeguards and security, and conduct necessary surveillance and maintenance on ETTP defense and non-defense facilities and maintain other base operations activities at ETTP as necessary due to reduced target levels.
- Conduct routine surveillance and maintenance of surplus facilities and remedial action sites at ORNL and Y-12.
- Continue to support the EM cleanup activities through waste acceptance and placement operations at the EMWMF and the Oak Ridge Reservation Landfills.
- Provide regulatory compliant operation of the ORNL Liquid and Gaseous Waste Operations and the Oak Ridge Reservation Landfill.

Paducah Gaseous Diffusion Plant

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
140,483	134,042	151,168	144,729	136,592	137,544

Site Details

Site Overview

For approximately 50 years, the Paducah Gaseous Diffusion Plant in Paducah, Kentucky supported the Federal Government and commercial nuclear power missions. Decades of nuclear energy and national security missions left radioactive and chemical contamination. The mission of the site is transitioning from primarily enrichment operations to shared missions with environmental cleanup, waste management, depleted uranium conversion, deactivation and decommissioning, and long-term stewardship.

The original mission at the Paducah Gaseous Diffusion Plant was to produce low-assay enriched uranium for use as commercial nuclear reactor fuel. In 1993, uranium enrichment operations were turned over to the United States Enrichment Corporation in accordance with the Energy Policy Act of 1992. Under the United States Enrichment Corporation, production of enriched uranium for use in the United States and abroad continues today. While the United States Enrichment Corporation operates the enrichment program, the Department owns the physical plant and is responsible for the environmental cleanup. The United States Enrichment Corporation is responsible for the operation and maintenance of all primary process facilities and auxiliary facilities at Paducah.

Initial production of enriched uranium began in 1952. In 1953, recycled uranium from nuclear reactors was introduced into the Paducah enrichment process, which continued through 1964. In 1964, feed material was switched to virgin-mined uranium. Use of recycled uranium resumed in 1969 and continued through 1976, when it permanently ceased. In 2001, the United States Enrichment Corporation selected Paducah as the site to continue gaseous diffusion operations pending successful pilot plant demonstration (lead cascade) and deployment of the next generation of enrichment technology.

The Paducah site will maintain gaseous diffusion operations through this budget period. DOE continues to be responsible for management of the site, administration of the lease with the United States Enrichment Corporation, environmental remediation, and legacy waste/materials management.

Depleted Uranium Hexafluoride Conversion Facilities

Since the 1950s, the depleted uranium hexafluoride produced during enrichment operations at the Portsmouth and Paducah Gaseous Diffusion Plants (and the East Tennessee Technology Park in Tennessee) has been stored in large steel cylinders at the sites. DOE is currently responsible for the management of approximately 700,000 metric tons of depleted uranium hexafluoride

stored in about 60,000 cylinders. DOE awarded a contract and started construction in July 2004 on a depleted uranium hexafluoride conversion facility at Paducah, to convert the depleted uranium hexafluoride to a more stable form for reuse or disposal. This facility will operate over the next two decades. DOE is ultimately responsible for the deactivation and decommissioning of the facilities.

The Department is committed to the clean up of the Paducah Gaseous Diffusion Plant to industrial standards. Limited land areas will require institutional controls following remediation. Excess buildings at Paducah that are not being leased are being assessed for reuse by the Department and will be scheduled for demolition if they are not suitable for reuse. Equipment and material removed from buildings will be decontaminated, reused, or recycled to the extent practicable.

Site Description

The Paducah site, comprising approximately 3,400 acres, is located in rural western Kentucky, 15 miles west of Paducah, Kentucky, near the confluence of the Ohio and Mississippi rivers.

Site Cleanup Strategy/Scope of Cleanup

Historic operations at Paducah produced contaminated areas onsite and beyond site boundaries. Principal contaminants of concern include uranium (from enrichment processing), technetium, trichloroethylene, and polychlorinated biphenyls. Through spills and disposal operations, these contaminants have entered groundwater aquifers, formed plumes, and in some cases, have migrated offsite and contaminated private drinking water wells. Since its inception, the Paducah site has generated, stored, and disposed of hazardous, nonhazardous, radioactive, polychlorinated biphenyls, small quantities of transuranic waste, and mixed waste as well as large quantities of scrap metal.

Paducah is focusing on cleanup of high-risk areas first. The site has completed a wide variety of characterization projects, installed groundwater treatment facilities, put in place institutional controls for offsite drinking water, removed two major sources of surface water contamination, removed one subsurface trichloroethylene groundwater contamination source, removed five inactive facilities, and dispositioned scrap materials, and disposed of legacy waste streams. Additional remediation activities include completing legacy waste disposal, removing additional subsurface trichloroethylene groundwater contamination sources, remediation of groundwater plumes, and decontamination and decommissioning of multiple facilities.

Congress directed DOE in the FY 2006 Energy and Water Development Appropriation Act (Senate Report 109-084) to study the purchase of the property above the contaminated groundwater plume and "consider whether such purchase, when taking into account the cost of remediation, long-term surveillance and maintenance, is in the best interest of the taxpayers." The result of this study will be considered in any final cleanup strategy.

Site Completion (End State)

The overall environmental cleanup strategy at Paducah is based on taking near term actions to control or eliminate ongoing sources of contamination along with continued investigation of other potential sources. In FY 2003, DOE signed a Letter of Intent with the Commonwealth of Kentucky that includes completion milestones for groundwater source term in 2010, soils in

2015, surface water in 2017, and burial grounds in 2019. FY 2008 through FY 2010 represents a critical period for continued preparation and progress. In addition, Paducah will complete construction and begin operating a depleted uranium hexafluoride conversion facility. The end date for cleanup is 2030, and includes the completion of remedial activities and the completion of the depleted uranium hexafluoride conversion operations.

Regulatory Framework

Regulatory requirements to address contaminated groundwater at the Paducah site were initially included in an Administrative Consent Order issued by the Environmental Protection Agency in 1988. The Commonwealth of Kentucky and the Environmental Protection Agency issued a Resource Conservation and Recovery Act permit in 1991 for storage and treatment of hazardous wastes at Paducah and a permit for the remediation of solid waste management units under Resource Conservation and Recovery Act. In May 1994, the Paducah site was placed on the Environmental Protection Agency's National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. The 1997 Federal Facility Agreement among the Department, the Commonwealth of Kentucky, and the Environmental Protection Agency Region IV established the framework for cleanup at Paducah, instituted enforceable milestones, and coordinates site-specific cleanup requirements under the Comprehensive Environmental Response, Compensation, and Liability Act and Resource Conservation and Recovery Act. The Department also achieved resolution of long-standing regulatory disputes through the Agreed Order with the Commonwealth of Kentucky.

The Environmental Protection Agency and the Kentucky Division of Waste Management are the regulatory agencies for DOE waste management operations. Applicable requirements and the DOE Order governing waste management include: Resource Conservation and Recovery Act, Part B, Hazardous Waste Management Permit; Toxic Substances Control Act regulations for polychlorinated biphenyl wastes; DOE Order 435.1 Radioactive Waste Management; and Kentucky solid waste regulations for other wastes.

Agreements related to the implementation of these regulations and the DOE Order follow the Site Treatment Plan and associated Agreed Order under the Federal Facility Compliance Agreement for characterization, treatment, and disposal of mixed hazardous/radioactive wastes; Toxicity Characteristic Leaching Procedure Federal Facility Compliance Agreement for characterization under Resource Conservation and Recovery Act for waste generated prior to September 25, 1990; and Toxic Substance Control Act, Federal Facility Compliance Agreement for use, cleanup, storage, treatment, and disposal of polychlorinated biphenyls.

Future use will support ongoing and anticipated DOE missions, the United States Enrichment Corporation enrichment operations, and other current users of the sites. Power distribution functions and facility utilization by the private sector at sites is not expected to substantially change. Support has been expressed for various forms of passive recreational and public use that are compatible with anticipated industrial, and conservation uses of the reservation.

Critical Site Uncertainties and Assumptions

The only operational facility for removing technetium-99 contamination from uranium hexafluoride in the United States is leased and operated by the United States Enrichment

Corporation under their Nuclear Regulatory Commission license at the Portsmouth facility, with the resultant product being further processed at the Paducah Gaseous Diffusion Plant facility.

It is uncertain if the capacity and availability of the Toxic Substance Control Act Incinerator located in Oak Ridge, Tennessee, is sufficient to meet the baseline assumptions for waste treatment.

It is uncertain whether the Environmental Protection Agency or the Commonwealth of Kentucky will accept the probabilistic groundwater and trichloroethylene degradation modeling for the southwest plume in support of the conclusion of "no further action."

The Department does not have a clear regulatory agreement on polychlorinated biphenyls cleanup levels; therefore, this remains a long-term, end-state issue.

The final Comprehensive Environmental Response, Compensation and Liability Act action for the Paducah environmental remedial activities is subject to the ongoing Comprehensive Environmental Response, Compensation and Liability Act process. Until the Record of Decision is agreed upon, a high degree of project uncertainty exists in the project risk management plan.

The assumption that no more than three burial ground operable units will require remediation, and that the operable units will be capped and managed in situ, is a large uncertainty associated with the lifecycle project cost estimate. In addition, the current baseline does not assume long-term plume remediation to drinking water standards. Congress has directed DOE to study the purchase of property above the contaminated plumes for consideration in any final groundwater actions.

Future decontamination and decommissioning costs will be subject to several large uncertainties, including the following: extent of final contamination into the environment, cleanup levels, disposal options, availability of funds, and stakeholder/regulator acceptance.

Interdependencies

Paducah is dependent upon the Toxic Substance Control Act Incinerator at the East Tennessee Technology Park site in Oak Ridge, Tennessee, for Toxic Substance Control Act waste treatment and the Nevada Test Site waste facility in Nevada for low level waste disposal.

Some or all of the Oak Ridge natural and enriched uranium cylinders may be shipped to Paducah for inventory consolidation and subsequent use or disposal.

Contract Synopsis

The Portsmouth/Paducah Project Office awarded remediation and infrastructure contracts for each site. This strategy allows the optimum potential for both incentivizing and achieving accelerated performance for the remediation and infrastructure effort. The infrastructure contracts provide information technology, human resources, mail, site security planning, road and ground maintenance, janitorial, and real and personal property inventory and disposition. The infrastructure contract at the Paducah site is Swift & Staley Mechanical Contractors, Inc., and is award-fee contract which expires in March 2010. The remediation contracts provide cleanup and closure of all inactive facilities not leased to the United States Enrichment

Corporation and cleanup of soils, groundwater, landfills, storage yards, as well as disposal of legacy waste (excluding the United States Enrichment Corporation leased units). The remediation contract at Paducah is the Paducah Remediation Services, LLC., which is a cost-plus-incentive-fee contract, which expires September 2009. Deactivation and decommissioning of the diffusion plant process facilities is not part of the remediation contract.

Cleanup Benefits

The intent of the Federal Government is to manage the sites and the missions in an integrated manner. DOE retains overall responsibility for the sites. Significant portions of the site footprints are managed by the United States Enrichment Corporation under the provisions of a lease with DOE. Achievement of DOE responsibilities in environmental cleanup and legacy material disposition will allow for future site missions, as well as the reduced environmental health and safety risks.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008-2012, Paducah target-level funding will support the Department's progress on four of EM's sixteen corporate performance measures. In contributing to EM's measure #4, Paducah will package for disposition over 70,000 metric tons of depleted uranium and other uranium. For measure #10, the Paducah site will dispose of over 7,500 cubic meters of low level and mixed low level waste. For measure #13, the Paducah site will complete one radioactive facility completion. For measure #15, the Paducah site will complete 24 release sites.

FY 2008 Accomplishments

- Complete construction and initiate operations of the DUF6 conversion facility.
- Complete ongoing characterization, treatment, and disposal of all legacy mixed waste (excluding mixed transuranic waste).
- Perform ongoing characterization, packaging, treatment and disposal of newly generated waste (mixed and low-level).
- Complete Remedial Investigation Field Work for Burial Ground Operable Unit (critical path activity).
- Perform ongoing remedial action activities for the Southwest Plume/sources and removal action activities for the surface water (onsite) project in compliance with the Federal Facility Agreement.
- Complete construction and start operation of C-400 Groundwater remedial action.
- Complete infrastructure equipment removal of C-410 Complex Sector 2.
- Complete D&D of C-611-M and C-611-N Silos.
- Obtain a signed Record of Decision for the Southwest Plume remedial action.
- Obtain regulatory approval for the Surface Water Operable Unit Engineering Evaluation/Cost Analysis.
- Obtain regulatory approval for the Remedial Investigation/Feasibility Study report and negotiate with regulators and stakeholders for the onsite waste disposal strategy.
- Obtain regulatory approval for the Soils Operable Unit Action Memorandum and Remedial Action Work Plan.

FY 2009 Accomplishments

- Continue operations of the DUF6 conversion facility.
- Inspect and maintain the polychlorinated biphenyl collection and containment system to maintain compliance.
- Continue to maintain surveillance/maintenance and environmental monitoring activities to maintain compliance.
- Complete legacy low-level waste and Toxic Substance Control Act waste characterization, packaging, and disposal.
- Complete characterization and disposal of all DOE Material Storage Areas.
- Complete C-400 groundwater remedial action and submit Remedial Action Completion Report for approval.
- Complete infrastructure equipment removal of C-410 Building Sector 3.
- Complete D&D of the four inactive facilities (C-342 Ammonia Dissociator/Storage Facility, C-403 Neutralization Pit, C-218 Firing Range, and C-410-B Sludge Pit).
- Complete Surface Water hot spot removal action.
- Obtain regulatory approval for the Burial Grounds Remedial Investigation and Feasibility Study reports.
- Obtain regulatory approval for the Southwest Plume Remedial Action Work Plan and Construction Design.
- Obtain regulatory and stakeholder approval for the plan for the onsite waste disposal strategy.

FY 2010 Accomplishments

- Continue operations of the DUF6 conversion facility.
- Inspect and maintain the polychlorinated biphenyl collection and containment system to maintain compliance.
- Continue surveillance, maintenance, and environmental monitoring activities to maintain compliance.
- Complete construction and begin operations for the Southwest Plume remedial action as approved by the regulators.
- Complete infrastructure removal in Sectors 5 & 7 of the C-410 Complex.
- Obtain regulatory approval for the Burial Grounds Proposed Plan.
- Obtain regulatory approval for the Surface Water Onsite Remedial Action Completion Report.
- Obtain regulatory approval for the Surface Water off-site removal notification.

FY 2011 Accomplishments

- Continue operations of the DUF6 conversion facility.
- Continue surveillance, maintenance, and environmental monitoring activities to maintain compliance.
- Inspect and maintain the polychlorinated biphenyl collection and containment system to maintain compliance.
- Complete infrastructure removal in Sectors 4, 6, & 8 of the C-410 Complex.
- Obtain regulatory approval for the Dissolved Phase Plume Proposed Plan and Record of Decision.

- Obtain regulatory approval for the Groundwater Off-site Plume Remedial Design Work Plan.
- Obtain regulatory approval for the Burial Grounds Record of Decision and Remedial Design Work Plan.
- Obtain regulatory approval for the Surface Water Off-site Engineering Evaluation/Cost Analysis, Action Memorandum & Remedial Action Work Plan.
- Obtain regulatory approval for the Soils Remedial Investigation Report and Feasibility Study.
- Obtain regulatory approval for the Soils Removal Engineering Evaluation/Cost Analysis.

FY 2012 Accomplishments

- Continue operations of the DUF6 conversion facility.
- Inspect and maintain the polychlorinated biphenyl collection and containment system to maintain compliance.
- Continue surveillance, maintenance, and environmental monitoring activities to maintain compliance.
- Complete Demolition of the C-410 Complex.
- Complete Surface Water off-site fieldwork.
- Obtain regulatory approval for the Southwest Plume Remedial Action Completion Report.
- Obtain regulatory approval for the Groundwater Off-site Plume Remedial Design Report and Remedial Action Work Plan.
- Obtain regulatory approval for the Burial Grounds Remedial Action Work Plan and Remedial Design.
- Obtain regulatory approval for the C-340 Complex Remedial Action Work Plan and Action Memorandum.
- Obtain regulatory approval for the Soils Remedial Proposed Plan, Record of Decision, and Remedial Design Work Plan.
- Obtain regulatory approval for the Soils Removal Action Memorandum and Remedial Action Work Plan.

Portsmouth Gaseous Diffusion Plant

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
239,177	238,848	254,986	284,963	253,970	261,766

Site Details

Site Overview

For approximately 50 years, the Portsmouth Gaseous Diffusion Plant in Portsmouth, Ohio, supported Federal Government and commercial nuclear power missions. Decades of nuclear energy and national security missions left a legacy of radioactive and chemical contamination. The mission of the site is transitioning from primarily enrichment operations to environmental cleanup, waste management, depleted uranium conversion, deactivation and decommissioning, re-industrialization, and long-term stewardship.

Construction of the Portsmouth Gaseous Diffusion Plant began in late 1952 with a mission to increase the national production of enriched uranium and maintain the nation's superiority in the development and use of nuclear energy. The first enrichment diffusion cells went on line in September 1954, and the facility was fully operational in March 1956. The enriched uranium was required for both government and commercial uses.

In the mid-1980s, the facilities and equipment required for the next generation of enrichment facilities technology, the Gas Centrifuge Enrichment Plant (GCEP), were constructed and installed at Portsmouth. However, the project was terminated in 1985, before going into full production, due to a significant reduction in the worldwide market for enriched material. The newly constructed facilities were placed in shutdown mode until, ultimately, much of the process-unique equipment was removed and a substantial number of the remaining buildings were renovated in support of the DOE cleanup mission into office space, warehouses, or storage facilities, including permitted storage for hazardous and mixed-waste.

From 1991 until production ceased in 2001, the Portsmouth plant produced only low-enriched uranium for commercial power plants. In 1993, uranium enrichment operations were turned over to the United States Enrichment Corporation in accordance with the Energy Policy Act of 1992. The United States Enrichment Corporation was privatized in 1998, and a corporate business decision was made in January 2000 to terminate uranium enrichment at Portsmouth, while maintaining the Paducah facility in operation. Some of the facilities were no longer required by the United States Enrichment Corporation and subsequently returned to DOE.

The United States Enrichment Corporation selected the Portsmouth site in 2004 as the location for deployment of a commercial centrifuge plant by the end of the decade. As a result, the United States Enrichment Corporation has identified a number of buildings and areas that are or will be transitioning to DOE under the terms of the lease agreement.

The Department maintained the Portsmouth Gaseous Diffusion Plant facilities in Cold Standby from 2001 to 2005. The Cold Standby program was completed in September 2005 and the facilities were moved into Cold Shutdown in October 2005. The Department approved (Critical Decision 0) in October 2005 for the initiation of activities to plan for the decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant. In FY 2007, the Department is scheduled to conduct Critical Decision 1 for the decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant, establishing the approach to be taken to implement decontamination and decommissioning and clean up of the site.

The Department is committed to clean up the Portsmouth site to industrial reuse standards. Limited land areas will require institutional controls following remediation. Equipment and material removed from buildings will be decontaminated, reused, or recycled to the extent practicable.

Depleted Uranium Hexafluoride Conversion Facilities

Since the 1950s, the depleted uranium hexafluoride produced during enrichment operations at the Portsmouth and Paducah Gaseous Diffusion Plants (and the East Tennessee Technology Park in Tennessee) has been stored in large steel cylinders at the sites. DOE is responsible for the management of approximately 700,000 metric tons of depleted uranium hexafluoride stored in about 60,000 cylinders. DOE awarded a contract and started construction in July 2004 on a depleted uranium conversion facility at Portsmouth to convert the depleted uranium hexafluoride to a more stable form for reuse or disposal. This facility will operate over the next two decades. DOE is ultimately responsible for the deactivation and decommissioning of the facility.

Technetium-99 Cleanup

A significant portion of the Department's surplus (excess to defense requirements) uranium inventory is contaminated with technetium-99, eliminating the value of this asset in the commercial market. The only operational facility for removing technetium-99 contamination from uranium feed in the United States is leased and operated by the United States Enrichment Corporation under their Nuclear Regulatory Commission operating certificate at Portsmouth, with the resultant product being further processed at the Paducah Gaseous Diffusion Plant. The United States Enrichment Corporation processes the contaminated uranium for the Department. The Department has funded this work through a barter transfer of uranium to United States Enrichment Corporation, appropriated funding, and from the proceeds of DOE uranium sales.

As of September 2006, there are 52 metric tons of United States Enrichment Corporation's uranium inventory to be processed (from the original material transferred to United States Enrichment Corporation from DOE) and 4,727 metric tons of DOE's uranium inventory that must finish processing to meet American Society for Testing and Materials standards. The estimated cost for completing the uranium decontamination program from FY 2007 to first quarter FY 2009 is approximately $150,000,000. The source of funds necessary to complete this program is projected to be from sales of DOE's cleaned excess uranium inventory which is contingent upon the reauthorization of Section 314 of the FY 2006 Appropriations Act or alternative Congressional authorization. The General Accounting Office reviewed the technetium-99 cleanup project in FY 2006 and raised concerns regarding the United States

Enrichment Corporation's submittal of financial information in a timely manner. As of September 2006, the United States Enrichment Corporation is providing the Defense Contracts Audit Agency and DOE with detailed financial data on the schedule prepared in response to the General Accounting Office report.

Site Description

The Portsmouth site is located approximately 75 miles south of Columbus, Ohio in the foothills of the Appalachian Mountains.

Site Cleanup Strategy/Scope of Cleanup

The Portsmouth site's use of recycled reactor fuel (or reactor returns) as feed material in the 1950s introduced such fission products as technetium, cesium, and strontium into the system, as well as small quantities of transuranics, primarily plutonium and neptunium. Spills and waste disposal during past operations also resulted in contamination from various industrial solvents (e.g. trichloroethylene) and uranium, technetium, and metals. Groundwater contamination is limited to a shallow aquifer that is not used as a drinking water source. A layer of bedrock only 30 feet beneath the surface has helped to contain the groundwater plumes. Although all direct discharges from DOE operations are monitored through a National Pollutant Discharge Elimination System permit, from the early years of plant operations, minor levels of contaminants have been detected in nearby stream sediments.

DOE has focused environmental cleanup on high-risk areas first at Portsmouth. DOE has completed all initial assessments required under the Resource Conservation and Recovery Act and has remediated several hazardous and solid waste sites. In addition, DOE will process and disposition the depleted uranium hexafluoride cylinders to a more stable form, for reuse or disposal.

The United States Enrichment Corporation-leased facilities are presently being deactivated toward a shutdown condition intended to minimize future surveillance and maintenance costs. The deactivation is conducted to address the highest risk conditions in the facilities, including the removal of large uranium deposits, and stabilize the facilities for future decontamination and decommissioning.

Site Completion (End State)

FY 2008 through FY 2010 represents critical years for the environmental cleanup program at Portsmouth. The current end state completion for the ongoing environmental restoration is 2012; this does not include decontamination and decommissioning of the main gaseous diffusion plant facilities. The primary objectives of the cleanup program during this period will be to implement the last remaining approved remediation at the X-701B Area (land sites and groundwater), to continue operations of groundwater treatment facilities in support of installed remedies, and to remove all currently stored legacy low-level waste streams, and mixed waste streams contaminated with hazardous or toxic chemicals. Portsmouth will also decontaminate and decommission identified inactive ancillary facilities and complete disposition of currently stored highly enriched uranium. In addition, Portsmouth will complete construction and begin operating a depleted uranium hexafluoride conversion facility. The end date for cleanup is 2025, and includes the completion of remedial activities and the completion of the depleted uranium hexafluoride conversion operations.

Future decontamination and decommissioning plans include the transfer of leased gaseous diffusion plant facilities to DOE for disposition, surveillance and maintenance and deactivation of facilities in preparation of decontamination and decommissioning, and actions required to perform scheduled decontamination and decommissioning activities.

Regulatory Framework

Oversight of cleanup activities at the Portsmouth site is the responsibility of the Environmental Protection Agency Region V and the Ohio Environmental Protection Agency. The program is being conducted in accordance with a State of Ohio Consent Decree and an Environmental Protection Agency Administrative Consent Order. The 1989 Administrative Consent Order was amended in 1997 to streamline environmental oversight by identifying Ohio Environmental Protection Agency as the lead agency responsible for day-to-day oversight.

The primary role of the Environmental Protection Agency is to concur in the remedy decisions for final actions. The Portsmouth site is not on the Comprehensive Environmental Response, Compensation and Liability Act's National Priorities List but undertakes cleanup in compliance with both Resource Conservation and Recovery Act and Comprehensive Environmental Response, Compensation and Liability Act requirements. To facilitate site investigations and final cleanup actions, the Portsmouth site was divided into four quadrants based on groundwater flow and surface water runoff. Each quadrant contains multiple solid waste management units. The regulatory framework for the final decontamination and decommissioning is being discussed with the regulators.

Critical Site Uncertainties and Assumptions

It is the assumption that DOE will support the needs for future centrifuge plant construction, operation, and use of site facilities for uranium enrichment activities.

It is uncertain whether DOE will be able to continue the technetium-99 cleanup agreement for removing technetium-99 contamination from uranium feed in the FY 2007 through FY 2009 time period by selling excess clean uranium and using the proceeds. The only operational facility for removing technetium-99 contamination in the United States is leased and operated by the United States Enrichment Corporation under their Nuclear Regulatory Commission license at the Portsmouth facility.

Future regulatory decisions regarding the extent of cleanup at Portsmouth is an uncertainty.

The current baseline will be adjusted to include the updated projected costs associated with the future decontamination and decommissioning of the Portsmouth gaseous diffusion plant.

Future decontamination and decommissioning costs will be subject to several large uncertainties, including the following: extent of final contamination into the environment, cleanup levels, disposal options, availability of funds, and stakeholder/regulator acceptance.

Interdependencies

Portsmouth has received all the depleted uranium hexafluoride cylinders stored at Oak Ridge's East Tennessee Technology Park in Tennessee by September 2006.

Portsmouth is dependent upon the Toxic Substance Control Act Incinerator at the East Tennessee Technology Park in Oak Ridge, Tennessee, for waste treatment and the Nevada Test Site waste facility for low-level waste disposal.

The Portsmouth decontamination and decommissioning planning is incorporating the lessons learned from the ongoing East Tennessee Technology Park decontamination and decommissioning project.

Contract Synopsis

The Portsmouth/Paducah Project Office awarded remediation and infrastructure contracts in 2005 at the Portsmouth site. This strategy provides incentives to improve performance for the remediation and infrastructure effort. The infrastructure contracts provide information technology, human resources, mail, site security planning, road and ground maintenance, janitorial, and real and personal property inventory and disposition. The infrastructure contract was awarded to Theta Pro2Serve Management Company, LLC at the Portsmouth site. The infrastructure contract is a cost-plus-award-fee contract and expires in March 2010. The remediation contract provides cleanup and closure of all inactive facilities not leased to the United States Enrichment Corporation and cleanup of soils, groundwater, landfills, storage yards, as well as disposal of legacy waste (excluding the leased units). The remediation contract was awarded to LATA/Parallax Portsmouth, LLC at Portsmouth. The remediation contract is a cost-plus-incentive-fee contract and expires September 2009.

Decontamination and decommissioning of the diffusion plant process facilities is not part of the remediation contract. The decontamination and decommissioning of the gaseous diffusion plant leased facilities contract will be awarded subject to the DOE Critical Decision (CD-1) decision anticipated in FY 2007. The United States Enrichment Corporation activities supporting DOE are scheduled to be completed in FY 2008 or first quarter of FY 2009.

Cleanup Benefits

The intent of the federal government is to manage the site and the missions in an integrated manner. DOE retains overall responsibility for the site. Significant portions of the site footprints are managed by the United States Enrichment Corporation under the provisions of a lease with DOE. Achievement of DOE responsibilities in environmental cleanup and legacy material disposition will allow for future site missions, as well as the reduced environmental health and safety risks.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008-2012, Portsmouth target-level funding will support the Department’s progress on three of EM's sixteen corporate performance measures. In contributing to EM's measure #4, Portsmouth will package for disposition about 53,900 metric tons of Depleted Uranium and Other Uranium. For measure #10, Portsmouth will dispose of 1,900 cubic meters of Low-Level and Mixed Low-Level. For measure #15, Portsmouth will complete remediation of one release site. Additionally, target-level funding permits the site to continue progress for five Enforceable Agreement (EA) milestones involving Thermal Desorption, TSCA Incineration, Macro-Encapsulation, Commercial Stabilization and Future Off-Site Incineration.

FY 2008 Accomplishments

- Complete construction and initiate operations of the DUF6 conversion facility.
- Continue technetium-99 cleanup assuming funds are obtained through reauthorization of Section 314 or alternative method.
- Continue to conduct polychlorinated biphenyl activities in the former process buildings to maintain compliance.
- Continue to conduct environmental monitoring and reporting for groundwater, surface water, sediment, biological, vegetation, and associated sample collection to maintain compliance.
- Continue enhanced uranium deposit mitigation measures for criticality concerns in the process buildings to eliminate near-term criticality safety issues.
- Continue the repackaging and disposal of low-level waste associated with 438 converter shells in storage with potentially classified waste.
- Complete disposition of classified material in DOE Material Storage Areas 11 and 12; complete disposition of excess site equipment; and complete disposition of poly-bottles of poly-bottle solutions containing liquids with high fissile material.
- Complete highly enriched uranium disposition activities.
- Maintain progress on X-701B oxidation treatment field activities, including completion of Phase II (fourth and fifth oxidant injection events) and completion of Phase III (monitoring, analysis, and reporting).
- Initiate soil and groundwater investigation and/or remediation for approximately 140 buildings for which the Resource Conservation and Recovery Act facility investigation has been deferred.
- Issue Request for Proposals for Portsmouth decontamination and decommissioning (D&D) and deferred unit remediation contract subject to Critical Decision – 1 approval.
- Negotiate with USEC to effectively transition leased Gaseous Diffusion Plant facilities back to DOE for D&D.
- Work with regulators and stakeholders to develop the D&D regulatory approach.
- Continue to develop preliminary design and regulatory analyses for the D&D waste disposal strategy.

FY 2009 Accomplishments

- Continue operations of the DUF6 conversion facility.
- Complete technetium-99 cleanup assuming funds are obtained through reauthorization of Section 314 or alternative method.
- Conduct site-wide infrastructure and surveillance and maintenance levels to maintain compliance.
- Continue to conduct polychlorinated biphenyl activities in the former process buildings to maintain compliance.
- Continue to conduct environmental monitoring and reporting for groundwater, surface water, sediment, biological, vegetation, and associated sample collection to maintain compliance.
- Continue to package and ship newly-generated waste for offsite treatment and disposal that cannot be disposed onsite.
- Complete X-701B oxidation injections system field treatment activities.

- Design and construct X-701B unit final caps.
- Continue deferred unit remediation activities in accordance with the deferred unit strategy.
- Award decontamination and decommissioning and deferred unit remediation contract.
- Transition responsibility for gaseous diffusion plant buildings to the decontamination and decommissioning contractor.
- Develop and issue decontamination and decommissioning regulatory decision document with regulators, including waste disposal alternatives.

FY 2010 Accomplishments

- Continue operations of the DUF6 conversion facility.
- Conduct site-wide infrastructure and surveillance and maintenance levels to maintain compliance.
- Continue to conduct polychlorinated biphenyl activities in the former process buildings to maintain compliance.
- Continue to conduct environmental monitoring and reporting for groundwater, surface water, sediment, biological, vegetation, and associated sample collection to maintain compliance.
- Continue to package and ship newly generated waste for offsite treatment and disposal that cannot be disposed onsite.
- Initiate and complete installation of X-701B phytoremediation.
- Continue deferred unit remediation activities in accordance with the deferred unit strategy.
- Develop and validate decontamination and decommissioning and deferred unit performance baseline.
- Obtain approval of the performance baseline and initiate decontamination and decommissioning operations of the gaseous diffusion plant ancillary buildings.
- Complete operational readiness reviews and implement comprehensive waste disposal plan for D&D project, subject to regulatory approval

FY 2011 Accomplishments

- Continue operations of the DUF6 conversion facility.
- Conduct site-wide infrastructure and surveillance and maintenance levels to maintain compliance.
- Continue to conduct polychlorinated biphenyl activities in the former process buildings to maintain compliance.
- Continue to conduct environmental monitoring and reporting for groundwater, surface water, sediment, biological, vegetation, and associated sample collection to maintain compliance.
- Continue to package and ship newly generated waste for offsite treatment and disposal that cannot be disposed onsite.
- Continue deferred unit remediation activities in accordance with the deferred unit strategy.
- Continue decontamination and decommissioning of gaseous diffusion plant ancillary buildings.

- Complete preparation work for expanded decontamination and decommissioning operations of the gaseous diffusion plant process building and process equipment.

FY 2012 Accomplishments

- Continue operations of the DUF6 conversion facility, including determining required procurement approach for continued operations.
- Conduct site-wide infrastructure and surveillance and maintenance levels to maintain compliance.
- Continue to conduct polychlorinated biphenyl activities in the former process buildings to maintain compliance.
- Continue to conduct environmental monitoring and reporting for groundwater, surface water, sediment, biological, vegetation, and associated sample collection to maintain compliance.
- Continue to package and ship newly generated waste for offsite treatment and disposal that cannot be disposed onsite.
- Continue deferred unit remediation activities in accordance with the deferred unit strategy.
- Initiate decontamination and decommissioning of ancillary buildings of the gaseous diffusion plant D&D project.
- Perform decontamination and decommissioning of gaseous diffusion plant process building and process equipment.

Richland

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
917,395	974,719	934,677	1,084,938	1,095,000	1,100,000

Site Details

Site Overview

The Richland Operations Office manages cleanup of the Hanford Site, with the exception of the tank farms (managed by the Office of River Protection), and the Pacific Northwest National Laboratory (managed by the Office of Science, Pacific Northwest Site Office).

The site was established during World War II to produce plutonium for the nation's nuclear weapons. Peak production was reached in the 1960s when nine production reactors were in operation along the Columbia River. The last reactor to be shutdown was the N-Reactor, and its spent nuclear fuel that was originally stored in the K-Basins has since been relocated to dry storage in the Central Plateau (also known as the 200 Area). Soil and groundwater contamination from past operations resulted in placement of the Hanford Site on the National Priorities (Superfund) List. The Hanford mission is now primarily site cleanup/environmental restoration to protect the Columbia River. The cleanup is addressed in commitments in a 1989 consent agreement, known as the Tri-Party Agreement. Parties to the agreement include the DOE, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology.

Site Description

Hanford Site - Richland Operations Office: As noted above, the Richland Operations Office manages the majority of the Hanford Site in southeastern Washington State. The 1,533 square kilometer (586 square mile) site contains the Central Plateau, the River Corridor, and the Fast Flux Test Facility.

Central Plateau

The central part of the site is known as the 200 Area or the Central Plateau. It is called the "plateau" because it is elevated about 61 – 67 meters (200 -250 feet) above the water table at the Columbia River shore (100 and 300 areas). The 200 Area is where fuel irradiated in the production reactors was chemically processed to separate and recover plutonium for use in nuclear weapons. Several other valuable isotopes were also recovered. During World War II, the two 200 Areas (East and West) were constructed about five miles apart and in such a manner that it would be difficult for an enemy aerial attack to destroy all of the chemical separations buildings. Three separation plants were initially built in the 200 Areas: T Plant, B Plant and U Plant. The S Plant (Reduction-Oxide) and the Plutonium Uranium Extraction Plant followed with second and third generation improvements in product outputs. The U Plant was initially

used to train operators for the other two plants. During the 1950s, U Plant had a special mission in recovering uranium that had been placed in waste tanks during the rush of World War II.

A part of the legacy of Hanford operations is a significant waste inventory of radioactive and regulated chemical materials. Past releases of these materials have contaminated Hanford's facilities, groundwater, soils, and environment. Over 625,000 cubic meters of solid waste were buried in Hanford site soils, while more than 1.7 trillion liters of liquid waste containing radioactive and chemical contamination have been discharged to the ground. The 200 Area's current mission involves cleanup of radioactivity and chemical contamination in about 800 waste sites, and approximately 1,000 facilities.

The Central Plateau also has ongoing waste management activities which include storage of spent nuclear fuel at the Canister Storage Building, cesium and strontium capsules in the Waste Encapsulation and Storage Facility, and transuranic waste, mixed low-level waste and low-level waste generated at the Hanford Site and other offsite locations and stored at Central Waste Complex. Transuranic waste is to be processed in the Waste Receiving and Processing facility for shipment to the Waste Isolation Pilot Plant. The non-transuranic waste is permanently disposed at the Environmental Restoration and Disposal Facility. Other Central Plateau activities include operations of mixed low-level waste trenches, treatment of mixed low-level waste to meet regulatory requirements, disposition of over 200 defueled naval reactor compartments in a dedicated trench, and treatment of generated liquid wastes at the Effluent Treatment Facility, Liquid Effluent Retention Facility, and Treated Effluent Disposal Facility.

Much of the Hanford Site's existing infrastructure has it roots in the Manhattan project. Railroads, utilities, roads and buildings were constructed during the 1940's as part of the wartime effort. The infrastructure supports the various projects at Hanford with a majority of the centralized system existing in the 200 Area. Sufficient infrastructure will be maintained as the cleanup mission progresses. As the need for the infrastructure diminishes, these systems and components will be demolished, removed or placed in long term stewardship. The Central Plateau contains the following areas:

- 200 East Area: The 200 East Area covers approximately 9.1 square kilometers (3.5 square miles). The area has two processing plants: B Plant and the Plutonium Uranium Extraction Plant. B Plant was deactivated in 1998 and the Plutonium Uranium Extraction Plant was shutdown in 1997. The Effluent Treatment Facility, the Treated Effluent Disposal Facility, the Waste Encapsulation and Storage Facility, and the Canister Storage Facility used in waste management activities are located in this area. Offices and infrastructure support facilities are also located in the 200 East Area.
- 200 West Area: The 200 West Area covers just under 13 square kilometers (5 square miles) and is located about 13 kilometers (8 miles) from the Columbia River and 40 kilometers (25 miles) from Richland. The 200 West Area includes Central Waste Complex, Waste Receiving and Processing Facility, the Environmental Restoration and Disposal Facility (ERDF) and three processing plants: T Plant, U Plant and S Plant. T Plant and U Plant were nearly identical in function at the time they were constructed in 1943 and 1944. S Plant was a second-generation processing plant that began operation in 1952. The duplication of facilities was done for safety as well as security. U Plant and S Plant have been shut down, and T Plant is now used as the site's decontamination facility.

The T Plant has not conducted plutonium processing since 1956. Connected to S Plant was the 233-S Plutonium Concentration Facility, a building originally built for concentrating plutonium before it was sent to the Plutonium Finishing Plant. The Plutonium Finishing Plant complex consists of multiple buildings that were used for defense production of plutonium nitrates, oxides and metal from 1950 through early 1989.

River Corridor

The River Corridor contains the following areas:

- 100 B & C Areas: B Reactor, the first full-size nuclear reactor in the world, was the first reactor built on the Hanford Site. It has received several national awards as a nuclear and engineering landmark, and has the distinction of being listed on the National Register of Historic Places. Near B Reactor, in an area between the Columbia River and the reactor, is a site where contaminated soil is being remediated. When the reactors operated, water pumped from the Columbia River circulated around the radioactive fuel to cool it while it was in the reactor. This water was then sent through underground pipes to pond sites. The water was temporarily kept there to allow it to both cool off in temperature and to let some of the short-lived radioactivity decay. The water was then discharged to the river. The dirt under and around the ponds became contaminated and it is this soil that is being excavated and taken to the on-site Environmental Restoration and Disposal Facility (located in the 200 Area) for placement in a safe, long-term disposal configuration.
- C Reactor has been placed in a safe storage condition for up to 75 years. This has involved removing the fuel storage basin, the fuel examination facility, the surrounding support buildings, and portions of the C Reactor building structure. This reduced the size of the original footprint by 81 percent. A new weatherproof roof and a remote monitoring system were then put in place. Putting the reactor into a safe condition not only will shield the reactor core for up to 75 years, but it will also reduce the time and money needed for regular surveillance and maintenance. Site personnel will only be required to enter the reactor once every five years to check conditions. In the interim, the reactor is checked via a remote system.
- 100 KW & KE Areas: K-West and K-East reactors were built in 1955 and were shut down in 1970 and 1971. Even though the reactors were shut down, their fuel storage basins remained in operation, providing storage for up to 2,300 tons of spent reactor fuel. The fuel came from N Reactor operations during the 1970s and 1980s. The highly radioactive spent nuclear fuel from the K Basins has now been retrieved, cleaned, packaged and safely stored away from the Columbia River in the 200 Area Central Plateau. In addition, approximately 300 tons of highly radioactive debris has been removed from the K Basins and disposed of. However, 44 cubic meters of highly radioactive sludge remain in K-East and K-West Basins that must be removed and treated. In addition, the basins still contain 70 tons of highly radioactive debris that must be removed and disposed of.
- 100 N Area: N Reactor operated from 1963 to 1987 when it was shut down for maintenance, refueling, and safety upgrades. In April 1986 the accident at the Chernobyl nuclear plant in the Soviet Union drew public attention to N Reactor. After the Energy Department ordered safety enhancements, restart was planned. However, in early 1988

DOE decided to place N Reactor on standby. With the end of the Cold War, there was no longer a need for plutonium production and thus, N Reactor was never restarted. The N Reactor Area has been deactivated. This area contains slightly more than 100 buildings of which 23 have been demolished.

- 100 D & DR Areas: D Reactor was one of the three original reactors built in World War II. The reactor next to it is known as DR, or the D Replacement. The two reactors operated side-by-side until the mid-1960s. The D and DR Reactors have been placed into safe storage, or a "cocooned" state. Cleanup of soil in the 100-D Area began in 1996.
- 100 H Area: Construction of H Reactor began in March 1948 and began operation in 1949. It was shut down in 1965. It was built as part of Hanford's first Cold War expansion, in response to some of the earliest events of the Cold War. H Reactor was placed into safe storage in October 2005.
- 100 F Area: F Reactor went into production in February 1945 during World War II and was shut down in 1965. Upon completion, 100-F Area contained 29 permanent buildings and 24 facilities. F Reactor was placed into safe storage in January 2004.
- 300 Area: The 300 Area's two main functions were production (or fabrication) of fuel for the reactors (performed in the north end of the area) and chemical research to improve the entire production process. Some of the buildings in the 300 Area were constructed during World War II. During the Cold War, many of the 300 Area laboratories performed research to expand and improve the efficiency of weapons production. Now, many of them are undergoing cleanout and deactivation. The 300 Area buildings that remain active include laboratories, technical shops, engineering offices, their support facilities and 310 Treated Effluent Disposal Facility and the 340 Facility.

Fast Flux Test Facility

The Fast Flux Test Facility planning began in 1965, during the heyday of commercial nuclear power building and experimentation. Four years later, the conceptual design was completed. Construction was completed in 1980, and full critical operations got underway in early 1982. The reactor, built to be the prototype for America's breeder reactor program, was to be a bridge to a newer, non-defense role for the Hanford Site. The Fast Flux Test Facility was the world's largest test reactor of its kind. It was designed primarily to test fuels and materials for the nation's advanced reactor program. The facility is currently undergoing a major deactivation leading to a low-cost surveillance and maintenance mode (until cleaning sodium residuals, processing and dispositioning bulk sodium and decommissioning and demolition of the facility are conducted in the future).

Transfer to Non-Federal Entity

Hanford's 1100 Area served for half a century as the hub of the site's support services, including vehicle maintenance and motor pool; warehousing and property receiving and distribution; mail services; and other infrastructure services. The area also was the hub for the site's approximately 201 kilometers (125 miles) of rail track. The largest building here, the 1171 Building, has rail tracks running through it, and housed a rail overhaul and repair shop.

However, on September 30, 1998, the 1100 Area, the 26 facilities within it, and the 16 southern-most miles of the Hanford Railroad were transferred by DOE to Richland's Port of Benton for

use in regional economic development. Transfer of the 768-acre 1100 Area (about 3.6 square kilometers [1.4 square miles]) pushed the Hanford Site border north by about a mile.

Site Cleanup Strategy/Scope of Cleanup

The primary focus for the Hanford Site is the safe storage, treatment and disposal of Hanford's legacy wastes and environmental restoration. The cleanup strategy is a risk-based approach that focuses first on those contaminant sources that are the greatest contributors to risk. Risk to the public, workers, and environment will be reduced by removing contamination before it migrates to the Columbia River or the groundwater. This includes cleanup of facilities/waste sites in the 100, 200, and 300 Areas, as well as retrieval of suspect transuranic waste for final disposition off-site. The final focus is the cleanup of the Central Plateau with priority on the decontamination and decommissioning of the Plutonium Finishing Plant and completion of groundwater remediation. Safe and secure interim storage of special nuclear material and spent nuclear fuel will continue to be maintained.

Site Completion (End State)

The Federal government is expected to maintain ownership of most of the site once cleanup is complete, planned for FY 2035. However, this completion schedule may be impacted by the extension to the completion of the Waste Treatment and Immobilization Plant operations, since the Hanford site can not complete the cleanup mission until the completion of the Plant operations. To date, about 50 percent of Hanford Site lands have been cleaned up or transferred for alternate uses. The North Slope has been put under the management of other federal and Washington state agencies but remains under DOE ownership to maintain a safety buffer zone and pristine habitat. In 1999, DOE completed an environmental impact statement for the Final Comprehensive Land Use Plan. Final decisions on the level of cleanup to be performed on individual waste sites continue to be made through the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA) decision processes.

- **K Basin Closure:** The K Basins are the highest risk reducing project because of its proximity to the Columbia River. Significant risk reduction is continuing with the removal of highly radioactive sludge and debris from wet storage in the K Basins. Sludge will be treated and placed in a form suited for disposal, currently planned to be completed by FY 2010. This project's completion will mean the removal of more than 55 million curies of radioactivity from near the Columbia River to the 200 Area Central Plateau – a reduction of more than 95 percent of the radioactivity in Hanford's River Corridor.
- **River Corridor Closure Project:** The River Corridor Closure Project will remediate 761 contaminated waste sites (including 50 burial grounds); deactivate, decontaminate, decommission and demolish 379 facilities adjacent to the Columbia River; and place eight reactors into interim safe storage condition. Completion of the project is expected by the contract end date of 2015 or earlier. The work includes excavating and disposing of contaminated soil, backfilling with clean soil, constructing interim safe storage for the reactors, and demolishing the old reactor complexes and facilities in the 300 Area. The project has the goal of ensuring that the land is sufficiently clean to support land management by the Department of Interior. At that time, the footprint of active Hanford cleanup will be reduced from the present 586 square miles to about 75 square miles.

- **Transuranic Retrieval:** All contact-handled suspect transuranic waste in the low-level burial grounds will be retrieved by December 2010, with an expectation that about half will be disposed as transuranic waste and half as low-level and mixed low-level wastes. Retrieval of the remote handled waste will be performed by 2018. Processing of transuranic waste for shipment to the Waste Isolation Pilot Plant will occur in the Waste Receiving and Processing Facility and may occur in T Plant. Upon completion of this cleanup work, all waste will have been retrieved and transferred to a treatment, storage, and/or disposal facility.
- **Groundwater Remediation:** This project includes remediation and monitoring of groundwater/vadose zone to address contamination by carbon tetrachloride, chromium, technetium, strontium, and uranium. Response actions for the 100 Area groundwater plumes are to be completed by December 2012. The end-state and cleanup decisions for existing groundwater plumes completed by 2012. Groundwater completion activities will follow waste tank and waste site closure activities through the 2024 time frame.
- **Solid Waste Disposal:** About 70,000 cubic meters of mixed low-level waste will be treated to meet regulatory requirements and then disposed of on-site in the mixed waste trenches or the Environmental Restoration Disposal Facility. About 130,000 cubic meters of low-level waste will be disposed of through site closure. In addition, liquid waste will be treated through the Effluent Treatment Facility, the Liquid Effluent Retention Facility, and the Treated Effluent Disposal Facility. Hanford will continue to operate facilities for the disposal of low-level and mixed low-level waste from Hanford and offsite generators.
- **Plutonium Finishing Plant Closure Project:** The Plutonium Finishing Plant consisted of over 60 facilities that were used for production of plutonium from 1950 to 1989. The project provides storage of special nuclear materials and maintains the facilities in a safe and secure manner until the completion of demolition. Upon removal of all Special Nuclear Material and fuels, the security area will be eliminated and the Plutonium Finishing Plant complex will be demolished to slab-on-grade by 2016.
- **Central Plateau Cleanup:** One legacy of Hanford operations is a significant waste inventory of radioactive and regulated chemical materials. Past releases of these materials have contaminated Hanford's facilities, groundwater, soils, and environment. Over 625,000 cubic meters of solid waste were buried in Hanford site soils, while more than 1.7 trillion liters of liquid waste containing radioactive and chemical contamination have been discharged to the ground. DOE will clean up radioactivity and chemical contamination in about 800 waste sites that have the potential to impact ground water; and demolish approximately 900 facilities on the Central Plateau and South Hanford Industrial Area.
- **Fast Flux Test Facility:** By FY 2007, DOE plans to complete major elements of deactivation, including reactor defueling; fuel washing, dry packaging, storage (in storage casks), and disposition of 367 reactor fuel assemblies; and the draining of 260,000 gallons of bulk sodium in plant systems, reactor vessel and fuel storage vessels. DOE will then begin transition the facility into long-term surveillance and maintenance.

Regulatory Framework

As noted earlier, the U. S. Department of Energy, the U. S. Environmental Protection Agency, and the State of Washington Department of Ecology signed a comprehensive cleanup and compliance agreement on May 15, 1989. The Hanford Federal Facility Agreement and Consent Order, or Tri-Party Agreement, is an agreement for achieving compliance with the CERCLA

remedial action provisions and with the RCRA treatment, storage, and disposal unit regulations and corrective action provisions. More specifically, the Tri-Party Agreement: 1) defines and ranks cleanup commitments, 2) establishes responsibilities, 3) provides a basis for budgeting, and 4) reflects a concerted goal of achieving full regulatory compliance and remediation, with enforceable milestones in an aggressive manner.

Tri-Party Agreement/Compliance Milestones:

Tri-Party Agreement major milestones for K Basin Closure

- M-034-00A, Complete Removal of the K Basins and their Content by March 2009

Tri-Party Agreement major milestones for Plutonium Finishing Plant Project

- M-083-00A, PFP Facility Transition and Selected Disposition Activities by September 2016

Tri-Party Agreement major milestones for Transuranic Retrieval

- M-091-40, Complete Retrieval of Contact-Handled Waste by December 2010
- M-091-41A, Complete Retrieval of Non-Caisson Remote-Handled Waste by December 2014
- M-091-44B, Complete Retrieval of the 200A Caisson Remote-Handled Waste in 218-W-4B by December 2018

Tri-Party Agreement major milestones for Fast Flux Test Facility

- M-081-14, Complete Fast Flux Test Facility Sodium Drain by September 2009
- M-081-00A, Complete Fast Flux Test Facility Transition by February 2011

Tri-Party Agreement major milestones for River Corridor Closure Project

- M-016-58, Initiate K-West Basin Soil Remediation by April 2009
- M-016-00A, Complete All Interim Response Action for the 100 Areas by December 2012
- M-094-00, Complete disposition of 300 Area surplus facilities by September 2015
- M-016-69, Complete All Interim 300 Area Remedial Actions by September 2015

Tri-Party Agreement major milestones for the Central Plateau clean up activities

- M-15-00, Complete 200 Area Remedial Investigation/Feasibility Study Process for all Non-Tank Farm Operable Units by December 2008.
- M-20-00, Submit Part B Permit Application or Closure/Post Closure Plans for all Resource Conservation and Recovery Act Treatment, Storage, and Disposal Units by December 2008
- M-034-30, Initiate Sludge Treatment by December 2008
- M-034,31, Complete Sludge Treatment by November 2009
- M-16-00, Complete Remedial Actions for all Non-Tank Farm Operable Units by December 2024

Critical Site Uncertainties and Assumptions

The Richland Operations Office is currently addressing a number of significant known uncertainties including:

- Waste Isolation Pilot Plant receiving schedule for transuranic waste from Hanford.
- The current approved closure date for Richland Operations Office is 2035; however, this may be impacted by an extension to the completion of the Waste Treatment and Immobilization Plant operations.
- The opening date of a Federal repository for spent nuclear fuel and high-level waste and subsequent receipt of spent nuclear fuel and high-level waste from the Hanford Site.
- Timely implementation of the plutonium consolidation strategy to support de-inventory of materials in storage at the Plutonium Finishing Plant.
- The acceptance of cleanup levels in Interim Records of Decision by regulators to support deletion of the Hanford Site from the National Priority List.
- Records of Decision for the Central Plateau Area that will define cleanup actions of central plateau waste sites.
- Unexpected contamination at some waste sites or facilities.

Interdependencies

Richland has identified the following near term interdependencies needed for mission execution:

- Transuranic Waste Shipments: About 27,000 cubic meters of transuranic waste is to be processed and shipped to the Waste Isolation Pilot Plant from the Hanford Site.
- Department of Defense Naval Reactors: Over 200 defueled naval reactor compartments will be disposed in a dedicated trench at the Hanford Site in the 200 Area.
- Spent Fuel: Approximately 2,100 metric tons of spent nuclear fuel currently in interim storage at the Hanford Site is to be transported to a Federal repository for disposal.
- Cesium and Strontium Capsules: Approximately 1,936 capsules currently in interim storage at the Hanford Site are to be transported to a Federal repository for disposal.
- Remediation of Central Plateau: Waste sites will need to be coordinated with the Office of River Protection's tank farm activities.
- Fast Flux Test Facility: Sodium-bonded fuel is to be transported to the Idaho National Laboratory for disposition.
- Special Nuclear Materials: Coordination of the consolidation strategy involving sites presently storing materials, transportation elements and the candidate consolidation site.

Contract Synopsis

At the end of FY 2006, two major contracts to implement the cleanup strategy across the Hanford Site will expire: the Project Hanford Management Contract (RL) and the Tank Farm Management Contract (ORP). Extensions through FY 2008 were negotiated and signed. EM is currently developing an acquisition strategy for the follow on contracts. The draft Request for Proposals for competitive selections of the mission support and plateau remediations contractors were issued on November 17, 2006.

The River Corridor Closure contract, a cost-plus-incentive-fee type contract awarded in June 2005, is responsible for the cleanup of the nuclear reactor sites and the industrial 300 Area along the Columbia River as well as facilities in the 400 Area and two burial grounds in the 600 Area.

The cost plus incentive fee type contract was implemented to increase efficiency and accelerate the schedule for cleanup.

Cleanup Benefits

Near Term

Cleaning up the Hanford Site and protecting the Columbia River is a vast and complex task – one that has often been called the world's largest environmental cleanup project. The legacy of Hanford's 40 years of nuclear weapons production for the nation's defense includes enormous quantities of spent nuclear fuel, leftover plutonium in various forms, buried waste, contaminated soil and groundwater, and contaminated buildings that must undergo cleanup and be torn down (also known as D4). Forty percent of the approximately one billion curies of human-made radioactivity that exist across the nuclear weapons complex resides at Hanford and must be dealt with to protect human health and the environment.

The cleanup momentum over the past several years has been and continues to be focused on completing cleanup along the Columbia River Corridor and transitioning the Central Plateau of the Hanford Site to a modern, protective waste management operation - - driving down the risks to our workers, the community and the environment.

- Spent Nuclear Fuel (K Basins Closure) project completed and removed more than 55 million curies of radioactivity – more than 95 percent of the radioactivity in Hanford's River Corridor.
- Reactor Interim Safe Storage completed for five of the eight reactors to be placed in interim safe storage at Hanford.
- If the decision is made to consolidate plutonium at an off-site location, then plutonium will be shipped off-site to eliminate risk and protect the Plutonium Finishing Plant area.
- Risks associated with the radioactive fuel and liquid sodium coolant at the Fast Flux Test Facility will be reduced and the facility will be placed in long-term surveillance and maintenance.

Longer Term

- Complete CERCLA Records of Decision for the Central Plateau and initiate remediation activities.
- Complete retrieval of contact-handled transuranic waste by 2010 reducing the environmental risks in the 200 Area.
- Complete remedial actions in the 100 B/C, 100F and 100H areas.
- Complete K Basins sludge treatment, demolition of the basins, and 100 K Area remediation.
- Complete conversion of KE, KW and N reactors to interim safe storage – the last of the eight reactors to be placed in interim safe storage.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008-2012, Richland Operations Office's target-level funding will help the Department make progress on six of EM's sixteen corporate performance measures. In contributing to EM's measure #9, Richland Operations Office will ship 4,685 cubic meters of transuranic waste for disposal over the five years. For measure #10, Richland Operations Office will dispose of

approximately 3600 cubic meters of low-level and mixed low level waste from legacy and newly generated waste over the five years. For measure #11, Richland Operations Office will dispose approximately 1.6 million cubic meters of low-level and mixed low level waste from environmental remediation and D&D activities over the five years. For measure #12, Richland Operations Office will eliminate 18 material access areas over the five years. For measure #13, Richland Operations Office will complete 66 nuclear facilities over the five years. For measure #14, Richland Operations Office will complete 61 radioactive facilities over the five years. For measure #15, Richland Operations Office will complete 286 industrial facilities over the five years. For measure #16, Richland Operations Office will remediate 460 release sites over the five years.

FY 2008 Accomplishments

- Remediate 45 waste sites/liquid waste sites/burial grounds in the River Corridor
- Complete demolition of 38 facilities in the 100 Area and 300 Area
- Retrieve 2,500 cubic meters of suspect transuranic waste
- Treat 1,700 cubic meters of mixed low-level waste
- Continue shipment of plutonium to off-site consolidation location, if a decision to consolidate to made
- Complete K-West Basin final pass cleanup
- Complete transfer of sodium bonded fuel from the Fast Flux Test Facility to the Idaho National Laboratory
- Complete transition of the Fast Flux Test Facility to a long-term, low-cost surveillance and maintenance mode

FY 2009 Accomplishments

- Complete demolition of the K-East Basin
- Complete remediation of 100-F Area
- Complete shipment of plutonium to off-site consolidation location, if a decision to consolidate to made
- Start demolition of the 216-Z-9 Facilities
- Complete demolition of 34 facilities in the 100 and 300 Areas
- Initiate balance of canyon remedial investigation and feasibility study decision process
- Complete remedial investigation and feasibility of three waste site operable units in the central plateau
- Continue Fast Flux Test Facility in long-term, low-cost surveillance and maintenance mode

FY 2010 Accomplishments

- Complete contract-handled suspect transuranic retrieval
- Complete demolition of forty-one surplus facilities in the 100 and 300 Area
- Complete remedial actions for the six waste sites in the 300-FF-2 Operable Unit
- Complete decommissioning high risk groundwater wells
- Complete demolition of the 216-Z-9 Crib Facilities
- Continue Fast Flux Test Facility in long-term, low-cost surveillance and maintenance mode

FY 2011 Accomplishments

- Complete remediation of 100-H Area
- Complete demolition of 60 facilities in the 100 Area and 300 Area
- Ramp up the Plutonium Finishing Plant D&D
- Continue Fast Flux Test Facility in long-term, low-cost surveillance and maintenance mode

FY 2012 Accomplishments

- Continue Plutonium Finishing Plant D&D
- Complete demolition of 62 facilities in the 100 and 300 Areas
- Treat 1,000 cubic meters of contract-handled transuranic mixed waste
- Continue Fast Flux Test Facility in long term low cost surveillance and maintenance mode
- Complete 200 Area Remedial Investigation/Feasibility Study Process for all Non-Tank Farm Operable Units
- Complete 100 K East Interim Safe Storage
- Complete 100 N Interim Safe Storage

Office of River Protection

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
964,127	963,443	961,022	1,042,836	1,090,000	1,183,308

Site Details

Site Overview

In order to more effectively manage the River Protection Project and in response to Section 3139 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, the Secretary of Energy established the Office of River Protection at the Hanford Site in the State of Washington. The Office is responsible for the storage, retrieval, treatment, immobilization, and some disposal of tank waste and the operation, maintenance, engineering, and construction activities in the 200 Area Tank Farms. These Tank Farms include 177 underground storage tanks (149 single-shell tanks and 28 double-shell tanks) that contain approximately 190 million curies in approximately 53 million gallons of chemically hazardous radioactive waste from past processing operations. A multi-year construction project to build a Waste Treatment and Immobilization Plant to process and immobilize the tank waste is ongoing.

Hanford Site cleanup is managed by two Department of Energy offices, the DOE Richland Operations Office and the DOE Office of River Protection. Each office reports to the Office of Environmental Management.

Site Description

The Hanford Site is the largest of the three original defense production sites founded in World War II as part of the Manhattan Project. The Hanford reservation is about half the size of the State of Rhode Island, at 586 square miles. Over its 40 years of operations, the site produced approximately 74 tons of plutonium – nearly two-thirds of all the plutonium recovered for government purposes in the United States. Between 1943 and 1963, nine plutonium production reactors were built along the Columbia River. Plutonium and reusable uranium were separated from irradiated fuel using various chemical precipitation and solvent extraction techniques. The plutonium was exported to other DOE sites for eventual defense use in United States nuclear weapons.

During plutonium production, highly radioactive waste resulting from site operations was piped to underground tanks. In some cases small amounts of radioactive waste, representing small amounts of radioactivity, was discharged underground. For example, uncontaminated and slightly contaminated liquids and cooling water were pumped to ditches and ponds. Contaminated water discharged from the reactors was pumped to nearby soil as well as into the Columbia River. Solid waste was buried in shallow trenches or stored inside facilities. The result is more than 1,600 identified waste sites and more than 500 waste facilities at Hanford. Forty percent of the approximately one billion curies of human-made radioactivity that exists

across the nuclear weapons complex resides at Hanford. These materials must be dealt with in a safe and protective manner.

The DOE Office of River Protection is responsible for the clean up of the approximately 53 million gallons of waste in 177 underground storage tanks, as well as contaminated equipment and soils in the 18 tank farms where these tanks are located which are primarily located on the central plateau of the Hanford site. Sixty-seven of the 177 tanks are suspected to have leaked waste to the environment.

Site Cleanup Strategy/Scope of Cleanup

Office of River Protection's cleanup strategy is a risk-based approach that focuses first on those contaminant sources that are the greatest contributors to risk. Significant clean-up progress has occurred, for instance:

- Interim stabilization in which transfer of three-million gallons of pumpable liquids from Hanford's 149 single-shell tanks to safer double-shell tanks has been completed, to reduce the risk of future tank leaks to the environment.
- Completed retrieval of remaining solids and sludges from five single-shell tanks, initiated the retrieval process on three single-shell tanks, and initiated the design of one retrieval system. To date, approximately 12,500,000 curies and 1,100,000 gallons of waste have been retrieved and transferred to compliant double-shell tanks.
- The Waste Treatment and Immobilization Plant is being designed and constructed to vitrify the radioactive tank waste. It is the largest radioactive-chemical processing facility in the world.
- Completed the initial design of the Demonstration Bulk Vitrification System as a possible supplemental technology to increase the ability to treat Hanford's low-activity tank waste to supplement the Waste Treatment and Immobilization Plant capability.
- Retrieval of sludge/saltcake waste from the remainder of single-shell tanks continues.
- Construction of the Hanford integrated disposal facility, which will be used for the disposal of mixed low-activity wastes and low-level wastes, has been completed.

Site Completion (End State)

The River Protection Project end state goal is to clean up the tank waste and tank farms in a compliant manner; immobilize and facilitate safe disposal of associated radioactive and chemical wastes; and protect human health, the environment, and Columbia River resources by 2042. This date reflects the new Waste Treatment Plant and Tank Farms baseline. The following will have been accomplished at the completion of the Office of River Protection mission:

- High-level waste will be vitrified and shipped to the Federal repository.
- Low-activity wastes will be stabilized and disposed of onsite.
- Appropriate remediation measures will be implemented for contaminated soils.
- Tanks and related equipment will be stabilized in place pending a submittal/determination by the Nuclear Regulatory commission for tank closure criteria and/or inclusion under Section 3116 of the National Defense Authorization Act.
- Waste treatment systems will be decommissioned.
- Measures will be implemented to ensure the durability of protective conditions established through clean-up (e.g., durable surface barriers, long-term monitoring, markers, records, etc.).

Regulatory Framework

The principal regulatory drivers at the Hanford Site are the Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation, and Liability Act; and the Atomic Energy Act. In May 1989, DOE, the U.S. Environmental Protection Agency and the Washington State Department of Ecology signed the Hanford Federal Facility Agreement and Consent Order, commonly known as the Tri-Party Agreement. The Tri-Party Agreement defines legally enforceable milestones for Hanford cleanup in accordance with Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act.

Significant Tri-Party Agreement milestones include:

- M-62-08 -- Submit Hanford Tank Waste Supplemental Treatment technologies report by June 30, 2006. (Milestone missed; pending renegotiation.)
- M-48-00 – Complete double-shell tank integrity assessment by September 30, 2007.
- M-47-00 -- Complete all work necessary in support of the acquisition and operations of the Hanford Site high-level radioactive tank waste treatment, storage, and disposal facilities by March 31, 2009.
- M-90-11 -- Immobilized High Level Waste Storage Capacity (Canister Storage Building) available by August 31, 2010.
- M-45-06-TO4 -- First tank farm closure by March 31, 2014.
- M-45-05 – Single-shell tank retrievals complete by September 30, 2018.
- M-45-06 – Complete closure of all single-shell tank farms by September 30, 2024.
- M-61-00 – Complete supplemental treatment by December 31, 2028.

Critical Site Uncertainties and Assumptions

The River Protection Project is currently addressing a number of significant known uncertainties that are impacting the ability of the Hanford Site to disposition waste and complete the cleanup mission. Some of these uncertainties include:

- Delayed start of Waste Treatment and Immobilization Plant operations impacts the rates and timing of retrieval, treatment, disposal, and closure activities.
- Any significant delays in the availability of the Federal repository will delay project completion and increase storage costs of the vitrified canisters of high-level waste.
- Uncertainties regarding tank waste determination decisions due to the State of Washington not being a “covered State” under Section 3116 of the National Defense Authorization Act for FY 2005 can impact overall ORP tank closures, costs and schedules because alternative approaches may need to be taken.
- The retrieval, treatment, and disposal of any tank waste as transuranic waste at the Waste Isolation Pilot Plant is affected by the timing of National Environmental Policy Act decisions, a Waste Isolation Pilot Plant Class III permit modification decision, and a State of Washington Resource Conservation and Recovery Act permit.
- Successful identification, demonstration and regulator approval of a supplemental technology is needed to immobilize a portion of the low-activity waste.
- Although not included in the scope of the River Protection Project, determining a disposition path for almost 2,000 capsules of cesium and strontium salts currently stored

in capsules on the Hanford Site, poses some risk to Waste Treatment and Immobilization Plant operations.

Interdependencies

The Office of River Protection has identified the following near term interdependencies needed for mission execution:

- Technical consultation by the Nuclear Regulatory Commission on allowable waste residuals in the Hanford single-shell tanks.
- U.S. Environmental Protection Agency approval of the Hanford transuranic tank waste inventory inclusion in the Waste Isolation Pilot Plant compliance recertification application.
- State of New Mexico Department of Environment approval of the Waste Isolation Pilot Plant Class III Permit Modification for disposition of Hanford transuranic tank waste.
- Availability of the Federal repository for disposal of high-level waste.

Contract Synopsis

At the end of FY 2006, the Tank Farm Management Contract was extended to FY 2008. EM is developing an acquisition strategy for a new contract. A draft Request for Proposal was issued in November 2006.

The Office of River Protection currently has two prime contracts to implement its cleanup strategy. The Tank Farm Management contract with CH2M Hill Hanford, Inc. addresses the following: (1) store, operate, and interim stabilize Hanford tank waste; (2) retrieve and dispose waste from, and interim close, single-shell tanks; retrieve and dispose of waste from double-shell tanks, including completion of upgrades and waste retrieval and transfer systems; (3) construct, operate, and maintain facilities necessary for storage/disposal of immobilized waste whether onsite or offsite, including balance of plant construction; (4) stabilize facilities and preparation of tank closure plans for single-shell tanks; and (5) perform decommissioning and decontamination to support improved long-term operational efficiencies. This contract is a cost type site facilities management contract with performance-based incentives.

The Waste Treatment and Immobilization Plant contract with Bechtel National, Inc. includes the design, construction, and commissioning of the Waste Treatment and Immobilization Plant which includes; completing the Process and Facility Design; managing construction and procurement; conducting acceptance testing; commissioning of the facility; conducting all required environment, safety, quality, and health actions; assuming Full Design Authority; and having full accountability for plant performance, cost, and schedule. This contract type is a cost-plus-incentive-fee with cost, schedule, and operational incentives. DOE will renegotiate the contract based on the new Waste Treatment and Immobilization Plant baseline.

Cleanup Benefits

Near Term

- Retrieve liquid waste from single-shell tanks and transfer the waste to double-shell tanks for safe storage until the waste can be treated through the Waste Treatment and Immobilization Plant.

- Complete the Tank Closure and Waste Management Environmental Impact Statement and continue development of retrieval technologies to remove hard-heel tank waste.

Longer Term

- Continue to retrieve and treat Hanford's tank waste and begin closure of the tank farms to protect the Columbia River.
- Implement a supplemental technology (e.g., bulk vitrification) to treat low-activity waste that has low-curie content.
- Develop ability to retrieve and package transuranic waste and ship to the Waste Isolation Pilot Plant.

Five Year Funding Profile by Major Project[10]

(dollars in thousands)

Project	TPC[11]	Prior Year	FY2008	FY2009	FY2010	FY2011	FY2012	Outyears
Waste Treatment and Immobilization Plant	12,263,000	4,330,838	690,000	690,000	690,000	690,000	690,000	4,482,162

Major Construction-Waste Treatment Plant

The PBS includes the line-item project 01-D-416, Waste Treatment and Immobilization Plant, which will design, construct, and commission a high-level radioactive liquid waste treatment facility. This project has five subprojects as follows: 01-D-16A Low Activity Waste Facility, 01-D-16B Analytical Laboratory, 01-D-16C Balance of Facilities, 01-D-16D High-Level Waste Facility, and 01-D-16E Pretreatment Facility. This PBS also includes historical privatization costs. The Waste Treatment and Immobilization Plant is critical to the completion of the Hanford tank waste program by providing the primary facility to immobilize (vitrify) the radioactive tank waste at the Hanford Site. The Waste Treatment and Immobilization Plant complex includes five major facilities identified by the subprojects above. The Pretreatment Facility will separate the radioactive tank waste into low-activity and high-level fractions. The high-level fraction will be sent to the High-Level Waste Facility for immobilization (i.e., vitrified into glass), ready for disposal at a Federal repository. Approximately 40 percent of the low-activity waste fraction will be immobilized (vitrified into glass) in the Waste Treatment and Immobilization Plant with the balance immobilized using alternative, supplemental treatment being developed on the Hanford Site. The Analytical Laboratory will provide real-time analytical support for plant operations. The Balance of Facilities includes office facilities, chemical storage, site utilities, and infrastructure.

[10] For the purpose of this FYP, "major projects" are defined as any projects with a construction project data sheet that exceeds $100 million in total project cost.

[11] Includes design and construction costs. From page 263 of FY2008 Congressional Budget

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008 – FY 2012, the Office of River Protection target-level funding will assist the Department in making progress towards the long-term accomplishment of nine of the sixteen corporate performance measures. Short-term accomplishments during this budget period include: 173,000 gallons of liquid tank waste will be eliminated contributing to EM's measure # 5 and 7,768 cubic meters of low level and mixed low level waste will be disposed of contributing to EM's measure # 10.

FY 2008 Accomplishments

- Continue design and construction of the Waste Treatment and Immobilization Plant
- Close issues identified by the Waste Treatment and Immobilization Plant External Flow sheet Review Team, which includes demonstration of Pretreatment ultra filtration process performance using an Engineering Scale Test Facility
- Provide technical and managerial support to the Waste Treatment and Immobilization Plant Federal Project Director
- Manage the Tank Farms in a safe and compliant manner
- Continue to retrieve single-shell tank waste at a rate to maintain operator proficiency and support a delayed Waste Treatment and Immobilization Plant start-up date
- Continue evaluation of supplemental treatment alternatives for LAW.

FY 2009 Accomplishments

- Continue design and construction of the Waste Treatment and Immobilization Plant
- Provide technical and managerial support to the Waste Treatment and Immobilization Plant Federal Project Director
- Manage the Tank Farms in a safe and compliant manner
- Continue to retrieve single-shell tank waste at a rate to maintain operator proficiency and support a delayed Waste Treatment and Immobilization Plant start-up date
- Complete the Tank Closure and Waste Management Environmental Impact Statement
- Support supplemental treatment of LAW.

FY 2010 Accomplishments

- Continue design and construction of the Waste Treatment and Immobilization Plant
- Provide technical and managerial support to the Waste Treatment and Immobilization Plant Federal Project Director
- Manage the Tank Farms in a safe and compliant manner
- Continue to retrieve single-shell tank waste at a rate to maintain operator proficiency and support the delayed Waste Treatment and Immobilization Plant
- Support supplemental treatment of LAW.

FY 2011 Accomplishments

- Continue design and construction of the Waste Treatment and Immobilization Plant
- Provide technical and managerial support to the Waste Treatment and Immobilization Plant Federal Project Director
- Manage the Tank Farms in a safe and compliant manner

- Continue to retrieve single-shell tank waste at a rate to maintain operator proficiency and support a delayed Waste Treatment and Immobilization Plant start-up date
- Operate the Integrated Disposal Facility
- Initiate Tank C-200 Closure Demonstration
- Support supplemental treatment of LAW.

FY 2012 Accomplishments

- Continue design and construction of the Waste Treatment and Immobilization Plant, completing the construction of the Low-Activity Waste Facility, Analytical laboratory, and Balance of Facilities
- Provide technical and managerial support to the Waste Treatment and Immobilization Plant Federal Project Director
- Manage the Tank Farms in a safe and compliant manner
- Continue to retrieve single-shell tank waste at a rate to maintain operator proficiency and support a delayed Waste Treatment and Immobilization Plant start-up date
- Conduct Tank Farm Life Extension Projects
- Operate the Integrated Disposal Facility
- Continue Tank C-200 Closure Demonstration
- Initiate C-Farm Closure
- Initiate design of supplemental pre-treatment facility (waste feed pretreatment capability for the 200 West Low Activity Waste supplemental treatment facility)
- Support supplemental treatment of LAW.

Savannah River Site

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
1,248,020	1,355,490	1,281,361	1,400,000	1,517,706	1,457,706

Site Details

Site Overview

The Savannah River Site is a key Department of Energy (DOE) industrial complex dedicated to the reduction of risks through safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and waste. Also, the National Nuclear Security Administration program, that supports the DOE national security and non-proliferation programs, and the EM program that addresses the reduction of risks through safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and waste.

Site Description

The Savannah River Site encompasses over 310 square miles with 1,000 facilities concentrated within only 10 percent of the total land area. As cleanup activities are completed, operations will be concentrated to the site's central core area. The land surrounding the central core area provides a protective buffer. All EM facilities and inactive waste units are being deactivated, decommissioned, and remediated. Facility decommissioning alternatives include demolition and in-situ disposal.

The Savannah River Site is divided into 18 site areas, according to the types of mission activities that occurred at each. All nuclear material will be stabilized and safely dispositioned. Groundwater will be addressed such that the Federal Safe Drinking Water Act maximum contaminant levels or alternate concentration levels will be achieved over time through source control, natural attenuation, and active cleanup (as needed).

Site Cleanup Strategy/Scope of Cleanup

Work scope is planned and executed at the Savannah River Site by treating each discrete cleanup program scope of work, as well as the total scope of work, as a project. Specifically, the scope, end state, cost, and schedule for each project is clearly defined and managed consistent with Departmental guidance for project management. The EM completion strategy provides a comprehensive risk-based approach to the EM cleanup project by disposition of radioactive liquid waste through vitrification of the high activity component at Defense Waste Processing Facility and disposal of the low-activity component through Saltstone; use existing Savannah River Site facilities to receive, store, and disposition aluminum-clad nuclear fuel; disposition excess plutonium using Savannah River Site facilities; disposition legacy transuranic waste to the Waste Isolation Pilot Plant; decommission all EM facilities not required for continuing missions; remediate all waste sites; and use existing Savannah River Site waste treatment, storage, and disposal capabilities to efficiently and safely complete the EM cleanup project and support other Savannah River Site tenants.

The Savannah River Site cleanup strategy has three primary objectives: (1) Eliminate or minimize nuclear materials, spent nuclear fuel, and waste through safe stabilization, treatment, and/or disposition; (2) reduce the costs of continuing operations and surveillance and maintenance; and (3) decommission all EM-owned facilities, except those identified for transfer to another Program Secretarial Office, and remediate groundwater and contaminated soils, using an Area completion approach.

Site Completion (End State)

Due to the revised Salt Waste Processing Facility schedule as well as extended Defense Waste Processing Facility operations caused by revised sludge volume estimates, end state for site completion has been extended from 2025 to 2031. By the end of FY 2031, subject to baseline validation and approval, inactive waste units will be remediated by employing an area-by-area completion strategy and any contaminated groundwater will be remediated, undergoing remediation, or monitored to ensure protection of human health and the environment. Units at which residual materials are left in place will be under institutional controls, comprised of access restrictions, inspections, maintenance, and monitoring. Concurrently with area completion, all EM facilities will be decommissioned.

Regulatory Framework

The Savannah River Site works closely with various oversight groups, environmental regulators, and stakeholders in accomplishing its work. The collaborative relationships, with these external parties and the cooperative nature of these relationships contribute to many cleanup accomplishments.

Savannah River and its contractors will continue to work proactively with the South Carolina Department of Health and Environmental Control, the Environmental Protection Agency, the Nuclear Regulatory Commission, the Defense Nuclear Facilities Safety Board, oversight groups, and stakeholders to facilitate the accomplishment of the environmental cleanup and risk reduction objectives at Savannah River Site. There are several key agreements that facilitate the cleanup of the Site. Subsequent to State initiated enforcement action, several key settlement agreements were entered into with the State of South Carolina, including Settlement Agreements 87-52-SW, 91-51-SW, 85-70-SW, 87-27-SW, as well as a Consent Decree through Federal Court. These enforceable agreements required Savannah River Site to submit closure plans and groundwater corrective action plans for several major land disposal units that operated after the effective date of the Resource Conservation and Recovery Act. The State of South Carolina is an Environmental Protection Agency authorized state allowing it to administer the Resource Conservation and Recovery Act for the Environmental Protection Agency. The State of South Carolina requires Savannah River Site to conduct these corrective actions through a Resource Conservation and Recovery Act Permit and that other Savannah River Site waste sites, i.e., Solid Waste Management Units and Areas of Concern, be investigated and remedial actions taken as needed.

In addition, the State of South Carolina has formally expressed its position that compliance with the requirements of the Federal Facility Agreement, including commitments and schedules within, constitutes compliance with the requirements of Resource Conservation and Recovery Act and the 1984 Hazardous and Solid Waste Amendments of the Solid Waste Disposal Act, as

embodied in the Resource Conservation and Recovery Act Permit for corrective action of Solid Waste Management Units and Areas of Concern. Further, the State of South Carolina views Resource Conservation and Recovery Act Permit requirements for corrective action of Solid Waste Management Units and Areas of Concern, as always applicable and enforceable under the terms of the permit, but these are fulfilled by implementing the terms of the Federal Facility Agreement. Thus, the permit contains standing provisions requiring cleanup of Solid Waste Management Units / Areas of Concern. Under the Federal Facility Agreement, remedial decisions are reached for these units and the State of South Carolina subsequently modifies the permit consistent with the remedial action decision. In this manner, the state maintains enforcement authority but stands ready to implement the decisions reached under the Federal Facility Agreement. In this fashion, the Federal Facility Agreement and Resource Conservation and Recovery Act work in tandem, enabling the Federal Facility Agreement remedy to be administered and enforced as a condition of the Resource Conservation and Recovery Act Permit at any time and in the event, the terms of the Federal Facility Agreement become exhausted. Significant fines/penalties (including possible the Resource Conservation and Recovery Act criminal penalties) are possible for non-compliance.

The *Federal Facility Agreement* for the Savannah River Site - In August 1993, DOE - Savannah River, Environmental Protection Agency, and the South Carolina Department of Health, and Environmental Control, referred to as "the parties," reached agreement on the cleanup of Savannah River Site and began execution of cleanup in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act integrated through the Federal Facility Agreement. The Federal Facility Agreement governs environmental remediation and the closure of selected radioactive liquid waste tanks. The major purpose of the Federal Facility Agreement is to ensure that the environmental impacts associated with past and present activities are investigated and appropriate action is taken to protect human health and the environment. Individual waste units are able to be adjusted each year. This agreement is legally enforceable (with fines and penalties possible for noncompliance) and is required under Federal Regulation in that the Savannah River Site is listed on the Environmental Protection Agency National Priorities List.

The Savannah River Site Area Completion Strategy incorporates all of the known or potential sites of contaminant releases to the environment – operable units, site evaluation areas, and remnants of decommissioned facilities requiring further evaluation – into a single investigation and cleanup assessment. Any needed remedial actions may be performed early or may be done in one mobilization. Combining the investigations, assessments, and cleanup actions for several units saves time, reduces documentation, and lowers costs, and facilitates the EM completion of entire industrial areas, each contributing to the stepwise EM completion of the Savannah River Site.

A key compliance milestone for the next couple of years is listed below:

- Issue M-Area operable unit record of decision by – 3/31/2009

The Savannah River Site Treatment Plan - The Site Treatment Plan is a document that requires radioactive mixed waste to be treated to hazardous waste standards within an agreed-upon schedule. Radioactive liquid waste is an example of a radioactive mixed waste. The Site

Treatment Plan is enforceable by a consent order signed by the Department of Health and Environmental Control and Savannah River. The Site Treatment Plan lays out the approaches and schedule milestones for treating and managing radioactive mixed wastes that are stored or generated at Savannah River Site. These treatment approaches and milestones are determined to ensure Savannah River Site compliance with Resource Conservation Recovery Act land disposal restriction requirements. The Site Treatment Plan is required by the Federal Facility Compliance Act and is updated annually. This annual update includes an inventory of all mixed waste, status of all treatment residuals, implementation schedule, and projections of new mixed waste streams at Savannah River Site or those to be received from organizations external to Savannah River Site.

A key compliance milestone for the next couple of years is listed below:

- Remove remote-handled transuranic waste from Savannah River Site by – 1/1/2009

Federal Facility Compliance Act- This agreement defines requirements for preparing and submitting a site treatment plan for mixed low-level waste (radioactive waste mixed with hazardous chemicals) to the South Carolina Department of Health and Environmental Control, including options and schedules for treatment of identified waste.

Section 3116 of the Ronald W. Reagan National Defense Authorization Act - The Federal Facility Agreement defines the enforceable commitments for completion of closure of non-compliant tanks at Savannah River Site. Originally all tanks were to be closed in accordance with the waste incidental to reprocessing methodology in DOE Order 435.1. In October 2004, Congress passed the Ronald W. Reagan National Defense Authorization Act of FY 2005 (Public Law 108-375, 2004). Section 3116 of the National Defense Authorization Act allows the Secretary of Energy, in consultation with the Nuclear Regulatory Commission, to determine when waste from reprocessing of spent nuclear fuel is appropriate for onsite disposition as other than high-level waste when certain criteria are met. In order to meet criteria established in the statue, DOE must remove waste to the maximum extent practical and submit waste determinations to Nuclear Regulatory Commission for review. In addition to the Nuclear Regulatory Commission consultation, the Savannah River Site must obtain South Carolina Department of Health and Environmental Control and Environmental Protection Agency Region 4 approval on closure documentation required by the Industrial Waste Water Permit issued by the South Carolina Department of Health and Environmental Control prior to initiating tank closure activities.

Some of the key compliance milestones are listed below:

- Begin operations of the Salt Waste Processing Facility by – 9/30/2011
- Close 24 non-compliant tanks by - 10/1/2022
- Maintain Defense Waste Processing Facility canister production sufficient to remove all High-Level Waste from tanks by – 1/1/2028

Nuclear Cooperation Agreements – Savannah River Site has received and expects to receive additional Foreign Research Reactor Spent Nuclear Fuel through FY 2019 that has restrictions regarding the use and/or recycle of the fuel. Generally these restrictions do not allow for the recycled fuel to be used for the production of, or use in nuclear weapons. These restrictions are

often referred to as “Foreign Obligations”. These obligations originate from "agreements for cooperation" which are negotiated by the State Department with foreign countries that are recipients of US-origin research reactor fuel or for which such fuel passes through their boundaries. Certain of these agreements specify that the obligated material or substitute material must be placed under International Atomic Energy Agency safeguards. These agreements are not expected to affect the disposition of the Foreign Research Reactor spent nuclear fuel.

Critical Site Uncertainties and Assumptions

Program-specific uncertainties that could have significant impacts to individual projects and may impact the overall cleanup scope, schedule, and costs have been identified:

- Loss of any major process facility for an extended period of time would impact cleanup and other Savannah River Site missions;
- Delays in the availability of Yucca Mountain would delay site completion and increase storage costs for high-level waste and spent nuclear fuel;
- Controlling sources of soil/groundwater contamination through sustained area-by-area cleanup/completion is critical to aquifer/stream protection and risk reduction and will allow for passive and natural groundwater remedies that are critical to reducing the cost of long term stewardship;
- Uncertainties within the radioactive liquid waste disposition program (i.e., the waste determination process under section 3116 of the FY 2005 National Defense Authorization Act) could delay tank closures;
- Uncertainties in the consolidation and disposition strategy for excess plutonium stored at sites by EM;
- Uncertainty in sludge inventory and characteristics in tank waste that could drive disposition costs and schedules in an adverse fashion;
- The Salt Waste Processing Facility and the 3013 construction project baselines (Critical Decision-2) have not yet been approved.

Interdependencies

Execution of the EM cleanup project at Savannah River Site involves numerous interfaces with other organizations both on and offsite. Since EM is the major Savannah River Site program, it provides landlord services to other organizations, primarily the National Nuclear Security Administration. Major interfaces are described below for both on and offsite entities. The EM role as landlord will end with the completion of work scope by the end of FY 2031, at which time landlord and interface responsibilities will transition to the National Nuclear Security Administration.

National Nuclear Security Administration – Defense Programs – Tritium

The National Nuclear Security Administration-Defense Programs mission includes maintaining technical expertise in tritium operations, production, and engineering to support the national nuclear weapons stockpile. The tritium program generates both liquid and solid low-level waste that is disposed by EM at Savannah River Site. This program does not have a forecast end date. The site Program Execution Plan assumes that no National Nuclear Security Administration-Defense Programs facilities will be transitioned to EM for decommissioning and soil and groundwater remediation.

National Nuclear Security Administration – Nuclear Nonproliferation – Plutonium Disposition
Savannah River Site has been selected as the location for the construction and operation of facilities to dispose of approximately 34 metric tons of surplus weapons-usable plutonium.

Three new facilities will be required to accomplish this plutonium disposition mission. One facility is the Pit Disassembly and Conversion Facility. The nuclear weapons are disassembled at the Pantex Plant in Texas. Plutonium pits from inside the nuclear weapons that are no longer needed for defense will be sent to the Savannah River Site's Pit Disassembly and Conversion Facility, which will disassemble the plutonium component of a nuclear weapon, and convert the resulting plutonium metal to a declassified oxide form suitable for the second facility, the Mixed Oxide Fuel Fabrication Facility. The Mixed Oxide Fuel Fabrication Facility will blend depleted uranium dioxide and plutonium dioxide, form the mixture into pellets, and load the pellets into fuel rods for use in commercial nuclear power plants. Approximately 34 metric tons of surplus plutonium will be used to fabricate this fuel.

The Mixed Oxide Fuel Fabrication Facility will be owned by DOE but designed, built, licensed, and operated by a private consortium (Duke, Cogema, and Stone & Webster companies). The facility will be licensed by the Nuclear Regulatory Commission and operated so that the facility will be available for inspection by the International Atomic Energy Agency. The third facility is the Waste Solidification Building that will treat the waste streams from both Pit Disassembly and Conversion Facility and Mixed Oxide Fuel Fabrication Facility.

The EM Program assumes that National Nuclear Security Administration will decommission their own facilities and will be responsible for soil and groundwater remediation and any new waste generated.

National Nuclear Security Administration – Nuclear Nonproliferation Program – Enriched Uranium Blend Down
The United States has declared a total of 174.3 metric tons of highly enriched uranium surplus to future weapons needs. One path for making this material unsuitable for nuclear weapons is through a dilution process, which makes this material suitable for productive use in commercial reactors. Of the 174.3 metric tons of highly enriched uranium, approximately 85 percent will be converted to commercial or research reactor fuel. The remaining highly enriched uranium will be disposed of as waste. Through the end of FY 2006, Savannah River Site has processed and blended approximately 14 metric tons of highly enriched uranium fuel and other material to low enriched uranium for shipment to a Tennessee Valley Authority vendor for processing and fabrication into commercial reactor fuel assemblies. Three more metric tons will be processed, blended and shipped in Fiscal Year 2007. In addition, through the end of Fiscal Year 2006, Savannah River Site shipped approximately 5 metric tons of highly enriched uranium aluminum alloy to a Tennessee Valley Authority vendor for processing and fabrication into commercial reactor fuel assemblies. The extended operation of the H-Canyon through Fiscal Year 2019 in accordance with the Enriched Uranium Disposition Project will disposition by processing blend down an additional 26 metric tons for transfer to the Tennessee Valley Authority.

Savannah River National Laboratory

The Savannah River National Laboratory is a DOE multi-program applied science laboratory. The Savannah River National Laboratory provides the expertise and the technology to help all DOE sites address the challenge of cleaning up of the environmental legacy from the Nation's nuclear weapons program and support the Energy initiatives of DOE. Savannah River National Laboratory also supports national, Homeland Security, and Energy Security objectives of our Nation. To support all these missions, Savannah River National Laboratory conducts broad-based, multidisciplinary programs of scientific research and applied engineering directed toward applications for new and improved techniques, materials, systems, and capabilities to meet DOE and the Nation's needs. The Savannah River National Laboratory is indirectly funded by EM and the National Nuclear Security Administration. EM indirect funding was $49,207,000 in FY 2006, and is projected to be $43,300,000 in FY 2007, and is estimated to be $39,300,000 in FY 2008.

Office of Science – Savannah River Ecology Laboratory

The Savannah River Ecology Laboratory provides an independent evaluation of the ecological effects of Savannah River Site operations through a program of ecological research, education and outreach. This involves both basic and applied research with emphasis in three critical areas: 1) ecological risks and effects; 2) remediation and restoration; and 3) environmental characterization. This research supports Savannah River Site cleanup, stewardship, end state, and potential new missions. The University of Georgia manages the Savannah River Ecology Laboratory.

United States Forest Service – Savannah River Forest Station

The Savannah River Forest Station, implements a comprehensive program designed to sustain the health, productivity, and diversity of Savannah River Site natural resources that will meet regulatory requirements, protect site personnel and facilities, and address site-related natural resource issues that affect off-site stakeholders. Key elements include wildland fire protection, secondary road maintenance, site boundary management, soil and erosion control, forest products management, natural resources research, as well as wildlife and habitat management. The United States Forest Service also provides direct support to a number of site environmental cleanup projects, including maintaining cover systems placed on closed land disposal waste units and operating a groundwater corrective action/irrigation system required under the Resource Conservation and Recovery Act Permit. The United States Forest Service – Savannah River is an independent unit of the United States Forest Service.

Transuranic Waste Disposal

Transuranic waste resulting from nuclear material stabilization activities has been stored at Savannah River Site for years. Transuranic waste poses a significant risk due to waste characterization uncertainties and the potential for build-up of hazardous gases that could lead to an environmental release of contamination. Transuranic waste is being characterized and processed to ship to the Waste Isolation Pilot Plant. Shipments of transuranic waste drums began in FY 2001. The Waste Isolation Pilot Plant provides personnel at Savannah River Site who package material for shipment and provides certain equipment required for transuranic waste processing. Elimination of the transuranic waste inventory at Savannah River Site depends on the continued operation and acceptance of transuranic waste at the Waste Isolation Pilot Plant.

Hazardous and Mixed Waste Disposal

Hazardous waste is defined by the Environmental Protection Agency and requires management in accordance with specific regulatory mandates. Mixed low-level waste is a low-level radioactive waste, which also contains hazardous constituents, and is managed in accordance with DOE Order 435.1, Radioactive Waste Management, and hazardous waste regulations. The solid waste program receives, stores, and arranges offsite treatment or disposal for Savannah River Site - generated hazardous/mixed wastes. Examples of hazardous/mixed waste include materials such as lead, solvents, paints, and pesticides. N Area contains some of the interim hazardous waste storage facilities for the site, which involves three primary operations: receipt of waste from Savannah River Site generators, interim storage, and shipment of the waste for treatment and disposal at a location other than Savannah River Site. Continued operation and cleanup of the Savannah River Site depends on the ability to ship hazardous waste to offsite vendors. Although the Nevada Test Site and the Hanford Site may be available in the future, there are presently no federal disposal facilities for treated, listed mixed waste.

Low-Level Waste Disposal

Low-level waste is radioactive waste that is not classified as radioactive liquid waste, transuranic waste, spent nuclear fuel or byproduct material and does not contain any hazardous waste. Typically, low-level waste at Savannah River Site is radioactively contaminated materials such as job-control waste, small and large equipment, plastic sheeting, gloves, soil, and suspect contaminated materials used within radioactive material management areas that cannot be proven to be free of radioactive contamination. Some low-level wastes generated at Savannah River Site are disposed of at other DOE locations (e.g., Nevada Test Site or Hanford) or commercial sites. Cleanup of the Savannah River Site depends on continued shipment of these materials to other sites for disposal.

Naval Reactor Waste

Classified waste, such as reactor components, is routinely received from Naval Reactors. These components are disposed of in E Area.

Tennessee Valley Authority

As previously mentioned, excess highly enriched uranium at Savannah River Site is being dispositioned by both dilution and shipment to the Tennessee Valley Authority vendors, Areva, and by direct shipment to Nuclear Fuel Services, respectively. Areva also provides natural uranium for the blending. Savannah River Site depends on Tennessee Valley Authority to provide and accept these materials to enable deinventory of H, L, and K Areas.

Idaho National Laboratory

Deinventory of H Canyon is dependent on transferring excess neptunium-237 to the Idaho National Laboratory for use in producing plutonium-238 (shipments are in progress). Additionally, spent nuclear fuel (containing enriched uranium) is planned to be exchanged between Savannah River Site and Idaho National Laboratory. The aluminum based spent nuclear fuel (at Savannah River Site plus any received from Idaho National Laboratory) is planned to be stored in L-Basin awaiting shipment to the H-Canyon for processing and blend down to low enriched uranium in accordance with the Enriched Uranium Disposition Project (as previously discussed). The non-aluminum based spent nuclear fuel at Savannah River Site is planned to be shipped to Idaho National Laboratory to be consolidated with the non-aluminum based spent nuclear fuel already there.

Enriched Uranium Receipts from National Nuclear Security Administration Sites (Y-12 Oak Ridge, Los Alamos, Lawrence Livermore and others)
K-Area will accept enriched uranium materials for lag storage and subsequent shipment to the H-Canyon and HB-Line for processing and blend down to low enriched uranium in accordance with the Enriched Uranium Disposition Project (as previously discussed).

Oak Ridge Toxic Substances Control Act Incinerator
Savannah River Site sends waste to the Oak Ridge Toxic Substances Control Act Incinerator for thermal treatment. Although primarily available for treatment of radioactive polychlorinated biphenyl waste, the incinerator is also permitted for mixed low-level waste. Most recent shipments include F Canyon PUREX solvent.

Hanford, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory Plutonium Receipts
DOE still has significant excess inventories of plutonium at three sites other than Savannah River Site: Hanford, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory. The 2002 Performance Management Plan proposed consolidation of plutonium from across the DOE Complex at Savannah River Site to await disposition. At this time, DOE has not made a decision to consolidate any additional EM-owned plutonium at Savannah River Site; however, the Savannah River Site is prepared to support receipt of Fast Flux Test Facility material and additional DOE-STD-3013 containers from Hanford, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory, should a consolidation decision be made.

Savannah River National Laboratory Support to Hanford Waste Treatment Plant
Savannah River National Laboratory has provided significant support to the Hanford Waste Treatment Plant Research and Technology Program. Primary areas of support have been in the areas of waste characterization, process and design confirmation, obtaining basic data to support design, and obtaining regulatory data to support environmental permitting and waste form qualification. Savannah River National Laboratory began supporting the Waste Treatment Plant in FY 2001 and is anticipated to continue support during design and construction of the Waste Treatment Plant.

Spent Nuclear Fuel
Savannah River Site receives, stores, and will ultimately disposition spent nuclear fuel from both domestic and foreign research reactors. This program requires extensive interface with reactor owners, and other DOE programs (e.g., National Nuclear Security Administration, Office of Civilian Radioactive Waste Management), other DOE field offices, and the Nuclear Regulatory Commission. Also approval from the Nuclear Regulatory Commission and the Department of Transportation to use the approved transportation corridor routes will have to be reaffirmed. Savannah River will be working with Idaho National Laboratory to plan the shipping schedule. Each shipment will have to be communicated to the Nuclear Regulatory Commission, the Department of Transportation and other Federal, State, and Local agencies along the route.

Plutonium Production Reactor Agreement – The Savannah River Site is party to an agreement with Russia to ensure that Savannah River Site Reactors are not used in the production of plutonium. Russian representatives visit the Savannah River Site generally once each year to

inspect various seals at various reactor areas to ensure the seals are still intact. The Agreement is administered through the State Department.

International Atomic Energy Agency – The Department of Energy has placed approximately two metric tons of surplus plutonium under control of the International Atomic Energy Agency. The International Atomic Energy Agency inspects the surplus plutonium generally once per month either via an on-site inspection or remotely and also performs an annual inspection on-site. The surplus plutonium is awaiting disposition (either as feed for mixed oxide fuel [pending construction], dissolution in the H-Canyon or vitrification via the Plutonium Vitrification Facility [pending construction]).

Contract Synopsis

The majority of cleanup scope falls within the management and operating contract (currently Washington Savannah River Company) which expired December 31, 2006. Negotiations are ongoing to extend the management and operating contract with Washington Savannah River for up to eighteen months. Savannah River Site is employing new strategies to achieve Departmental missions. The current approved acquisition strategy is to award two separate contracts. One contract will be for the management and operations of the Site and the other will be for the tank liquid waste project. The draft management and operating contract Request for Proposals has been made available for public comment. The draft tank liquid waste Request for Proposal is currently under internal Departmental review.

Cleanup Benefits

Savannah River Site is implementing a cleanup strategy that focuses on using a project approach to accomplish the EM cleanup. As of September 2006, 100 percent of the Savannah River Site's nuclear materials that were identified in the Defense Nuclear Facilities Safety Board Recommendation 94-1/2000-1 have been stabilized (54 milestones representing 143,518 items). Additionally, as of June 2006, Savannah River Site has received and stored the contents of 372 spent nuclear fuel casks (foreign and domestic), while at the same time completing deinventory of the Receiving Basin for Offsite Fuel. More than 2,132 vitrified waste canisters have been produced in conjunction with the removal of radioactive liquid waste from the storage tanks. Technical improvements have also permitted an increase in waste loading per canister. Shipments of transuranic waste to the Waste Isolation Pilot Plant have been increased, and other wastes are being sent offsite to disposition facilities. In the soils and groundwater project, 334 of the 515 waste sites have been completed or have Records of Decision in place. Over 200 facilities have been decommissioned. Relationships between Savannah River Site and its regulators have focused on additional completions through the deployment of new technologies and streamlining the regulatory documentation process.

Specific program benefits realized from the EM cleanup project are significant. For example, the non-compliant radioactive liquid waste tanks are the highest environmental and human health risks in the State of South Carolina according to the South Carolina Department of Health and Environmental Control. Most of the tanks with closure activities in FY 2008 have documented leaks. All leaks from the non-compliant tanks (tanks that do not meet Resource Conservation and Recovery Act standard for full secondary containment) have been to the annulus only with the exception of one Tank. Tank 16 leaked and overflowed the secondary containment in the annulus and resulted in about one hundred gallons spilled to the environment. This tank has been

completely emptied but not closed and the annulus contains leaked high-level waste that is now solid. The leaks in these non-compliant tanks are managed in several ways and most are not active because material in the tanks is currently in solid form or levels in the tanks have been reduced below the leak sites. Removal of radioactive liquid waste will be completed by 2026. Upon completion, the facilities that supported these projects must be deactivated and decommissioned. In addition, the physical locations of the facilities must be closed under the Comprehensive Environmental Response, Compensation and Liability Act, or other governing permits and laws. These decontamination and decommissioning and environmental closure activities constitute the additional work scope from 2026 to 2031.The Federal Facility Agreement commitment is to close all non-compliant tanks by FY 2022. H Canyon and HB Line will remain as the only operational chemical separations facilities after FY 2006. Savannah River Site has consolidated spent nuclear fuel from three storage basins to a single storage basin, all Savannah River Site 94-1/2001 commitments have been met, all Mk-16/Mk-22 fuel (approximately 16 metric tons) have been dissolved and are nearing disposition (at the end of FY 2007). Legacy transuranic waste is being shipped to the Waste Isolation Pilot Plant nearly three decades ahead of the original baseline, and the soil and groundwater project will be completed by FY 2031.

Funding is provided to the South Carolina Department of Health and Environmental Control for oversight and implementation of the Federal Facility Agreement and the Site Treatment Plan. Payments-in-Lieu-of-Taxes are provided for Aiken, Allendale, and Barnwell counties. Funding is also provided for the operation and maintenance of a public reading room for Savannah River Site documents to support stakeholder involvement.

Five Year Funding Profile by Major Project[12]

(dollars in thousands)

Project	TPC	TEC[13]	Prior Year	FY2008	FY2009	FY2010	FY2011	FY2012	Outyear
Salt Waste Processing Facility	680,000	559,600	183,986	141,001	131,000	103,613	0	0	0

Salt Waste Processing Facility

This project will construct a facility to treat large quantities of waste from reprocessing and other liquids generated by nuclear materials production operations at the Savannah River Site. Approximately 37,000,000 gallons of this waste is being stored on an interim basis in 49 underground waste storage tanks. Of the 37,000,000 gallons approximately 3,000,000 gallons are sludge waste and approximately 34,000,000 gallons are salt waste, consisting of 16,500,000 gallons of solid saltcake and 17,500,000 gallons of salt supernate. Waste volumes are subject to change because the supernate is evaporated to reduce its volume, sludge is being removed for processing and vitrification, and new waste is being transferred to the underground storage tanks. In addition, waste required for saltcake removal from the tanks and processing is presently expected to result in approximately 84 million gallons of salt and supernate solution to be

[12] For the purpose of this FYP, "major projects" are defined as any projects with a construction project data sheet that exceeds $100 million in total project cost.

[13] Includes design and construction costs only. From page 339 of FY2008 Congressional Budget

processed. Continued, long-term storage of this liquid waste in underground storage tanks poses an environmental risk.

Project	TPC	TEC[14]	Prior Year	FY2008	FY2009	FY2010	FY2011	FY2012	Outyears
Container Surveillance and Storage Capability Project	142,894	128,161	87,561	31,000	9,600	0	0	0	0

Container Surveillance and Storage Capability Project
This project will provide long-term capability for surveillance of 3013 containers in accordance with the DOE-STD-3013, including the ability to re-stabilize and re-package any off-normal materials detected during surveillance. The storage and non-destructive surveillance capability will be met via installation of the infrastructure necessary for K-Area to routinely unload shipping packages and handle the 3013 containers. Additionally, the project will install the capability to perform multiple non-intrusive inspections of the 3013 storage containers and their contents to detect conditions adverse to safe long-term storage, such as excessive pressurization, corrosion, and oxidation.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008 to FY 2012, the Savannah River Site's target-level funding will help the Department make progress on all sixteen corporate performance measures. In contributing to Environmental Management's performance measures, the Savannah River Site will: package 8,544 metric tons of depleted and natural uranium in a form suitable for disposition, ship 6,570 cubic meters transuranic waste for disposal, dispose of 15,081 cubic meters of low-level and 88,230 cubic meters of mixed low-level waste, reduce 4,900 k/gal radioactive liquid waste inventory, close seven liquid waste tanks, and prepare for disposal of 930 canisters.

FY 2008 Accomplishments

- Produce 186 canisters of vitrified high level waste through the Defense Waste Processing Facility.
- Continue Bulk Waste Removal and Tank Closure and Salt activities.
- Initiate construction of Salt Waste Processing Facility.
- Operate Actinide Removal Process, Modular Cesium Unit, and Waste Transfer Line.
- Continue Saltstone operations.
- Environmental Management plutonium consolidation program (Savannah River Site will support consolidation activities once Department of Energy approves the program).
- K-Area Container Surveillance and Storage Capability project - complete preliminary design and complete decontamination and decommissioning of interferences.
- Operation of K-Area, L-Area, and H-Canyon to disposition NNSA nuclear materials and spent nuclear fuel.
- Dispose of newly generated low-level, hazardous and mixed waste.
- Shipment of low-activity transuranic waste.

[14] Includes design and construction costs only. From page 345 of FY2008 Congressional Budget

- If and when a decision is made to consolidate plutonium, support receipt and storage of Fast Flux Test Facility green fuel and additional DOE-STD-3013 containers from Hanford.
- Continue construction on the 3013 Container Surveillance and Storage Capability Project.
- Initiate Plutonium Disposition Project preliminary design.
- Continue preparation for the spent nuclear fuel exchange with Idaho National Laboratory.
- Support International Atomic Energy Agency inspections of materials in storage.
- Meet site integrated schedule commitments associated with the Design Basis Threat requirements.
- Submit Phase II (b) Groundwater Corrective Action Plan for F/H.
- Continue RCRA corrective actions.
- Continue soil and groundwater remediation.

FY 2009 Accomplishments

- Operation of K-Area, L-Area, and H-Canyon to disposition NNSA nuclear materials and spent nuclear fuel.
- Maintain H-Canyon/HB-Line in a surveillance and maintenance mode.
- Continue to support EM plutonium consolidation decisions.
- K-Area Container Surveillance and Storage Capability project - complete preliminary design and continue construction
- K-Area Plutonium Disposition project - continue preliminary design and begin D&D of interferences (e.g., fuel hangers, piping, pumps pedestals…etc.)
- Support International Atomic Energy Agency inspections of materials in storage.
- Produce 186 canisters of vitrified high level waste.
- Continue Bulk Waste Removal and Tank Closure and Salt activities.
- Continue construction of Salt Waste Processing Facility.
- Operate Actinide Removal Process, Modular Cesium Unit, and Waste Transfer Line.
- Continue Saltstone operations.
- Continue RCRA corrective actions.
- Continue soil and groundwater remediation.
- Dispose of newly generate low-level, hazardous and mixed waste.
- Begin activities for disposition of boxed transuranic waste.

FY 2010 Accomplishments

- Operation of K-Area, L-Area, and H-Canyon to disposition NNSA nuclear materials and spent nuclear fuel.
- Maintain H-Canyon/HB-Line in a surveillance and maintenance mode.
- Continue to support EM plutonium consolidation decisions
- K-Area Container Surveillance and Storage Capability project - complete construction
- K-Area Plutonium Disposition project - complete preliminary design and decontamination and decommissioning of interferences, and begin construction.
- L-Basin provides safe receipt, handling and storage of EM legacy and non-legacy spent fuel inventories including Foreign Research Reactor/Domestic Research Reactor fuel at 21 casks per quarter.

- L-Area prepare for spent nuclear fuel exchange with Idaho National Laboratory
- Support International Atomic Energy Agency inspections of materials in storage.
- Continue F&H Tank Farm operations and space management.
- Produce 186 canisters of vitrified high level waste.
- Continue Bulk Waste Removal and Tank Closure and Salt activities.
- Continue construction of Salt Waste Processing Facility.
- Operate Actinide Removal Process, Modular Cesium Unit, and Waste Transfer Line.
- Continue Saltstone operations.
- Continue RCRA corrective actions.
- Continue soil and groundwater remediation.
- Dispose of newly generated low-level, hazardous and mixed waste.
- Continue activities for disposition of legacy boxed transuranic waste.

FY 2011 Accomplishments

- Operation of K-Area, L-Area, and H-Canyon to disposition NNSA nuclear materials and spent nuclear fuel.
- Maintain H-Canyon/HB-Line in a surveillance and maintenance mode.
- Continue to support EM plutonium consolidation decisions.
- K-Area Container Surveillance and Storage Capability project - complete readiness reviews and start operations
- K-Area Plutonium Disposition project - continue construction.
- L-Basin provides safe receipt, handling and storage of EM legacy and non-legacy spent fuel inventories including Foreign Research Reactor/Domestic Research Reactor fuel at 21 casks per quarter.
- Begin spent nuclear fuel exchange with Idaho National Laboratory
- Support International Atomic Energy Agency inspections of materials in storage.
- Continue F&H Tank Farm operations and space management.
- Produce 230 canisters of vitrified high level waste.
- Continue Bulk Waste Removal and Tank Closure and Salt activities.
- Operate Waste Transfer Line and complete Operations Readiness Review and initiate operations of the Salt Waste Processing Facility.
- Continue Saltstone operations.
- Continue RCRA corrective actions.
- Continue soil and groundwater remediation.
- Dispose of newly generated low-level hazardous and mixed waste.
- Continue activities for disposition of legacy boxed transuranic waste.

FY 2012 Accomplishments

- Operation of K-Area, L-Area, and H-Canyon to disposition NNSA nuclear materials and spent nuclear fuel.
- Maintain H-Canyon/HB-Line in a surveillance and maintenance mode.
- Continue to support EM plutonium consolidation decisions.
- K-Area Plutonium Disposition project - complete construction and begin operational readiness reviews.

- L-Basin provides safe receipt, handling and storage of EM legacy and non-legacy spent fuel inventories including Foreign Research Reactor/Domestic Research Reactor fuel at 21 casks per quarter.
- Continue spent nuclear fuel exchange with Idaho National Laboratory.
- Support International Atomic Energy Agency inspections of materials in storage.
- Continue F&H Tank Farm operations and space management.
- Produce 230 canisters of vitrified high level waste.
- Continue Bulk Waste Removal and Tank Closure and Salt activities.
- Operate Waste Transfer Line and Salt Waste Processing Facility.
- Continue Saltstone operations.
- Continue RCRA corrective actions.
- Continue soil and groundwater remediation.
- Dispose of newly generated low level, hazardous and mixed waste.
- Continue activities for disposition of legacy boxed transuranic waste.

NNSA Sites

Lawrence Livermore National Laboratory

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
11,580	8,680	0	0	0	0

Site Details

Site Overview

Lawrence Livermore National Laboratory is a National Nuclear Security Administration multi-disciplinary research and development center focusing on weapons development and stewardship and homeland security. The Environmental Management program includes the completion of disposition of legacy waste by the end of calendar year 2005; transfer of the Newly Generated Waste Program to National Nuclear Security Administration in FY 2006; completion of the Lawrence Livermore National Laboratory Main Site remedial activity build-out in FY 2006 and transition to long-term stewardship in FY 2007; and completion of the Lawrence Livermore National Laboratory Site 300 remedial activity build-out in FY 2008 and transition to long-term stewardship in FY 2009. Starting in FY 2007, the National Nuclear Security Administration will be responsible for long-term stewardship for the Lawrence Livermore National Laboratory Main Site.

The only Environmental Management program remaining at Lawrence Livermore National Laboratory is the completion of the Site 300 Environmental Restoration Project. In FY 2008 the cleanup activities at Site 300 consist of the build-out of treatment systems and implementation of all other selected remedial actions associated with the completion of the Environmental Management program. Starting in FY 2009, the National Nuclear Security Administration will be responsible for Long-Term Stewardship of the Lawrence Livermore National Laboratory Site 300.

Site Description

Lawrence Livermore National Laboratory Main Site

Lawrence Livermore National Laboratory Main Site is an 800-acre highly developed area of industrial facilities, laboratories, and office buildings in the eastern part of Alameda County, adjacent to Livermore, California. The site does both nuclear and non-nuclear research and development. The surrounding area is a combination of suburban development and rural land usage. There is soil and groundwater contamination on-site and limited groundwater contamination off-site.

Lawrence Livermore National Laboratory Site 300

Site 300 is an 8,000-acre site located about 15 miles east of Livermore, California with limited development primarily used for explosive hydrodynamic testing and analysis of weapons components. The surrounding area is sparsely populated rural agricultural. There is soil and groundwater contamination on-site and limited groundwater contamination off-site.

Site Cleanup Strategy/Scope of Cleanup

The cleanup strategy is a risk-based and regulatory compliant approach that focuses first on those contaminant plumes and sources that are the greatest contributors to risk. The overall goal is to ensure that risks to the public and workers are controlled, followed by work to cleanup soil and groundwater using a risk-based methodology. Having established the risk-based prioritization for the work, a number of substantive changes to work practices that facilitate work execution were implemented.

Site Completion (End State)

At completion, all required groundwater and /or soil vapor extraction and treatment facilities will be constructed and fully operational. Groundwater monitoring and risk and hazard management will continue. Legacy waste will have been disposed offsite and the Newly Generated Waste program will be transferred to National Nuclear Security Administration. Starting in FY 2007, the National Nuclear Security Administration will be responsible for long-term stewardship for the Lawrence Livermore National Laboratory Main Site. The EM program includes completion of the Lawrence Livermore National Laboratory Main Site remedial activity build-out in FY 2006 and transition to long-term stewardship in FY 2007; and completion of the Lawrence Livermore National Laboratory Site 300 remedial activity build-out in FY 2008 and transition to Long-Term Stewardship in FY 2009.

Site 300 Remediation - Past operations at the Lawrence Livermore National Laboratory Site 300 resulted in the release and subsequent migration of contaminants into the soil and groundwater. The major contaminants are volatile organic compounds, tritium, depleted uranium, perchlorate, nitrate, and high explosive compounds. To date, the project has completed construction, installation, and operation of twenty (20) treatment systems through the end of FY 2006.

Near-Term Projects:

Legacy Waste Project - The project was initiated in FY 2003 to focus efforts on the elimination of the legacy low-level waste, mixed low-level waste, transuranic waste, and mixed transuranic waste inventory having disposition pathways at Lawrence Livermore National Laboratory. The project scope was completed in November 2005 and all legacy waste has been disposed in federal and/or commercial facilities.

Lawrence Livermore National Laboratory Main Site Completion - Past operations at the Lawrence Livermore National Laboratory Main Site resulted in the release and subsequent migration of contaminants into the soil and groundwater. The major contaminants are volatile organic compounds, primarily trichloroethylene. The project scope was completed in FY 2006.

Longer Term Projects:

Site 300 Completion - Soil and groundwater contamination will be characterized and cleanup levels for these contaminants will be codified in a Record of Decision in FY 2008. The treatment systems and monitoring network will be completed and operational by the end of FY 2008.

Regulatory Framework

The Environmental restoration activities at Lawrence Livermore National Laboratory are governed by two site-specific Comprehensive Environmental Response, Compensation and Liability Act Federal Facility Agreements for the Lawrence Livermore National Laboratory Main Site and Site 300. The Livermore Site Federal Facility Agreement was signed in 1988. Subsequently, a Record of Decision was signed in 1992 mandating the cleanup of the site groundwater to Safe Drinking Water Act maximum contaminant levels.

The environmental restoration activities at Lawrence Livermore National Laboratory Site 300 are governed by a site-specific Comprehensive Environmental Response, Compensation and Liability Act, Federal Facility Agreement, signed in 1992. Subsequently, an interim Record of Decision was signed in 2001 to evaluate the practicality of applying the State "Non-degradation Policy" to the cleanup of soil and groundwater at Site 300. Based on this evaluation of cleanup efficacy, a final Record of Decision will be entered into in 2008.

Critical Site Uncertainties and Assumptions

At Site 300, the major uncertainty is the final negotiation of ground water cleanup standards. The baseline assumes that the State and Environmental Protection Agency will agree to similar ground water cleanup standards negotiated for the Lawrence Livermore National Laboratory Main Site, as well as accept monitored natural attenuation for the cleanup of several on-site plumes. These ground water cleanup standards will be codified in the Site-Wide Final Record of Decision scheduled for FY 2008.

Interdependencies

For the duration of the legacy waste project and the ongoing newly generated waste program, Lawrence Livermore National Laboratory is dependent on Government Furnished Services and Items support from the National Nuclear Security Administration Service Center for business services in developing and implementing contract mechanisms for complex-wide disposal contracts with Envirocare and contracting mechanisms to access commercial treatment, storage, and disposal facilities for treatment and disposal services. Lawrence Livermore National Laboratory does not have onsite disposal capability, and therefore relies on Waste Isolation Pilot Plant for transuranic waste disposal and Nevada Test Site for low-level waste disposal.

Contract Synopsis

The cleanup work is currently managed by the Lawrence Livermore National Laboratory Management and Operating contractor (the University of California). Both cleanup and waste disposition performance are measured in the contract.

The current contract with the University of California for operation of Lawrence Livermore National Laboratory expires September 30, 2007.

Cleanup Benefits

The funding for Lawrence Livermore National Laboratory has yielded cleanup accomplishments, including final disposition of legacy waste inventories in CY 2005 and the construction of all groundwater treatment facilities at the Lawrence Livermore National Laboratory Main Site in 2006, resulting in Environmental Management completion of these two projects.

Site 300 final ground water cleanup levels will be negotiated and included in the Site-Wide Final Record of Decision scheduled for FY 2008. All ground water and soil vapor extraction and treatment facilities will be constructed and operational by the end of FY 2008.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Site-Wide Final Record of Decision (ROD) (including negotiated final groundwater cleanup standards)
- Site-Wide Final Revised Remedial Design Work Plan
- Remove PCB-contaminated soil at the building 850 Firing Table
- Pit 7 Complex Final Interim Remedial Design

FY 2009 Accomplishments

- Not applicable.

FY 2010 Accomplishments

- Not applicable.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

Los Alamos National Laboratory

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
91,627	141,372	144,497	165,593	172,604	181,467

Site Details

Site Overview

Since its inception in 1943 as part of the Manhattan Project, the primary mission of the Los Alamos National Laboratory has been nuclear weapons research and development. In achieving this mission, the Laboratory released hazardous and radioactive materials to the environment through outfalls, stack releases, and material disposal areas. Mixed low-level waste and transuranic waste have been staged in preparation for off-site disposition. Since 1989, the Environmental Management Program at Los Alamos National Laboratory has been comprised of activities to address the characterization and cleanup of environmental media (i.e., soil and groundwater), the disposition of legacy waste, and the decontamination and decommissioning of nuclear facilities that are in the path of environmental sites in need of characterization and remediation.

Site Description

Los Alamos National Laboratory is located in north-central New Mexico, in Los Alamos County, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The site is approximately 40 square miles and is situated on the Pajarito Plateau, which consists of a series of finger-like mesas separated by deep east-west-oriented canyons cut by streams. The surrounding land is largely undeveloped and large tracts of land North, West, and South of Los Alamos National Laboratory are held by other Federal agencies. In addition, there are four Native American Pueblos that border Los Alamos National Laboratory. There are four distinct geographical areas associated with the cleanup of Los Alamos National Laboratory:

Townsite - This area includes potential release sites associated with the Manhattan Project and early Cold-War-era Los Alamos National Laboratory operations and support. These sites are found on property currently owned by private citizens and local governments.

Technical Area-21 -This area includes evaluation and implementation of corrective measures for: material disposal areas A, B, T, U and V; the former process waste lines; and a broad category of environmental sites, referred to as the Delta Prime Site Aggregate, which served the process facilities in Delta Prime West and Delta Prime East including the Tritium Systems Test Assembly decontamination and decommissioning facility. Aggregates are areas defined in the consent order and are roughly a geographic area sized between a large watershed and a very small Solid Waste Management Unit (e.g., Upper Mortandad Aggregate Area).

Technical Area-54 - Former and active waste disposal areas for the Los Alamos National Laboratory are located at Technical Area-54, and the scope of work includes decontamination and decommissioning and the cleanup of several major material disposal areas (G, H, and L).

Watersheds – Sites scheduled for investigations and cleanup that are not covered within the three areas discussed above are included within Watersheds. There are eight watersheds across the Laboratory that collectively drains all run-offs from the Los Alamos National Laboratory to the Rio Grande. There are more than 650 sites within these eight Watersheds still requiring investigations and remediation.

Site Cleanup Strategy/Scope of Cleanup

Los Alamos National Laboratory has developed a plan for cleanup of EM legacy waste sites at Los Alamos. This plan integrates the retrieval and disposition of legacy transuranic waste, decommissioning and decontamination of excess facilities at Technical Area 21 and Technical Area 54 and final remedy and site completion at 760 remaining Solid Waste Management Units by the end of 2015. The Los Alamos National Laboratory conducts assessments and corrective actions at contaminated sites to reduce unacceptable human health and ecological risks, and to reduce the inventory of legacy transuranic waste. The environmental restoration strategy is risk-based and complies with regulatory requirements to provide for future land use scenarios. The transuranic waste disposition strategy is to characterize, package, and ship waste to Waste Isolation Pilot Plant.

Site Completion (End State)

The end state for Environmental Management work is: (1) protection and monitoring of the regional aquifer, (2) cleanup of sites at Los Alamos National Laboratory and surrounding areas to levels appropriate for the intended land use, (3) disposal of all legacy transuranic waste and mixed low-level waste from Los Alamos National Laboratory, and (4) installment of all long-term surveillance and monitoring systems. The estimated end date for cleanup operations is currently 2015.

Near-Term Projects:

Material Disposal Area H – This is an inactive 0.3-acre site used historically (1960 to 1986) for the disposal of classified solid-form waste. It consists of nine 60-feet deep shafts. The largest component of the inventory, 57 percent, is metal, both radioactive and non-radioactive (24 percent depleted uranium and 33 percent other metals). The Los Alamos National Laboratory has submitted an assessment of potential alternatives for cleanup. The New Mexico Environment Department is currently evaluating these alternatives and has the responsibility for selecting a final remedy. A date for final completion will be established at that time. Delays in the remedy selection will extend this project completion beyond the original Consent Order completion date of September, 2006.

Airport Remediation –There are two on-going projects at the Los Alamos County Airport (former Technical Area 73). The Airport Landfill consists of a historic sanitary landfill covering approximately 11 acres. An asphalt cover is being constructed and will be finished by January 2007. A remedy completion report is due to New Mexico Environment Department by March 30, 2007. The Ash Pile project is for removal and disposal of ash and ash-like waste deposited

on the steep side slope of Pueblo Canyon and characterization of surrounding Solid Waste Management Units. This project will be completed by January 31, 2007.

Cañon de Valle/260 Outfall - The Cañon de Valle/260 outfall includes the characterization and remediation at 140 Solid Waste Management Units/Areas of Concern located within Technical Areas-14, -15, and -16. These Solid Waste Management Units/Areas of Concern are expected to remain as industrial sites under DOE control for the foreseeable future. Notification of final remedy for the 260 outfall was given by New Mexico Environment Department in October 2006. Construction of corrective measures is scheduled to begin in FY 2007.

Mixed Low-Level Waste - Five legacy canisters contaminated with tritium have been put into storage-for-decay and will be sent for treatment and disposal in the future once their tritium component has decayed to levels within the PermaFix waste acceptance criteria limits (5–50 yr) or when additional options become available. Other mixed low level waste including shock-sensitive items were dispositioned in FY 2005.

Longer-Term Projects:

Technical Area-21 - This project will characterize and remediate, if necessary, all Solid Waste Management Units and Areas of Concern in the vicinity of Technical Area-21, including characterization and probable capping of three material disposal areas and likely remediation of two additional material disposal areas just outside of the fence of Technical Area-21. This work has infrastructure issues associated with Los Alamos National Laboratory unoccupied buildings in Delta Prime East. This project is scheduled for FY 2007 – FY 2013 with the Consent Order completion milestone in FY 2013.

Corrective Actions - This project includes all investigations and subsequent remediation of potential release sites intermixed with active Los Alamos National Laboratory operations. The investigation and cleanup activities for these Solid Waste Management Units (numbering approximately 550) will be coordinated with managers for active mission projects to ensure no disruption of operations. This project includes Solid Waste Management Units in eight watersheds and 20 aggregates. The Consent Order requires completion of corrective action at material disposal area C by October 31, 2009, and investigation and remediation of all other Solid Waste Management Units in the aggregate by 2015.

Watershed Integration - The watershed integration work includes investigation and clean up of the Canyons, the Facility-Wide Groundwater Monitoring Project, and the Federal Facilities Compliance Agreement and Administrative Order. The integration of these work components is intended to facilitate efficiencies in the collection of environmental data, management of related data, reporting of data, and the utilization of combined data in support of site decisions, not only for ground and surface water, but for other projects such as corrective measures at material disposal areas. Work conducted for the canyons and site-wide monitoring aggregates are driven by the Consent Order, whereas the Facilities Compliance Agreement and Administrative Order requirements (pending issuance of an individual permit) are separate from the Consent Order. Routine groundwater monitoring conducted in 2005 led to the identification of chromium contamination in regional groundwater at monitoring well R-28 located in Mortandad Canyon. Chromium concentrations at that well are approximately 400 μg/L (ppb) exceeding the New

Mexico Environment Department and Environmental Protection Agency standards of 50 μg/L and 100 μg/L, respectively. The Laboratory has prepared and is implementing an "Interim Measures Work Plan" pursuant to a requirement from the New Mexico Environment Department. Objectives of the Interim Measure Work Plan is to determine the primary source(s) of chromium contamination and the nature of operations associated with releases, characterize the present-day spatial distribution of chromium and related constituents, collect data to evaluate the geochemical and physical/hydrologic processes that govern chromium transport; and collect and evaluate data to help guide subsequent investigations and remedy selection. The initial phase of fieldwork was completed in September 2006 and a final report issued in early November 2006 detailing recommended corrective actions. The fieldwork is expected to be complete in FY 2007. An investigation report and a work plan for the next phase (which may include corrective action) will follow.

Technical Area-54 Closure - This area includes evaluation and implementation of corrective measures for material disposal areas G, H, and L. The corrective measures are presumed to be the installation and monitoring of engineered covers and installation and operation of a soil vacuum extraction system at material disposal area L. This area also includes the demolition of the waste staging and characterization buildings at Area L and Area G to facilitate the implementation of the final covers. This work includes the closure of former and active radioactive waste disposal areas for Los Alamos National Laboratory. Consent Order schedule for completion of this project is 2015.

Transuranic Waste - Transuranic waste in drums and standard waste boxes at the Los Alamos National Laboratory must be characterized, certified, and shipped in accordance with the Carlsbad Field Office procedures. DOE-Los Alamos Site Office and DOE- Carlsbad Field Office signed a memorandum of agreement in April 2005 specifying that the Carlsbad Field Office's Central Characterization Project will characterize, certify, and ship Los Alamos National Laboratory transuranic waste to Waste Isolation Pilot Plant.

Pit 9 Transuranic Waste - The Pit 9 transuranic waste retrieval project mission is to retrieve the transuranic waste stored in Pit 9 and place it in an inspectable storage configuration by April 2011.

Trenches A–D - Trenches A–D contain 363 casks that contain two 30-gallon drums, a total of 721 drums. This project will include the retrieval of the casks from the trenches and placement of the waste in inspectable storage configuration by October 2011.

Remote Handled Transuranic Waste - The remote handled retrieval project mission is to retrieve the transuranic waste from 33 lined shafts, canisters and torpedoes and place it in inspectable storage configuration (if required) by July 2010. This project also includes site stabilization and removal of any contaminated soils resulting from any breeched containers.

Regulatory Framework

The primary regulatory driver for the Environmental Management Projects at Los Alamos National Laboratory is the March 1, 2005, Compliance Order on Consent. The Consent Order, signed by the New Mexico Environment Department, Los Alamos National Laboratory and DOE, provides the primary requirements for the Los Alamos National Laboratory Environmental

Restoration Project, and establishes an enforceable schedule and milestones for corrective actions.

Other drivers include the 1995 Federal Facilities Compliance Agreement, Public Law 105–119, 10 Code of Federal Regulations, Part 830, Nuclear Safety Management, a hazardous waste facility permit for storage and treatment, Federal Facility Compliance Order, the Atomic Energy Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act, and the Clean Air Act.

Critical Site Uncertainties and Assumptions

The New Mexico Environment Department will select remedies for the material disposal areas that have similar cost and schedule magnitude as those presumptive remedies that have been built into the plan. Some of the material disposal areas are on or near land transfer parcels; their proximity to the town-site increases the risk that the presumptive remedy will not be selected, potentially increasing cost and schedule for completion of some of the material disposal areas.

Monitored natural attenuation for groundwater will be accepted as the remedy rather than active remediation processes that can be more expensive and longer in duration. Regulators will approve cleanup levels for individual sites that correspond to the intended land use, thereby leaving in place contaminants whose presence does not pose unacceptable health and environmental risk.

The condition of the waste stored below grade will be no worse than that experienced in the previous Transuranic Waste Inspectable Storage Project retrieval project. Adverse conditions could have negative impacts on the cost and schedule.

Interdependencies

For the legacy project, Los Alamos National Laboratory is dependent on Government Furnished Services and Items and support from the Carlsbad Field Office in the area of characterization, packaging, and transportation of transuranic waste to Waste Isolation Pilot Plant.

Contract Synopsis

A new contract was awarded in December 2005 to Los Alamos National Security, LLC, who assumed responsibility on June 1, 2006. This contract is a management and operating cost-reimbursable contract with performance-based provisions. Individual tasks are executed through management and operating issued procurements. Acquisition planning and execution is conducted throughout the life of the Los Alamos National Laboratory Environmental Management Program by the management and operating contractor. The management and operating contractor awards subcontracts to provide significant flexibility to achieve cleanup in the most cost-effective manner. The near-term (current contract period) performance baseline has been prepared. The contractor submitted the baseline to DOE in June 2006 and the National Nuclear Security Administration and EM submitted it to OECM for an External Independent Review in August 2006. The External Independent Review was completed in early November 2006. A corrective action plan to address the findings is in preparation.

Cleanup Benefits

The Environmental Management Projects at Los Alamos National Laboratory support the DOE's mission by addressing legacy waste, legacy waste sites, and groundwater protection consistent with the Consent Order. Regulatory closure of Los Alamos National Laboratory legacy waste sites and completion of the Los Alamos National Laboratory Environmental Restoration Projects support the DOE goal of accelerating cleanup at Los Alamos National Laboratory.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- 1144 m^3 contact handled (CH) TRU waste volume repackaged, characterized, shipped to WIPP
- Completion of remedy for Material Disposal Area (MDA) H
- Submittal of 4 deliverables (Upper Mortandad Canyon Aggregate Area Investigation Work Plan, Upper Sandia Canyon Aggregate Area Work Plan, Upper Canada del Buey Investigation Work Plan, and Three-mile Canyon Aggregate Area Investigation Work Plan) to NMED
- Monitoring of regional aquifer and preparation of submittal of two quarterly reports to NMED
- Completion of the first Phase of Chromium investigations.
- Storm water monitoring and reporting to EPA
- EM completion of 52 Solid Waste Management Units (SWMU).
- Corrugated Metal Pipe, and PIT 9 Retrieval Planning

FY 2009 Accomplishments

- 1196 m^3 CH TRU waste volume repackaged, characterized, shipped to WIPP
- Complete 260 Outfall Corrective Measures Implementation (soil and surface water systems)
- EM completion of 65 SWMUs
- Complete General's Tanks (MDA A) Characterization
- Groundwater and storm water monitoring and reporting
- Corrective Measure Study/Corrective Measure Implementation activities at MDAs C, and T
- Start D&D field work at Tritium System Test Area (TSTA) facility

FY 2010 Accomplishments

- 1000 m^3 CH TRU waste volume repackaged, characterized, shipped to WIPP, which will reduce site risk.
- Corrugated Metal Pipes retrieved from below grade and size reduced.
- Completion of remedy for MDA B
- EM completion of 29 SWMUs,
- Start groundwater remedies in Los Alamos Canyon
- Groundwater and storm water monitoring and reporting
- Complete D&D of TSTA Facility

FY 2011 Accomplishments

- 1,549 m3 CH TRU waste volume repackaged, characterized, and shipped to WIPP
- Pit 9 waste retrieved from below grade, fiberglass-reinforced plywood boxes repackaged
- Trenches PU-238 waste retrieved from below grade.
- EM completion of 145 SWMUs
- Completion of remedies and actions in Upper Canada del Buey Area (21 sites)
- D&D of 16,000 sq. ft. at Technical Area 21 and Technical Area 54
- Groundwater and storm water monitoring and reporting

FY 2012 Accomplishments

- 1,200 m3 of CH TRU waste volume repackaged, characterized, and shipped to WIPP
- Remote-handled hot cell liners retrieved, repackaged, characterized and shipped to WIPP.
- Completion of remedy for MDA C and MDA L
- EM completion of 95 SWMUs
- Completion of remedies in S-Site Area (19 sites)
- Groundwater and storm water monitoring and reporting
- Complete D&D of 8,000 sq. ft. at TA 21 and TA 54

Nevada Test Site

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
79,668	81,106	79,619	83,428	84,067	83,865

Site Details

Site Overview

The Nevada Test Site was the primary location for conducting nuclear tests and was established to conduct tests of both nuclear and conventional explosives in connection with the research and development of nuclear weapons. Field testing was primarily conducted at the Nevada Test Site; however, some storage and transportation experiments were conducted on the Nevada Test and Training Range, formerly known as the Nellis Air Force Range. Atmospheric nuclear weapons tests were initiated in 1951. Portions of the Nevada Test Site and the Nevada Test and Training Range, including the Tonopah Test Range, were used for chemical explosion tests of plutonium- and uranium-bearing materials. Nuclear tests conducted at the Nevada Test Site after July 1962 were underground. Other locations (known as "Nevada Offsites") within the continental United States were used for testing based on the purpose of the test or geologic formation. These offsites were transferred to the Office of Legacy Management in FY 2007. For most of the sites, no work remains other than that associated with long-term stewardship. Where additional cleanup is needed, it is minor in scope and within the capabilities of Legacy Management to complete.

Site Description

The Nevada Test Site is located approximately 65 miles northwest of Las Vegas, Nevada and occupies approximately 1,375 square miles. The Nevada Test Site is surrounded by approximately 4,500 square miles of federally owned and Department of Defense controlled land. The Nevada Test Site is surrounded by the Nevada Test and Training Range on the north, east, and west, and land managed by the U.S. Department of the Interior, Bureau of Land Management on the south and southwest. The Nevada Test and Training Range, which includes Tonopah Test Range, is used for military training; the Bureau of Land Management lands are used for grazing, mining, and recreation. The Nevada Test Site is in a remote and arid region with approximately 75 percent of its perimeter surrounded by federal installations with strictly controlled access, and 25 percent adjacent to public lands that are open to public entry.

Site Cleanup Strategy/Scope of Cleanup

The EM program at the Nevada Test Site (including the Nevada Test and Training Range) consists of two primary projects, environmental restoration and waste management. The environmental restoration project mission is to assess and perform appropriate corrective actions at 878 former underground test locations, 113 surface or near surface soil contamination locations, and more than 1,000 other industrial-type sites. The waste management project supports the closure of DOE sites across the United States by maintaining the capability to dispose low-level waste and mixed low-level waste. The Nevada Test Site is designated as a

regional disposal site for low-level waste and a secondary disposal site for mixed low-level waste generated as the result of cleanup activities across the DOE Complex. Additionally, the waste management project is responsible for the storage, treatment, and disposition of legacy on-site transuranic and mixed transuranic waste.

The environmental restoration project scope addresses surface and shallow subsurface radiological soil contamination on the Nevada Test Site and Nevada Test and Training Range. Contamination at these sites is the result of historic nuclear detonations, safety experiments, storage/transportation related tests, nuclear reactor development and experiments, nuclear rocket engine tests, and hydronuclear experiments. The industrial-type sites restoration addresses facility decontamination and decommissioning, various historical infrastructure remediation efforts (e.g., septic systems, mud pits, storage tanks, disposal sites, etc.), and conventional weapons clean up including unexploded ordinance. The underground test area remediation involves geologic and hydrologic characterization, contaminated groundwater transport modeling, contaminant boundary definition and establishment of a monitoring system, to protect against the inadvertent use of contaminated groundwater.

The waste management project provides indispensable, efficient, cost-effective low-level waste and mixed low-level waste disposal capability to meet the needs of other DOE sites. Also under the Nevada Site Office waste management project, the scope for legacy on-site transuranic and mixed transuranic waste and material includes storage, treatment (as needed), and disposal/disposition.

Site Completion (End State)

The long-term end state vision for the Nevada Test Site is to restore the environment to an extent that will allow the continuation of the national security mission. This vision includes the removal of the contamination that poses an unacceptable risk to workers conducting planned site operations in support of the Nevada Site Office mission and characterizing/stabilizing the remainder of contamination to ensure effluent levels do not spread to the surrounding environment and pose an unacceptable risk. The end date for clean up activities is FY 2027.

The end state for the Nevada Site Office subsurface contamination for the underground test area sub-project will be achieved with the completion of a modeled contaminant boundary, a negotiated compliance boundary, monitoring well network(s), and successful five year “proof of concept” monitoring.

For the end state for surface and shallow subsurface radiological contamination associated with the soils sub-project, Nevada Site Office envisions sites on the Nevada Test and Training Range to have engineered controls developed (e.g., fences and postings) and use restrictions established to prevent inadvertent contact with remaining contamination (primarily for protection of U.S. military personnel). Remaining close-in-place sites on the Nevada Test Site will be inspected and monitored as necessary.

The end state for the Nevada Site Office industrial sites sub-project envisions applicable corrective actions completed for all 1,000 plus sites. Most sites will be available for unrestricted surface use while others will be stabilized for restricted use appropriate to the risk posed by residual contamination. For those sites where contamination remains in place, appropriate long-

term remedial action activities will be in place, including monitoring, cap inspections, and use restrictions as applicable. Closure of the industrial sites sub-project is expected to be completed in FY 2012.

The end state for the Nevada Site Office transuranic/mixed transuranic waste activities will be the elimination of the legacy transuranic/mixed transuranic waste and material from the Nevada Test Site. Disposition of the transuranic/mixed transuranic waste and material will reduce the risk to the Nevada Test Site workers and the environment resulting from continued storage. The Nevada Test Site transuranic/mixed transuranic waste related facilities will be decontaminated and decommissioned, or will be transitioned to other uses.

The end state for the Nevada Site Office waste management operations is closure of all filled disposal cells with a final approved closure cap and transition of any remaining disposal operations to the Nevada Test Site landlord if the capability is needed for on-site operations.

The primary short-term Nevada Site Office project will be the completion of disposition of all legacy transuranic/mixed transuranic waste and material by the end of FY 2007. The majority of the scope within the Nevada Site Office environmental restoration and waste management projects is long-term (earliest completion of significant scope other than transuranic/mixed transuranic waste is not planned until FY 2012).

Regulatory Framework

Nevada Site Office work at the Nevada Test Site and Nevada Test and Training Range follows all applicable federal level regulations including the Resource Conservation and Recovery Act, Clean Air Act, Clean Water Act, Atomic Energy Act, DOE Orders, and applicable Nevada specific laws, codes and acts relating to these regulations. Below are some specific regulatory instruments associated with agreements and consent orders between National Nuclear Security Administration Nevada Site Office and the state of Nevada.

For the environmental restoration project, the primary regulatory process for addressing contaminants on the Nevada Test Site and surrounding areas (Nevada Test and Training Range) is the Federal Facility Agreement and Consent Order (1996).

For the waste management project, the primary regulatory process is the Federal Facility Compliance Act. The Federal Facility Compliance Act of 1992 required the Secretary of Energy to develop and submit Site Treatment Plans for the development of treatment capacity and technologies for treating mixed wastes. Additionally, the June 1992 Settlement Agreement for mixed transuranic waste requires the National Nuclear Security Administration Nevada Site Office to operate the Area 5 Radioactive Waste Management Site Transuranic Pad in accordance with 40 C.F.R. Subpart I.

Critical Site Uncertainties and Assumptions

The major uncertainty is due to delays in shipments of transuranic waste resulting from unavailability or loss of authorization to ship to Waste Isolation Pilot Plant.

The major assumptions are:

- Changes to the current Nevada Site Office regulatory framework, including consent agreements, state and federal regulations, and/or DOE orders will not impact the implementation of the Nevada Site Office EM baselines.
- There will not be a change in plans from limited to complete remediation (i.e., from "close in place" to "clean close") of contaminated soils areas on the Nevada Test Site or the Nevada Test and Training Range.
- Subsurface contamination in and around the underground nuclear test cavities will not be removed, and post-closure monitoring will be conducted as agreed upon in the site completion reports for the subsurface.
- After subsurface completion, the final long-term hydrologic monitoring program will be defined in the site completion reports for the subsurface.
- Current land-use designations and subsurface intrusion restrictions will continue into the foreseeable future.

Interdependencies

- Nevada Site Office EM is dependent on concurrence from the U.S. Air Force on negotiated cleanup levels and plans to develop engineered controls and establish use restrictions.
- Nevada Site Office EM is dependent on the State of Nevada and other regulators for approval of investigation, characterization, closure, and long-term stewardship plans as stipulated in the Federal Facility Agreement and Consent Order.
- Nevada Site Office EM is dependent on the State of Nevada for acceptance of mixed low-level waste for disposal at the Nevada Test Site.
- Nevada Site Office EM requires the use of another DOE site for characterization, certification, and disposition to meet the goal of completing the transuranic waste project by the end of FY 2007.

Contract Synopsis

There are two primary contractors working on EM activities at Nevada Site Office responsible sites. National Security Technology, LLC, the Management and Operating Contractor for the Nevada Test Site, is contracted to perform environmental restoration field remediation activities and the waste management scope on the Nevada Test Site (including Nevada Test and Training Range). Stoller-Navarro Joint Venture, the architect engineer for EM work at Nevada Test Site, is contracted to perform site investigation and characterization activities on the Nevada Test Site (including Nevada Test and Training Range). In addition, the Desert Research Institute is contracted to perform subsurface characterization and modeling tasks, preliminary surface surveys, and re-vegetation.

Cleanup Benefits

The near and long-term benefit for Nevada Site Office environmental restoration efforts are varied and include the overall reduction in potential negative human health and environmental impacts, and restoration of the environment to an extent that will allow the maximum continuation of the national security mission conducted by the Nevada Site Office.

The near term benefit of the legacy transuranic/mixed transuranic waste cleanup at the Nevada Test Site is to eliminate the need for maintaining storage configurations, thereby eliminating

human health risk from continued compliance inspections, and to properly disposition the waste at an appropriate disposal location.

The near term and long term benefit for maintaining sufficient low-level and mixed low-level radioactive waste disposal capabilities is to support accelerated cleanup across the DOE complex. Disposing radioactive waste from storage locations across the DOE complex in engineered disposal facilities at the Nevada Test Site will substantially reduce risk at other DOE sites.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Complete Pahute Mesa Corrective Action Investigation Plan (CAIP) addendum
- Conduct soil characterization activities at sites in Areas 11 and 18
- Complete the closure of disposal wells, decontamination and decommissioning (D&D) sites, muck piles, storage bunkers, waste disposal sites, septic systems and discharge points
- Continue as the primary regional low-level waste (LLW) disposal site and as a secondary regional disposal site for mixed low-level waste (MLLW) for approved generators across the DOE complex

FY 2009 Accomplishments

- Complete Pahute Mesa transport model
- Complete Rainier Mesa source term analysis
- Complete Pahute Mesa CAIP addendum
- Complete drilling of Wells 1 and 2 in Western Pahute Mesa
- Complete Corrective Action Unit (CAU) 130 Storage Tanks closure activities
- Complete Pluto Reactor Site closure activities
- Conduct soil characterization activities at sites on the Nevada Test and Training Range
- Continue as the primary regional low-level waste (LLW) disposal site and as a secondary regional disposal site for mixed low-level waste (MLLW) for approved generators across the DOE complex

FY 2010 Accomplishments

- Complete drilling of Wells 3 and 4 in Western Pahute Mesa
- Complete Yucca Flat Phase I Flow Model
- Complete the closure of industrial waste sites and spill sites
- Execute work on Well 5 in Western Pahute Mesa
- Start drilling activities for 5 wells in Central Pahute Mesa
- Conduct soil characterization activities at sites in Areas 5 and 10
- Continue operating the primary regional LLW disposal site and secondary regional disposal site for MLLW for approved generators across the DOE complex

FY 2011 Accomplishments

- Complete drilling of 2 wells in Central Pahute Mesa
- Complete Frenchman Flat characterization and corrective action decision activities

- Complete the closure of contaminated bunker, mud pits, injection wells, and landfills
- Continue as the primary regional LLW disposal site and initiate closure of the MLLW disposal unit on the NTS
- Complete drilling of remaining 3 wells in Central Pahute Mesa
- Conduct soil characterization activities at sites in Areas 5 and 20

FY 2012 Accomplishments

- Complete Frenchman Flat Corrective Action Plan activities
- Complete Yucca Flat Phase I Transport Model
- Complete the closure of storage tanks, D&D sites, waste disposal sites, unexploded ordnance site, injection wells, and mud pits
- Conduct soil characterization activities at sites in Area 11
- Continue as the primary regional LLW disposal site for approved generators across the DOE complex

Pantex

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
23,726	12,411	0	0	0	0

Site Details

Site Overview

Pantex has a continuing mission to support nuclear weapons activities in the Nation's stockpile. The primary mission of the Pantex Plant is to: 1) evaluate, retrofit, and repair nuclear weapons in support of life extension programs and certification of weapon safety and reliability programs, 2) dismantle nuclear weapons surplus to the stockpile, 3) sanitize components from dismantled weapons, 4) develop, test, and fabricate chemical and explosive components, and 5) provide interim storage and surveillance of the plutonium components.

Historical waste management practices at the Pantex Plant have resulted in contamination of the soils and the upper Perched Aquifer. High explosives, metals, and solvents exist in the soils located at the Pantex Plant. The Perched Aquifer contaminant plume has migrated past the Plant boundaries and onto adjacent landowners' properties to the southeast. The lower Ogallala Aquifer is the primary water supply for Pantex and the area landowners. Immediately north of the Pantex property boundary is a well field in the Ogallala Aquifer that supplies a portion of the water supply to the City of Amarillo. Contamination in the Perched Aquifer has the potential to leach deeper if appropriate corrective measures are not implemented to mitigate the risk.

Site Description

The Pantex Plant is located in the Texas Panhandle, approximately 17 miles northeast of Amarillo, Texas. Pantex was deactivated in 1945 and sold to Texas Technical University as excess government property. In 1951 the Atomic Energy Commission reclaimed approximately 10,000 acres for the manufacturing of high explosives for the nuclear weapons program. During the mid-1960s, the plant was expanded to assume weapons maintenance and modifications. The Pantex Plant is composed of more than 600 buildings and several functional areas to carry out the nuclear mission.

Site Cleanup Strategy/Scope of Cleanup

To eliminate or reduce risk at the Pantex Plant, the site strategy for the environmental restoration project includes the following four strategic initiatives:

- Accelerate Soils Project Closure & Removal
- Accelerate Cleanup of Perched Aquifer
- Continued Monitoring of Ogallala Aquifer
- Accelerate Facility Cleanup and Footprint Reduction

Site Completion (End State)

Near Term Projects:

Environmental Restoration Project - The completion of the Environmental Restoration Project will leave an active industrial site with 15 of 252 potential release sites remaining in operation by FY 2008. There will be some environmental hazards from active Pantex industrial operations remaining after completion. These hazards are known and will be controlled per the final Compliance Plan to be negotiated prior to the end of FY 2008. Land use is expected to remain constant with continued cooperation with Texas Tech University through the Service Agreement and leasing of Texas Tech University land for security and safety reasons.

Decontamination and Decommissioning Project - Decontamination and Decommissioning activities removed the facilities currently in the EM scope at the Pantex Plant by the end of FY 2006 with waste and debris removal continuing into FY 2007. Since some of these decontamination and decommissioning facilities may have been a source term and/or co-located with other contaminated sites, these areas will be incorporated into the long-term stewardship mission beginning in FY 2009.

Longer Term Projects:

The environmental monitoring and maintenance of the corrective measures implemented in previous years will be the responsibility of the National Nuclear Security Administration in FY 2009. These Long-Term Stewardship/Long-Term Surveillance and Maintenance activities will continue to meet Resource Conservation & Recovery Act and Comprehensive Environmental Response, Compensation, and Liability Act regulatory requirements.

Regulatory Framework

The environmental work is identified and conducted under the requirements of the current solid and hazardous waste permit issued by the State of Texas. Also, the Environmental Protection Agency has listed the Pantex Plant on the National Priority List as a Superfund Site. Through a Memorandum of Agreement between the EPA and the State, the Texas Commission on Environmental Quality has authority for investigations conducted under the Resource Conservation & Recovery Act process; however, the Environmental Protection Agency has retained the authority to regulate radionuclides. There are no regulatory drivers associated with the decontamination and decommissioning activities at the Pantex Plant.

Critical Site Uncertainties and Assumptions

The Project Risk Management Plans Guide, bound by the Pantex risk assessment process, identified the following assumptions:

- The nature and extent of contamination has been fully defined and no additional investigations and risk modeling will be required.
- The Corrective Measure Study and subsequent corrective measure selection process will be successful.
- Decontamination and Decommissioning of Building 12-24 will be required for the closure of Solid Waste Management Unit 122b and the Southeast Waste Management Area release sites.

- Active sites are not included in the Pantex baseline.

Interdependencies
None.

Contract Synopsis
The Pantex Plant is operated by BWXT Pantex, under a Cost Plus Award Fee, Management and Operating Contract. The Pantex Site Office is developing annual incentives for baseline acceleration and critical milestone accomplishment for the remainder of the project.

Cleanup Benefits
Near Term Benefits: Enhanced onsite worker safety through source reduction efforts and site remediation. Protect the Ogallala aquifer from cross contamination through the perched aquifer by implementing interim corrective measures such as the Pump and Treatment System, Soil vapor extraction, In-situ bio remediation, Permeable reactive barrier, Ozone injection, and Playa 1 dewatering study. Gain stakeholder and regulatory confidence through CORE team meetings with the Texas Commission on Environmental Quality and EPA. Accelerate document approvals through the use of the CORE team and weekly interaction with regulatory agencies. Minimize risk of implementing interim corrective measures by close interaction with regulators.

Long Term Benefits: Reduce initial project duration by 6 years implementing the accelerated approach and including stakeholders and regulators in the process through CORE team meetings and quarterly public meetings. Avoid a cost of approximately $60 million by carrying out interim corrective measures that have been identified in the Corrective Measures Study. Offsite and onsite concerns regarding perched aquifer contamination have been mitigated with the early implementation of interim corrective measures. Proposed land acquisition will provide unrestricted access to neighboring land and will enhance the ability to monitor and treat the eastern boundary of the perched aquifer.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments
- Complete construction identified by Corrective Measures Study.
- Submit Corrective Measures Report for regulator approval.
- Obtain approval of the Final Compliance Plan by regulatory agencies.
- Environmental Remediation Program completion (CD-4).
- Complete EM activities in FY 2008, Long-Term Stewardship funding requested by NNSA beginning in FY 2009.

FY 2009 Accomplishments
- Not applicable.

FY 2010 Accomplishments
- Not applicable.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

Sandia National Laboratories-New Mexico

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
0	0	0	0	0	0

Site Details

Site Overview

The Sandia National Laboratories-New Mexico site is located in Albuquerque, New Mexico. The Sandia National Laboratories Environmental Restoration Project involves the remediation of inactive waste disposal and release sites at Albuquerque and other off-site locations. These sites have known or suspected releases of hazardous, radioactive, or mixed waste.

Site Description

The Sandia National Laboratories-New Mexico is a multi-program national laboratory with research and development programs in a broad range of scientific and technical fields. It is located in Bernalillo County, New Mexico, 6.5 miles east of downtown Albuquerque. Sandia National Laboratories consists of five technical areas and several remote areas covering 2,820 acres in the eastern half of the 118 square miles of Kirtland Air Force Base. The base is situated on two broad mesas bisected by the Tijeras Arroyo and is bound by the Manzano Mountains to the east and the Rio Grande river to the west.

Site Cleanup Strategy/Scope of Cleanup

Environmental restoration at Sandia National Laboratories was initiated to assess and remediate contaminated areas following federal, state and local statutes. For soils, the project objective is to achieve an acceptable level of risk that is consistent with either an industrial or recreational end-use. Some of the areas being cleaned up passed residential risk without additional remediation. For groundwater, an acceptable residential risk scenario with monitored natural attenuation is being pursued. Two hundred sixty eight (268) sites were subject to investigation and potential corrective action. Three of these sites will remain as "deferred active mission sites" and require future remediation (future liability). DOE corporate performance measures (site counts) are complete at 98 percent (259 of 265) of the sites. All remaining remediation activities (fieldwork), includes installing a cover and rock bio-barrier at the Mixed Waste Landfill, and groundwater sampling for obtaining final remedies at one groundwater area as prescribed by the Corrective Measures Evaluation process.

Site Completion (End State)

The actual risk level of the site and the expected future land use will be used to determine the end-state for all soil areas being cleaned up. Those sites that pass residential risk criteria will be approved by the regulatory authority as corrective action complete without controls and will not be subject to institutional or engineered controls. Sites that do not pass residential risk criteria will be approved by the regulatory authority as corrective action complete with controls and will be subject to long-term stewardship according to the designated land-use and regulatory

agreements. Long-term stewardship includes all activities necessary to ensure continued protection of human health and the environment after remediation, disposal, or stabilization of a site or part of a site. The end-state will be reached when: (1) all solid waste management units and areas of concern are remediated or remediation systems are constructed and operational, and all waste disposed of, and (2) when the site is placed under institutional controls with long-term monitoring in accordance with State and Federal requirements. The Sandia National Laboratories Environmental Restoration Project mission has completed all necessary corrective actions at 259 of 265 environmental restoration release sites by the end of FY 2006. The remaining fieldwork activities, Mixed Waste Landfill cover and groundwater characterization sampling at Burn Site GW area, and the regulatory closeout of the project will be completed in FY 2009. The baseline schedule was extended through FY 2009, due to regulatory delays on the Mixed Waste Landfill rock bio-barrier and soil cover fieldwork, obtaining three final remedies for groundwater and completing the remaining regulatory administrative closure activities.

Regulatory Framework

The regulatory driver for completing this work is the April 2004 New Mexico Environment Department Compliance Order on Consent. As of July 2006, 204 of 265 sites have been approved for No Further Action through the entire regulatory process. The remaining 61 sites are in various stages of completion, 60 are waiting for final regulatory approval and one site requires field remediation. Three groundwater areas require final remedies.

Critical Site Uncertainties and Assumptions

There are two critical project uncertainties based primarily on the New Mexico Environment Department's regulatory approval not being in place. The work schedule is jeopardized and the risk of added cleanup scope exists due to the regulatory uncertainty. Second, the requirement for additional public review of closure documents could delay completion. Regulatory uncertainty on three groundwater areas will exist until the final remedy that aligns with the baseline exit strategy is received.

The Mixed Waste Landfill received a Final Order (remedy) from the New Mexico Environment Department Secretary that requires additional scope beyond the soil cover and bio-barrier. The additional scope includes a fate and transport model and formal public review of post-remediation closure documents. This extends the corrective measure study process and project schedule.

Interdependencies

Long-term stewardship for the 259 completed release sites will be funded by the National Nuclear Security Administration beginning in FY 2007. After completion of the EM work at the remaining 6 release sites including the Mixed Waste Landfill, the National Nuclear Security Administration will provide support for the long-term stewardship associated with these release sites.

Contract Synopsis

The current management and operating contract between DOE and Sandia National Laboratories will exist for the remainder of the Environmental Management Project. Sandia National Laboratories will also maintain several Task Order sub-contracts active beyond FY 2006 to assist in the completion of administrative regulatory closure requirements.

Cleanup Benefits

At the end of FY 2006, 259 of 265 DOE Corporate Performance Measures were completed (i.e. soil site completion counts) where a risk-based closure approach based on the expected land-use was implemented. The environmental risk to human health and the environment has been greatly reduced at Sandia since many of the 259 soil sites passed residential risk (i.e. free release) and sites that passed industrial risk and required institutional controls were transferred to the long-term stewardship program. The footprint of contamination was reduced through the excavation of three major landfills, one of which had impacted groundwater. Millions of dollars of off-site waste disposal costs were avoided with the use of an on-site Corrective Action Management Unit (an engineered landfill unit that manages wastes excavated from the landfill that impacted groundwater) that is now under the long-term stewardship program. The remaining six soil sites are expected to pass industrial risk and three groundwater areas are expected to be managed under a Monitored Natural Attenuation strategy under long-term stewardship. The funding for Sandia National Laboratories has resulted in the regulatory benefit of compliance with the 2004 New Mexico Environment Department Compliance Order on Consent.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Receive regulator approval of Corrective Measures Implementation Report for the Mixed Waste Landfill
- Receive regulator approval of the Long Term Maintenance & Monitoring Plan for the Mixed Waste Landfill
- Receive regulator approval of the Corrective Measures Evaluation Report for the Burn Site GW area and submit its related Implementation Plan

FY 2009 Accomplishments

- Complete final regulatory actions for the Mixed Waste Landfill and the three groundwater areas.
- Complete the final Class III Permit Modification for the project
- Submit final CD-4 package to HQ

FY 2010 Accomplishments

- Not applicable.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

Separations Process Research Unit

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
24,500	27,585	32,756	32,756	32,756	23,861

Site Details

Site Overview

The Separations Process Research Unit is an inactive pilot plant used to research and develop the chemical process to separate plutonium from radioactive material. The Separations Process Research Unit operated from 1950 to 1953. Operation of the Separations Process Research Unit contaminated the nuclear facilities, and impacted approximately thirty acres of land where waste containers were managed. Groundwater immediately adjacent to the nuclear facilities, and in a limited area where containers were once stored is also contaminated with radioactivity.

Site Description

Separations Process Research Unit is located within the currently operating 170-acre Schenectady Naval Reactor's Knolls Atomic Power Laboratory near Schenectady, New York. The Mohawk River forms the northern boundary of this site. Both industrial and residential areas also bound the site.

Site Cleanup Strategy/Scope of Cleanup

The proposed cleanup strategy for the project is to remove the nuclear facilities and remediate the land areas. This approach is consistent with DOE Environmental Management's (DOE-EM) strategic objectives to eliminate legacy facilities, stabilize and consolidate transuranic waste at the Waste Isolation Pilot Plant, meet site Resource Conservation and Recovery Act Permit investigation and cleanup requirements, eliminate surveillance and maintenance costs of the nuclear facilities, and allow DOE-EM to closeout an agreement with Naval Reactors for the disposition of the Separations Process Research Unit facilities.

During the time period of FY 2003 through FY 2006 the Separations Process Research Unit Project received approval of the Mission Need (Critical Decision 0), obtained public input for the disposition of the nuclear facilities, and completed the characterization of the land areas. During FY 2007 the project expects to receive Acquisition Executive Approval of a preferred alternative (Critical Decision 1) for the nuclear facilities and land areas. Implementation of the preferred alternatives for the facilities and land will commence in FY 2007 and complete by FY 2014.

Site Completion (End State)

The site the Separations Process Research Unit is located on, the Knolls Atomic Power Laboratory, is a continuing mission site. The Knolls Atomic Power Laboratory will continue research and development of Naval Nuclear reactors for the foreseeable future. Taking into account Naval Reactor's continuing use of this site, and the fact that work with radioactive

materials continues, the appropriate DOE-EM end state for this site is to remove the contaminated excess facilities and restore land areas for continued industrial use.

Regulatory Framework

The Separations Process Research Unit project is implementing DOE's policy to decommission, remove facilities, and conduct cleanup using DOE's non-time critical removal action authority under the Comprehensive Environmental Response, Compensation, and Liability Act. In addition, the Separations Process Research Unit Project has applied for a simplified Resource Conservation and Recovery Act permit for investigation and cleanup of residual chemicals in several solid waste management units contained within the Separations Process Research Unit Project areas. The use of DOE's authority under the Comprehensive Environmental Response, Compensation, and Liability Act is allowing for a streamlined process, and has been acceptable to the public and the regulator.

Critical Site Uncertainties and Assumptions

The Separations Process Research Unit Project is still early in the planning process and the project cost estimate requires revision to account for characterization effort completed in FY 2006. The revision to the baseline will be included with the Critical Decision 1 submittal in early CY 2007.

Interdependencies

The major interdependency related to Separations Process Research Unit is the ongoing relationship with Naval Reactors and Knolls Atomic Power Laboratory. Separations Process Research Unit is located on the Knolls Atomic Power Laboratory site and Separations Process Research Unit characterization and remediation activities are closely coordinated with the local Naval Reactors Office and Knolls Atomic Power Laboratory in order to minimize impact on ongoing Knolls Atomic Power Laboratory operations. The relationship between the Separations Process Research Unit Project and the Naval Reactors is formally documented in a Memorandum of Agreement.

Other interdependencies are associated with waste disposition and will include the Waste Isolation Pilot Plant, Nevada Test Site, Savannah River Site, and Hanford Site. The project will work with these sites to ensure the expeditious transportation of waste and compliance with site waste acceptance criteria.

Contract Synopsis

All contracts issued since FY 2006 will be accomplished through direct contracts issued by EM's Consolidated Business Center. An EM Indefinite Delivery/Indefinite Quantity small business contractor is currently being used to accelerate removal of small structures, and improve small business involvement with the Separations Process Research Unit Project.

An acquisition strategy for the removal of the nuclear facilities and environmental restoration of land areas will be prepared and submitted in early CY 2007 with the Critical Decision 1 documentation. The Separations Process Research Unit Project expects to make use of the EM Indefinite Delivery/Indefinite Quantity contract in support of this effort.

Cleanup Benefits

The benefits of completing the Separations Process Research Unit Project are removal of a legacy cold war project site, consolidation of transuranic waste at the Waste Isolation Pilot Plant, elimination of surveillance and maintenance costs of inactive nuclear facilities and enable the Naval Reactors to make use of land area occupied by the Separations Process Research Unit Project areas for continued mission use.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Approve Nuclear Facility Safety Basis
- Issue DOE Safety Evaluation Report
- Install temporary enclosure above tank farm supporting transuranic waste removal
- Begin removal of transuranic waste from seven underground waste tanks
- Installation of access road to nuclear facilities completed
- Award contract for land environmental restoration
- Complete Soil Remediation of Lower Level Rail Bed
- Complete cleanup of four release sites

FY 2009 Accomplishments

- Continue transuranic waste removal from tank farm
- Deactivate Building H2
- Complete Deactivation of Building G2
- Complete Characterization of Pipe Tunnels

FY 2010 Accomplishments

- Complete asbestos and equipment removal decontamination of G2
- Complete transuranic waste removal from tanks
- Complete Characterization of Building H2
- Complete Deactivation of Pipe Tunnels
- Continue environmental restoration in North Field

FY 2011 Accomplishments

- Complete environmental remediation of the North Field.
- Complete environmental remediation of the parking lot
- Ship transuranic waste to WIPP

FY 2012 Accomplishments

- Return 90 percent of the land areas back to NNSA Naval Reactors for continued mission use
- Continue nuclear facility equipment removal and decontamination

All Other Sites

Argonne National Laboratory

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
10,726	2,437	459	0	0	0

Site Details

Site Overview

Argonne National Laboratory is a DOE Office of Science research and development laboratory with a broad program of research in the basic energy and related sciences (such as physical, chemical, material, computer, biomedical and environmental sciences) including operation of several large scientific user facilities. The Laboratory is located about 27 miles southwest of downtown Chicago.

Contamination of soil and groundwater occurred as a result of accidental spills, past materials management practices, and former waste disposal practices. Contaminants of concern for soil and groundwater include volatile organic compounds, semi-volatile organic compounds, metals, polychlorinated biphenyl compounds, and a variety of radioisotopes. A number of buildings and research reactors were contaminated with low levels of radioactive materials as a result of normal past operations. Resource Conservation and Recovery Act Corrective Actions were completed in September 2003 with minor ongoing long-term stewardship activities. Eleven (11) of thirteen (13) nuclear cleanups are complete, the twelfth is substantially complete at the end of FY 2006, and the final nuclear facility decontamination and decommissioning started planning in FY 2006.

Site Description

The Argonne National Laboratory cleanup involves two key areas: (1) Long Term Stewardship for Soil and Water Remediation (PBS CH-ANLE-0030); and (2) Nuclear Facility decontamination and decommissioning (PBS CH-ANLE-0040). Residual contamination, post cleanup, still remains at several areas of the Argonne National Laboratory site, which requires continued monitoring and/or remediation system operation. Decontamination and decommissioning will be completed at the Zero Power 6 reactor in FY 2007 and continue at Building 301.

The Illinois Environmental Protection Agency has formally issued all “No Further Actions” as appropriate and has signed the Land Use Control Memorandum of Agreement; the remediation systems are operational; and maintenance activities have been integrated into the site monitoring and surveillance program conducted by the site landlord (Office of Science) at Argonne National Laboratory. Transfer of monitoring and surveillance responsibilities to the Office of Science is planned to occur when all EM work at the site is completed at the end of FY 2009.

Site Cleanup Strategy/Scope of Cleanup

Corrective actions to address contaminated soils and groundwater were conducted under the site Resource Conservation and Recovery Act permit. All corrective actions were completed at the end of FY 2003, with the exception of such ongoing activities as operation and maintenance of groundwater pumping systems; routine environmental monitoring; and periodic inspection of engineered barriers. Focus of site cleanup is now on completing the remaining decontamination and decommissioning projects. At the end of FY 2006, eleven nuclear facilities were decontaminated and decommissioned, another is essentially complete, and one facility remains for completion.

Site Completion (End State)

EM site cleanup work will be complete in FY 2009, along with required regulatory actions. One facility awaits decontamination and demolition, Building 301 Hot Cells. There are also approximately 150 drums of legacy remote-handled transuranic wastes to be disposed at the Waste Isolation Pilot Plant, in Carlsbad, New Mexico, prior to geographic site completion of the Argonne National Laboratory site. The End State includes decontamination (as necessary) and demolition of Building 301. The land occupied by Building 301 will be available for unrestricted research and development reuse. Zero Power Reactor 6, which is being cleaned up for beneficial reuse, is scheduled to be complete in FY 2007 but is substantially complete at the end of FY 2006. Building 301 decontamination and demolition is planned to be complete in FY 2009.

Regulatory Framework

Corrective actions to address contaminated soils and groundwater were conducted under the Argonne site Resource Conservation and Recovery Act permit with the Illinois Environmental Protection Agency.

Critical Site Uncertainties and Assumptions

Achieving site completion by FY 2009 includes shipment for disposal of remote-handled transuranic waste by that time, which appears to be feasible. A previous critical project uncertainty had to do with the volume and disposal location of certain wastes anticipated to come from the Building 301 project. The DOE Argonne Site Office worked with stakeholders to assess the feasibility of implementing DOE's exemption policy for disposing some project wastes to a local landfill, including preparation of a quantitative risk and cost study to support future decision making. The risk and cost study showed no unacceptable risks, but also did not show appreciable cost savings. The DOE Site Office and Argonne National Laboratory have decided upon an alternate technical approach to the Building 301 project that will involve less upfront decontamination and quicker building demolition.

Interdependencies

Argonne Site Office and Argonne National Laboratory expect to work with various State of Illinois agencies such as Illinois Environmental Protection Agency, Illinois Emergency Management Agency, and the State Historic Preservation agency to execute the remaining EM scope. In addition, Department of Housing and Urban Development determinations are sometimes required when buildings are to be demolished. Wastes are typically disposed to local landfills or to Energy Solutions (formerly known as Envirocare) or the Nevada Test Site for radioactive wastes. Most shipments are economical via truck. Final disposal of the remote-

handled transuranic waste will require that the Waste Isolation Pilot Plant facility be open to accept remote-handled transuranic waste, and will require that the shipping corridor remain available from Argonne National Laboratory to the Waste Isolation Pilot Plant. In order to execute remote-handled transuranic waste shipments, coordination with various State agencies will be required. Currently, Argonne National Laboratory and EM have funded a project to dispose 100 of the estimated 150 drums of the remote-handled transuranic waste, to the Waste Isolation Pilot Plant. Removal of the remaining approximately 50 drums of legacy remote-handled transuranic waste needs to be completed to support overall EM site completion by the close of FY 2009. The site will recommend a characterization strategy to EM in mid 2007 to accomplish the removal of the remaining drums and meet the closure date.

Contract Synopsis

The current major contract in place to support the balance of the EM mission at Argonne National Laboratory is the Management and Operating contract for Argonne National Laboratory, previously held by the University of Chicago. Activity was underway in FY 2006 to compete the contract, which expired September 30, 2006. The new performance-based management contract was awarded July 31, 2006 to a new entity, UChicago Argonne LLC, and transition was completed by October 1, 2006. The Argonne Site Office also uses specialty contractors to support aspects of EM work such as the existing contracts for National Environmental Policy Act scope and for Independent Verification scope. It is possible that Argonne National Laboratory or the DOE Argonne Site Office will make use of one or more of the existing Indefinite Delivery/Indefinite Quantity contracts managed by the DOE EM Consolidated Business Center.

Cleanup Benefits

The last two EM scope projects will reduce risk, cut surveillance and maintenance costs, and return valuable space to Argonne National Laboratory for research and development purposes.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Continue long-term response actions for implemented soil and groundwater remedies
- Continue decontamination and initiate offsite disposal of Bldg. 301 demolition wastes

FY 2009 Accomplishments

- Continue long-term response actions for implemented soil and groundwater remedies
- Project end (all EM D&D Complete)

FY 2010 Accomplishments

- Not applicable.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

Brookhaven National Laboratory

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
28,272	23,699	20,885	7,614	7,468	7,572

Site Details

Site Overview

The Brookhaven National Laboratory is a U.S. Department of Energy (DOE) owned multi-disciplinary scientific research center located in the center of Suffolk County on Long Island, about 60 miles east of New York City. The Atomic Energy Commission established Brookhaven National Laboratory on the site of the U.S. Army's former Camp Upton in 1947. The Atomic Energy Commission's objective was to build a regional laboratory that could provide researchers with powerful tools too costly for their home institutions to build and maintain.

The Brookhaven Environmental Management Completion Project addresses the cleanup of the Brookhaven National Laboratory Superfund site as well as the decontamination and decommissioning of two former research reactors: the High Flux Beam Reactor and Brookhaven Graphite Research Reactor. Cleanup is required by a 1992 Interagency Agreement among DOE, the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation. The Brookhaven Environmental Management Completion Project is considered complete when all required groundwater treatment plants are built and operating; cleanup of soil and the Peconic River are complete; decontamination and decommissioning of the Brookhaven Graphite Research Reactor and High Flux Beam Reactor is complete; all cleanup, decontamination and decommissioning and legacy wastes are disposed of off-site; and an effective Long Term Environmental Operations, Safety and Security program is underway.

Brookhaven Science Associates has operated Brookhaven National Laboratory for DOE since 1997 and also performs the cleanup work for the DOE Office of Environmental Management (EM).

Site Description

Groundwater cleanup is Brookhaven National Laboratory's highest priority because Long Island's sole source aquifer provides the only source of drinking water for local residents. Off-site groundwater is contaminated with volatile organic compounds above State standards and onsite groundwater is contaminated with volatile organic compounds and the radionuclides tritium and strontium-90 above the drinking water standard. Some soils at Brookhaven National Laboratory are contaminated with radionuclides (primarily cesium-137 and strontium-90) and chemicals (primarily mercury) due to historical practices and spills. Three landfills have been capped and 55 waste disposal pits have been excavated and disposed of off-site. Historical discharges from Brookhaven National Laboratory's Sewage Treatment Plant have resulted in elevated levels of metals, primarily mercury, and radionuclides (e.g., cesium-137) in the Peconic

River sediments both on and just off-site. Cleanup requirements are outlined in Records of Decision for the various areas.

Brookhaven Graphite Research Reactor: The Brookhaven Graphite Research Reactor was the first reactor built solely to provide neutrons for research and was operated from August 1950 to June 1968. This reactor is of concern because releases to the environment have occurred and have caused soil and groundwater contamination with cesium-137 and strontium-90 and it is listed as an Area of Concern in the Interagency Agreement. Numerous interim actions have been performed to address high priority environmental releases. A Record of Decision was signed by the United States Environmental Protection Agency in March 2005 that adopts the interim actions as final and requires removal and off-site disposal of the pile and bioshield.

High Flux Beam Reactor: The High Flux Beam Reactor, constructed for basic experimental research in physics, chemistry and biology, was permanently shut down in 1999. Extensive stabilization activities were conducted during FY 2000 – FY 2001 including the removal of experimental equipment, installation of a stainless steel liner for the spent fuel pool and the installation of leak prevention alarms and double-walled piping to mitigate potential releases to the environment. All systems have been drained and the reactor vessel and primary and secondary cooling systems are in dry lay-up. The reactor fuel was sent to the DOE Savannah River Site in 1996-97. Decision making with the regulatory agencies and the community is currently underway for the High Flux Beam Reactor.

Site Cleanup Strategy/Scope of Cleanup

In summary, Brookhaven National Laboratory's highest cleanup priorities involve the cleanup of environmental releases to groundwater, soils and the Peconic River. These activities make up the CH BRNL-0030/Soil and Water Remediation and were completed in FY 2005. The budget for FY 2006 and beyond is for Long Term Environmental Operations, Safety and Security activities. High priority activities at the Brookhaven Graphite Research Reactor (CH-BRNL-0040 Nuclear Facility decontamination and decommissioning – Brookhaven Graphite Research Reactor) related to addressing environmental releases were also completed in FY 2005. Removal of the reactor internals, graphite moderator (pile), and radiation biological shield (bioshield) are planned for completion in FY 2008. These high priority activities include the removal and off-site disposal of contaminated soil and materials (e.g., concrete) associated with the Pile Fan Sump, Fan House, the Above Grade Ducts, Coolers and Filters, the Canal and Water Treatment House, and portions of the Below Ground Ducts. Decontamination and decommissioning of the High Flux Beam Reactor is considered the lowest risk and is scheduled for completion last.

Site Completion (End State)

Completion of the Brookhaven National Laboratory Soil and Water activities in FY 2005 is followed by continuing Long Term Environmental Operations, Safety and Security. These activities will continue while the Brookhaven Graphite Research Reactor and High Flux Beam Reactor decontamination and decommissioning is completed. Site completion has slipped from 2008 to 2010 because DOE has discovered several issues with the existing Feasibility Study, including the early removal of the control rod blades from the reactor and resolving the differences in the contractor's radioactive inventory at the facility. As a result, the Feasibility Study is being revised. Upon completion, the Long-Term Environmental Operations, Safety and

Security program will be transferred to the DOE Office of Science, which is the Brookhaven National Laboratory site landlord.

Regulatory Framework

Brookhaven National Laboratory was added to New York State's list of Inactive Hazardous Waste sites in 1980 and to the federal National Priorities List in 1989. A tri-party Federal Facilities Compliance Agreement, also known as the Interagency Agreement, was subsequently negotiated between the DOE, the U. S. Environmental Protection Agency Region II, and the New York State Department of Environmental Conservation. The Interagency Agreement integrates the requirements of Comprehensive Environmental Response, Compensation, and Liability Act, the corrective action requirements of the Resource Conservation and Recovery Act, DOE cleanup authorities under the Atomic Energy Act, and any corresponding New York State regulations.

The Interagency Agreement became effective in 1992 and provides the overall framework for conducting the Brookhaven environmental restoration program, using Comprehensive Environmental Response, Compensation, and Liability Act processes. Furthermore, the Interagency Agreement defines authorities between the three parties, and includes procedures for resolving disputes, assessing stipulated penalties by Environmental Protection Agency, reviewing documents, reporting and notifications, extending schedules, complying with State and Federal regulations and requirements, and reimbursing the costs of oversight performed by the New York State Department of Environmental Conservation. While not a formal Interagency Agreement partner, the Suffolk County Department of Health Services is also actively involved with the Brookhaven National Laboratory cleanup. Examples of Suffolk County Department of Health Services activities include reviewing proposed work plans, overseeing field work to ensure that it is performed properly and splitting Brookhaven National Laboratory samples for analysis.

Critical Site Uncertainties and Assumptions

The most significant project uncertainty for the High Flux Beam Reactor involves the resolution of the end state with the regulatory agencies and the public. The current assumption involves removing accessible source terms and shrinking the footprint of the facility to reduce long-term surveillance, maintenance and security requirements and to defer removal of the reactor vessel for 40 to 75 years which will allow the high source terms to radiological decay thus reducing radiation exposures to workers during removal and packaging. Deferral of the vessel removal will also greatly simplify the dismantlement, segmentation and packaging of the vessel and will reduce the need for specialized shipping casks and containers to transport the highly radioactive components; reducing the generation of secondary waste streams. DOE is using the Core Team process with the regulatory agencies to facilitate this decision.

The most significant project uncertainty for the Brookhaven Graphite Research Reactor involves hazard categorization of the facilities during the decommissioning. If the facility becomes a hazard category 3 nuclear facility during decommissioning, the additional reviews (e.g., operational readiness review) and approvals required may extend the completion of this project by two years. The current schedule assumes that the facility designation of a (less than category 3) radiological facility remains during decommissioning.

Interdependencies

The most significant dependency with other external agencies involves the resolution of the High Flux Beam Reactor end-state with the U. S. Environmental Protection Agency and New York State Department of Environmental Conservation, as well as the public. Waste transportation and disposal constitute the most significant inter-site dependencies. Radioactive waste from decontamination and decommissioning will be disposed at Nevada Test Site and Energy Solutions in Clive, Utah, (formerly Envirocare of Utah). Brookhaven Science Associates has applied value engineering to radioactive waste management on this project and is planning to use both Federal and commercial disposal facilities to provide the most efficient, cost effective disposal. For example, Brookhaven Science Associates has received certification to dispose of the graphite blocks at the Nevada Test Site, while radioactive debris from the bioshield will be disposed at Energy Solutions (formerly known as Envirocare.)

Contract Synopsis

DOE's cost-plus performance fee contract with Brookhaven Science Associates, as the managing and operating contractor, to perform the DOE science mission at Brookhaven National Laboratory extends through January 4, 2008. EM funded cleanup activities involving the completion of the Brookhaven National Laboratory Soil and Water activities, high priority removals at the Brookhaven Graphite Research Reactor, and surveillance and maintenance activities at the High Flux Beam Reactor are included in this contract. Current plans for work in FY 2006 and beyond involve extending Brookhaven Science Associate's contract to perform the Brookhaven Graphite Research Reactor and High Flux Beam Reactor decontamination and decommissioning as an integrating contractor. The current plan is for this contract to be competed during FY 2008.

Cleanup Benefits

Environmental restoration and nuclear facility decommissioning at Brookhaven National Laboratory addresses historical releases by mitigating their added risks to human health and the environment. Radiological and chemical contamination has been removed, reduced or placed under an active remediation system that is designed to isolate and remediate the contamination. The overall benefit is a workplace and environment whose immediate threats of exposure to contamination have been mitigated.

Under BRNL-0030, soil contamination has been either removed or placed in a safe and stable condition. Groundwater contamination is being addressed by a suite of remediation technologies designed to isolate and remediate the contamination and reduce overall risks. Peconic River sediment has been remediated. All soil, groundwater and Peconic River response actions are constructed and in various phases of operation and monitoring. This post-construction phase (Long-Term Environmental Operations, Safety and Security) will continue until such time when cleanup goals as specified in the Records of Decisions are achieved.

Sources of releases and contamination from the inactive nuclear facilities have been addressed in a variety of facility stabilization, decontamination and decommissioning activities have been removed. Final decommissioning is underway.

At the Brookhaven Graphite Research Reactor, removal of the reactor, which includes the reactor internals, the graphite moderator (pile), and the radiation biological shield (bioshield), is

the high priority activity under BRNL-0040 that will ultimately remove over 99 percent of the total radiological inventory. This is a significant reduction in source term and overall risk at Brookhaven Graphite Research Reactor. Historical releases to the environment have already been addressed and the facility is in a phase of post-construction groundwater monitoring.

The High Flux Beam Reactor is in a safe and stable condition. Environmental releases have been addressed and the facility has under gone extensive stabilization and decontamination. The remaining work is designed to further reduce the radiological inventory. However, because of the high radiation levels associated with final decommissioning, consideration of radioactive decay to safer levels is being evaluated as part of the Comprehensive Environmental Response, Compensation, and Liability Act response action selection process. The overall benefit is similar to Brookhaven Graphite Research Reactor in that the remaining radiological inventory will be addressed.

Overall, cleanup at Brookhaven National Laboratory, as executed under Comprehensive Environmental Response, Compensation, and Liability Act and the Brookhaven interagency agreement, is designed to take near-term action to reduce the immediate threats to human health and the environment from historical releases of contamination. Long-term actions are a key part of the cleanup strategy with the overall goal of delisting from the National Priorities List.

Outyear Accomplishment Priorities and Assumptions by Year

From FY 2008-2012, BNL target-level funding will result in the Decontamination and Decommissioning of two research reactors, i.e. the Brookhaven Graphite Research Reactor (BGRR) and the High Flux Beam Reactor (HFBR). Long-term operations, safety and security activities will also be performed for BNL's Soil and Water Remediation Project which involves the operation and maintenance of 16 groundwater treatment systems and associated groundwater monitoring, post cleanup monitoring of the Peconic River, surveillance and maintenance of three capped landfills and numerous soil cleanup areas, and continuation of institutional controls in accordance with BNL's Land Use Controls Management Plan.

FY 2008 Accomplishments

- Continue Long-Term Environmental Operations, Safety and Security involving the operations, maintenance and monitoring of 16 groundwater treatment systems, three capped landfills, the Peconic River and numerous soil cleanup areas.
- At the BGRR, complete demolition of Graphite Pile and the Bio-Shield as well as packaging, shipping and off-site disposal of generated wastes. Install groundwater monitoring wells. Perform surveillance and maintenance activities.
- At the HFBR, begin activities to place the confinement dome in a safe and stable configuration for long-term dormancy. Perform surveillance and maintenance activities.

FY 2009 Accomplishments

- Continue Long-Term Environmental Operations, Safety and Security involving the operations, maintenance and monitoring of 16 groundwater treatment systems, three capped landfills, the Peconic River and numerous soil cleanup areas.
- At the BGRR, complete installation of an engineered cap around the facility to prevent infiltration. Complete surveillance and maintenance activities.

FY 2010 Accomplishments

- Continue Long-Term Environmental Operations, Safety and Security involving the operations, maintenance and monitoring of 16 groundwater treatment systems, three capped landfills, the Peconic River and numerous soil cleanup areas.
- Complete Decontamination and Decommissioning of the High Flux Beam Reactor and the Brookhaven Graphite Research Reactor.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

Energy Technology Engineering Center

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
16,000	13,000	12,534	0	0	0

Site Details

Site Overview

The Santa Susana Field Laboratory, owned by the Boeing Company and NASA, is located atop a range of hills between the populous Simi and San Fernando Valleys, north of Los Angeles. The Energy Technology Engineering Center, which was DOE's laboratory at the Santa Susana Field Laboratory (2,850 acres), is a collection of facilities within Area IV.

When opened in the late 1950s, the site was ideally remote from population centers to enable development of security sensitive projects. These projects supported nuclear research and energy development for DOE and its predecessor agencies. The site includes buildings that housed test apparatus for large-scale heat transfer and fluid mechanics experiments, mechanical and chemical test facilities, office buildings, and auxiliary support facilities.

Site Description

The Energy Technology Engineering Center is surplus to DOE's current mission and is operated by EM solely to complete site cleanup and closure. As such, the current use of the site involves diminishing use of facilities through deactivation, decommissioning, and dismantlement. As a result of past operations, radioactive and chemical contamination exists in several structures (including the Radioactive Materials Handling Facility) and soil, surface and groundwater.

DOE is the regulator for radiological contamination under the Atomic Energy Act. The site is not a Comprehensive Environmental Response, Compensation, and Liability Act of 1980 site nor is it on the National Priorities List. Chemical contamination is being handled under the Resource Conservation and Recovery Act.

Historically, the site had 27 radiological facilities, although only two now remain. At one time there were seven non-radioactive sodium facilities (used to test reactor components because sodium is an efficient medium for heat transfer).

Site Cleanup Strategy/Scope of Cleanup

Two radiological facilities (comprising a total of 11 buildings) and two sodium facilities remain. The two radiological facilities remaining at Energy Technology Engineering Center are the Radioactive Materials Handling Facility complex (which has a Resource Conservation and Recovery Act permit) and Building 4024 (part of the space nuclear program). There are two sodium facilities: 1) Sodium Pump Test Facility; and 2) the Hazardous Waste Management Facility. The Sodium Pump Test Facility are those installations where research and development related to sodium cooled reactors was performed. The sodium has been removed from the

facility and is not radiologically contaminated. The Hazardous Waste Management Facility is a Resource Conservation and Recovery Act permitted facility. It is awaiting regulatory authorization to proceed with demolition. In addition, there is an ongoing Resource Conservation and Recovery Act Corrective Action for chemical contamination in soil and groundwater.

DOE is responsible for ten areas of soil contamination that require investigation and potential remediation at Energy Technology Engineering Center. Corrective actions are based on a residential land-use assumption. The land use assumption is for analysis only. It is anticipated that three to six of the ten units will be excavated to meet projected media cleanup standards.

Three small plumes are contaminated primarily with low levels of trichloroethylene and are included in the site wide Resource Conservation and Recovery Act Corrective Action Program. The Corrective Action program for DOE activities is a small part of the activity for the entire Santa Susana Field Laboratory. The state, which is the regulatory authority, will not allow DOE to proceed independently from the rest of the site. The long-term response actions for the DOE groundwater contamination was transferred to Boeing as part of the 1998 closure contract.

Site Completion (End State)

Due to the evolving work scope, it is possible that the current completion date of 2009 may be delayed. A new acquisition strategy is being worked on, as well as a CD-2/3 package to establish the EM strategy for completion of the scope.

Following is a list of remaining activities that are needed to achieve EM completion:

- Decontamination and demolition of two remaining radiologically contaminated facilities. One of the facilities also has a Resource Conservation and Recovery Act Part A permit. Radiological cleanup standard is 15 millirem/year with a residential land use scenario.
- Resource Conservation and Recovery Act Corrective Action. Currently, the site is in the investigation phase, which leaves the Corrective Measures Study phase and the Corrective Measures Implementation phase still to go. Additionally, the state will conduct an environmental review for all of the Santa Susana Field Laboratory after the Corrective Measures Study has been completed. Cleanup level is within the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 risk range.
- Demolition of two sodium facilities (not radiologically contaminated)
- Disposition offsite of all radioactive waste and decommissioned waste.

Regulatory Framework

Regulation of the Energy Technology Engineering Center Closure project is segmented into different regulatory authorities. The decontamination and demolition of the radiologically contaminated facilities at the Energy Technology Engineering Center site is being conducted under Atomic Energy Act authority. A comprehensive Environmental Assessment was released in March 2003 for the final decommissioning activities and release of the site. The California Department of Health Services does not have regulatory authority over DOE for radiological contamination. However, if it was determined that the site had not been adequately cleaned up to State standards, they would license the site and require additional survey and remediation before

it could be released. Therefore, as a risk mitigation measure, DOE obtains the Department of Health Services concurrence before former radioactively contaminated facilities are released. The Energy Technology Engineering Center site is not on the National Priority List and therefore the Environmental Protection Agency has no regulatory authority.

The Resource Conservation and Recovery Act chemical cleanup is regulated by the California Department of Toxics Substance Control. Once the closure plan for the Radioactive Materials Handling Facility has been approved in FY 2007, DOE will face fines and penalties if the closure schedule is not maintained. This is because the closure plan includes regulatory milestones. Failure to maintain progress towards completion in the Resource Conservation and Recovery Act Corrective Action will result in receipt of a stipulated enforcement order from the state.

Critical Site Uncertainties and Assumptions

Risks to EM completion at Energy Technology Engineering Center include potential delays in State environmental reviews and final acceptance by the regulators of DOE's approach to groundwater characterization and containment. All of the Santa Susana Field Laboratory is undergoing the Resource Conservation and Recovery Act Corrective Action. The state has mandated that the entire site be done as one project for the corrective action. Consequently, the DOE portion is connected inextricably to the progress of the balance of the site (all 2,850 acres). This is especially important for resolution of groundwater contamination. Characterization will not be completed for three years so there is a possibility that some issues with respect to the corrective action for the rest of the site could surface still.

The Radioactive Materials Handling Facility has a Resource Conservation and Recovery Act Part A permit. The facility has both radioactive and chemical contamination. In addition a portion of the facility is involved with the Resource Conservation and Recovery Act corrective action. The combination of the different programs raises uncertainty regarding the completion schedule.

The Natural Resources Defense Council, the City of Los Angeles and the Committee to Bridge the Gap have sued the Department regarding its adherence to Comprehensive Environmental Response, Compensation, and Liability Act of 1980, National Environmental Policy Act, and the Endangered Species Act. Until the lawsuit is settled, there is uncertainty regarding cost and schedule.

Interdependencies

There are no significant dependencies with other DOE sites.

Contract Synopsis

The current cleanup contract (through September 30, 2008) is held by Boeing. It is a cost plus incentive fee contract. The scope is comprehensive in that it includes all of the radioactive contamination (remediated under DOE's Atomic Energy Act authority) and chemical contamination, conducted under the state of California's Resource Conservation and Recovery Act authority. Under the terms of the contract, the site owner will assume responsibility for long-term groundwater surveillance and maintenance after the corrective action has been completed. In addition, the site owner agreed to take ownership of three uncontaminated buildings.

Cleanup Benefits

The cleanup is protective of human health and the environment using a residential land use scenario. Activities in FY 2008 will reduce nearly all of the remaining radiological contamination to acceptable risk levels. The ongoing Resource Conservation and Recovery Act investigation activities in FY 2008 are necessary to identify and define risks to enable their reduction through appropriate remediation technologies in the outyears.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Complete radiological scope including demolition of the Radioactive Materials Handling Facility and building 4024

FY 2009 Accomplishments

- Complete work on RCRA Facility Investigation
- Work on RCRA Corrective Measures Study

FY 2010 Accomplishments

- Not applicable.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

Inhalation Toxicology Laboratory

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
2,931	427	100	100	100	0

Site Details

Site Overview

The Inhalation Toxicology Laboratory is a research facility operated by the non-profit Lovelace Biomedical and Environmental Research Institute. It is located in Albuquerque, New Mexico on Kirtland Air Force Base. It was built by the Atomic Energy Commission in 1960 to conduct research on the health effects of inhaling radioactive and other energy related pollutants. From 1960 to 1996 Inhalation Toxicology Laboratory was operated under a traditional Management and Operating contract. In 1996 the facility was privatized and continues to operate as a private facility, which conducts research for DOE and other entities on a reimbursable basis.

As a result of operations conducted for DOE, groundwater and soil areas were contaminated, laboratories and buildings were contaminated and legacy waste has accumulated.

Site Description

Inhalation Toxicology Laboratory is located in Albuquerque, New Mexico on Kirtland Air Force Base. It has approximately 240,000 square feet of building space on 144 acres of land, which has been withdrawn from the Bureau of Land Management by the Air Force and permitted to DOE.

Site Cleanup Strategy/Scope of Cleanup

Remedial activities for contaminated soil and groundwater at the site were completed in 1997. Currently, the environmental management mission at the Inhalation Toxicology Laboratory is comprised of two projects: (a) groundwater monitoring and reporting and (b) waste collection and disposal--surface decontamination.

Site Completion (End State)

Groundwater monitoring and reporting is ongoing and will continue until state regulatory standards are met or an alternative abatement standard is granted by the state. Legacy waste from about 30 laboratories and other contaminated areas is being collected and disposed of. Once the legacy waste is collected and disposed and the laboratories and other contaminated areas decontaminated, the EM mission at Inhalation Toxicology Laboratory will be complete. EM completion is scheduled for 2008. Remaining projects for FY 2006-FY 2008 include the Radioactive Source Collection and Disposal, and cleanup of the Beta Gamma Wing, Castle Area and Miscellaneous Laboratory Areas.

Long-term stewardship objectives include continued groundwater monitoring and reporting under Monitored Natural Attenuation until either state standards are met or alternative abatement

standards are granted by the state. Institutional controls to preserve industrial land use will be required until approximately the year 2030 when residual radioactivity will decay sufficiently to allow for unrestricted land use.

Regulatory Framework

The Inhalation Toxicology Laboratory cleanup is being conducted under DOE Orders, Resource Conservation and Recovery Act, and State of New Mexico Groundwater Standards. The Sewage Lagoon Site is regulated under a State Discharge Permit. Hazardous waste is managed by the State of New Mexico pursuant to Resource Conservation and Recovery Act and radioactive waste is managed under DOE Orders and Nevada Test Site Waste Acceptance criteria. There are no compliance milestones other than those related to groundwater monitoring and reporting contained in the Discharge Permit and New Mexico State regulations.

Critical Site Uncertainties and Assumptions

It is assumed that no more TRU waste will be generated during the remainder of the ITL cleanup and that there will not be waste items identified for which there is no disposal path. The discovery of additional TRU waste or items with no known disposal path are considered to be a relatively low programmatic risk.

Interdependencies

Low-level waste is packaged and shipped by Inhalation Toxicology Laboratory to the Nevada Test Site or to a commercial vendor. The relatively small volume of transuranic waste resulting from Inhalation Toxicology Laboratory operations thus far has been transported to Sandia National Laboratory for ultimate disposition at the Waste Isolation Pilot Plant. There are no major Government-Furnished Services and Items related to materials or services. There are no other interdependencies associated with the Inhalation Toxicology Laboratory EM Project.

Contract Synopsis

The Inhalation Toxicology Laboratory has been managed under a Cooperative Agreement with DOE since 1996; the Cooperative Agreement expired at the end of FY 2006 and will be renewed for the period through FY 2008. The Cooperative Agreement is the mechanism currently used for funding the EM Project as well as other DOE projects and initiatives. It is administered by the National Nuclear Security Administration Service Center.

Cleanup Benefits

Completion of the Inhalation Toxicology Laboratory EM Project will represent elimination of radiological and hazardous chemical waste risk due to DOE activities in the Inhalation Toxicology Laboratory areas, thus enabling Inhalation Toxicology Laboratory to use these areas for its own use as a private entity.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- The collection and disposition of waste from the last remaining ITL Project, the Beta Gamma Wing, will be completed and all remaining legacy waste from the cleanup of the ITL facility will be disposed. All radiological surveys and documentation associated with

EM mission completion and transfer to the Office of Legacy Management for Long-Term Surveillance and Maintenance will be completed. This will complete the ITL EM Project. Long-Term Surveillance and Maintenance of groundwater will continue until standards are met or alternate abatement standards are approved by the state.

FY 2009 Accomplishments

- Not applicable.

FY 2010 Accomplishments

- Not applicable.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

Moab

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
22,865	23,952	30,513	31,307	32,121	32,956

Site Details

Site Overview

The project mission is to remediate uranium mill tailings from the former Atlas Minerals Corporation (Atlas) uranium-ore processing and mill site, contaminated vicinity properties, and contaminated groundwater. DOE became responsible for this mission upon the enactment of the Floyd D. Spence National Defense Authorization Act of 2001.

Site Description

The DOE Moab project site is approximately 3 miles northwest of the city of Moab, Utah on the west bank of the Colorado River. The site encompasses approximately 435 acres, of which approximately 130 acres is covered by a 12 million cubic yards uranium mill tailings pile.

Site Cleanup Strategy/Scope of Cleanup

DOE's Record of Decision (issued on September 14, 2005) made the decision to relocate the mill tailings pile away from the Colorado River to a DOE-constructed disposal facility near Crescent Junction, Utah via rail transportation. DOE will assess the extent of radiological contamination at the mill site and vicinity properties, characterize the proposed disposal site and construct a disposal cell, excavate and remove the tailings pile to the disposal cell, and remediate local ground water. The remainder of the mill site will be verified to meet radiological standards and then restored to an acceptable condition. Demobilization from the site will complete the on-site activities, except in the case of active ground water restoration. DOE also will investigate unidentified vicinity properties to assess the presence of contamination.

Site Completion (End State)

The end state for the Moab Site Project will be achieved after contaminated soil, tailings, vicinity properties, and surface and groundwater are remediated. DOE may place some restrictions on reutilization of the site, depending on how a proposed land use could impact the selected ground water remedy. The site will then be transferred to the Office of Legacy Management for monitoring and required stewardship. The end date will be established once Critical Decision-2 is in place and the performance baseline finalized. Based on the current funding profile and project technical approach, the current estimate of completion date at pre-Critical Decision-2 is 2028.

Regulatory Framework

In October 2000, the Floyd D. Spence National Defense Authorization Act for FY 2001 assigned DOE responsibility to establish a remedial action program and stabilize, dispose of, and control uranium mill tailings and other contaminated material at the Moab uranium-ore processing site

and associated vicinity properties. Remediation must be performed in accordance with Title I of the Uranium Mill Tailings Radiation Control Act and the cleanup standards established under 40 CFR 192. The Nuclear Regulatory Commission must concur on the remediation plan.

Critical Site Uncertainties and Assumptions

- Full cost of remediation will not be known until a remedial action contract(s) is awarded and a performance baseline is validated.
- Potential rail upgrades and rail transport will be accomplished within expected project cost and schedule.
- Vicinity Properties characterization will minimize the number of sites requiring remediation.
- Nuclear Regulatory Commission will concur on the Final Remedial Action Plan with no major revisions or additions.

Interdependencies

Past surveys by the Environmental Protection Agency indicate contaminated vicinity properties may exist and consequently will have to be remediated to Environmental Protection Agency standards. Contaminated materials will be excavated and transported to the disposal cell location.

Contract Synopsis

A remedial action contract will be awarded by March 30, 2007. A new technical assistance contract and a contract to remediate groundwater will be awarded before the existing technical assistance contract expires in June 2007.

Cleanup Benefits

Continued maintenance and surveillance of the groundwater and mill tailings pile area will ensure no further contamination of surrounding areas. Initiating the removal of the approximately 12 million cubic yards of uranium tailings away from the Colorado River will begin to significantly reduce danger to human health and the environment.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- NRC approves remedial action plan and final design
- Continue operations and maintenance, interim groundwater remediation, and remediation of vicinity properties as needed
- Initiate long-lead infrastructure - construction water, haul road/conveyance, rail spurs and upgrades
- Initiate disposal cell excavation

FY 2009 Accomplishments

- Continue site operations and maintenance, interim groundwater remediation, and remediation of vicinity properties as needed
- Complete long-lead infrastructure - construction water, haul road/conveyance, rail spurs and upgrades
- Begin tailings haul to disposal cell

- Continue disposal cell excavation

FY 2010 Accomplishments

- Continue site operations and maintenance, interim groundwater remediation, and remediation of vicinity properties as needed
- Continue tailings haul to disposal cell
- Continue disposal cell excavation

FY 2011 Accomplishments

- Continue site operations and maintenance, interim groundwater remediation, and remediation of vicinity properties as needed
- Continue tailings haul to disposal cell
- Continue disposal cell excavation

FY 2012 Accomplishments

- Continue site operations and maintenance, interim groundwater remediation, and remediation of vicinity properties as needed
- Continue tailings haul to disposal cell
- Continue disposal cell excavation
- Begin segmented disposal cell cover installation

Stanford Linear Accelerator Center

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
5,720	5,900	4,883	4,541	381	0

Site Details

Site Overview

The objectives of EM's Stanford Linear Accelerator Center Remediation Project are to conduct necessary response actions to a California Regional Water Quality Control Board Site (Water Board) Cleanup Requirement Order (issued May 2005), implement necessary long-term groundwater remediation remedies, excavate and dispose of contaminated soils, and transfer responsibility for long-term operation and maintenance of necessary groundwater treatment systems to the Office of Science at the end of FY 2009. Meeting these objectives will allow DOE-EM to meet ongoing obligations as defined in the DOE lease with Stanford University (April 26, 1962), perform EM's mission of legacy contamination cleanup, comply with the Water Board Order, and achieve EM completion for the Stanford Linear Accelerator Center Environmental Remediation Project. In addition, completing this project in the shortest time feasible results in mortgage reduction as annual site monitoring costs are reduced and most of the support staff can be reassigned or eliminated.

Historically, EM's mission at the Stanford Linear Accelerator Center was the remediation of contamination resulting largely from the Stanford Linear Accelerator Center's 2-mile long linear accelerator, a leaky underground solvent tank, and many oil-cooled transformers. By 2005, this was reduced to 54 remaining release sites. The 2005 Cleanup Requirements Order forced a reassessment that concluded there are 39 sites with known or suspected contamination that require immediate responses, plus numerous other sites that must be evaluated (presumed no-action) or monitored (currently inaccessible, with stable contamination). EM and the Office of Science staffs divided responsibility for the 39 sites, assigning 33 to EM. A Critical Decision-0 to redefine the Stanford Linear Accelerator Center project was made September 2005, and its supporting documents planned EM activities through 2009. The remediation work scope was finalized in February 2006, adding many new sites.

Site Description

The Stanford Linear Accelerator Center is a national research facility operated by Stanford University under contract with DOE. The term of Stanford University's current contract with DOE (then the Atomic Energy Commission) began in 1962 and extends to 2007. The current lease expires in 2012.

The Stanford Linear Accelerator Center is located in an unincorporated area of southeast San Mateo County, California, about 2 miles west of the Stanford University campus. Constructed on land owned by Stanford University, the Stanford Linear Accelerator Center is devoted to theoretical and experimental research in elementary particle physics, developing new accelerator

and particle detection techniques, and the utilization of synchrotron radiation in biology, chemistry, physics, materials science, medical science, and other disciplines.

As a result of Stanford Linear Accelerator Center's mission as a high-energy physics research facility, certain chemicals have been used or produced as wastes over its 40+ year history. These chemicals include volatile organic compounds, polychlorinated biphenyls, and metals, most notably lead. Additionally, radionuclides, notably tritium, have also been generated as a result of Stanford Linear Accelerator Center experiments. Some of these chemicals have been released to the environment, including site soil, groundwater, sediment, and storm water.

In May 2005, the state Water Board issued a Site Cleanup Requirements Order that set the scope for this phase of EM remediation work at the Stanford Linear Accelerator Center. The Cleanup Order directed 19 tasks, including following a "Comprehensive Environmental Response, Compensation, and Liability Act -like" process (Stanford Linear Accelerator Center is not a National Priorities List site, and is unlikely to become one). The release sites at issue are grouped into four operating units: Groundwater/Volatile Organic Compound, Tritium, Research Yard/ IR-6 Channel, and West Campus/ IR-8 Channel. Some of the release sites can't be currently accessed without interfering with the Stanford Linear Accelerator Center's research operations, and the Office of Science /Stanford Site Office has accepted responsibility for them as deferred actions.

Site Cleanup Strategy/Scope of Cleanup

The EM approved baseline calls for completing removal actions and construction of remedial measures by the end of FY 2009 and transition these facilities to the Office of Science for the implementation of long-term stewardship. This objective will be achieved by:

- Excavating contaminated soils
- Using a Core Team of Project Leads from each of the involved organizations to identify and resolve potential technical issues early, before they cause project delays
- Installing or upgrading two groundwater treatment systems, to be operated long-term by the Office of Science
- Stanford Site Office and Office of Science accepting responsibility for all sites that are currently inaccessible due to site research operations, and all contamination after EM completes this project
- Following the Comprehensive Environmental Response, Compensation, and Liability Act process (including public reviews), leading to issuing a Remedial Investigation/ Feasibility Study for two of the Operable Units and a Remedial Investigation for a third. The Office of Science will be responsible for completing the Comprehensive Environmental Response, Compensation, and Liability Act process for the other Operable Units.

The primary chemicals of concern detected in soils at the Stanford Linear Accelerator Center are polychlorinated biphenyls, lead, volatile organic compounds, and petroleum hydrocarbons. Remediation activities are planned for the Lower Salvage Yard, the Clean Landfill, the Bone Yard, and several other smaller sites.

A network of wells has been installed at the Stanford Linear Accelerator Center to investigate past operational areas. As a result of groundwater investigation and monitoring performed since the 1980s, four areas of Stanford Linear Accelerator Center have been identified where volatile organic compounds are present in groundwater. Additionally, results of storm water and sediment sampling and testing indicate that polychlorinated biphenyls and lead have entered Stanford Linear Accelerator Center's storm water drainage system.

Site Completion (End State)

Once site completion is achieved, and responsibility for all operation and maintenance of remedial systems will be transferred from EM to the Office of Science. It is anticipated that Stanford Linear Accelerator Center will continue to operate as an Office of Science DOE-sponsored laboratory indefinitely, with Office of Science managing and completing all Long Term Remedial Actions activities. EM will complete construction and startup of remedial systems and transfer them to Office of Science, dispose of all remediation derived waste, complete regulatory and business closure activities, and enter into an agreement with the Office of Science defining EM completion, the end state, and transferring the long-term response action responsibility.

Multiple minor contamination sites were quantified and 51 were identified as additional scope in February 2006. These sites became regulatory requirements in the Water Board Site Cleanup Requirements Order issued on May 18, 2005, which may delay the current site closure date of 2009 by several years.

Regulatory Framework

The California Regional Water Quality Control Board, Bay Area Region, is the lead regulatory agency for all media including soil, groundwater, sediment, and storm water portions of the Stanford Linear Accelerator Center Environmental Restoration Program. The U.S. Environmental Protection Agency has regulatory authority regarding soil remedial actions involving polychlorinated biphenyls but they do not desire to play a role as long as the Toxic Substances Control Act unrestricted use standards are applied. DOE is also executing its Comprehensive Environmental Response, Compensation, and Liability Act authority provided under Executive Order 15280 to conduct removal actions. The Stanford Linear Accelerator Center is now under a Water Board Site Cleanup Requirements Order, issued on May 18, 2005. This Order requires the investigation and remediation of impacted soil and groundwater resulting from the historical spills and leaks that have occurred during the operation of the Stanford Linear Accelerator Center. Per the Order, a Remedial Investigation/ Feasibility Study Work Plan was prepared and approved that details cleanup work and regulatory work.

Critical Site Uncertainties and Assumptions

Groundwater

The groundwater will be considered not drinkable (i.e., industrial or irrigation-only).
A 2001 evaluation documented that natural groundwater at the Stanford Linear Accelerator Center does not qualify as potable drinking water due to naturally poor water quality and low well yields. Stanford Linear Accelerator Center in conjunction with the landowner, Stanford University, has proposed that the California Regional Water Quality Control Board exempt

groundwater at Stanford Linear Accelerator Center from all potential uses except freshwater replenishment, agricultural supply, irrigation supply and industrial process supply.

Soil

Although the future land use at Stanford Linear Accelerator Center has been classified as residential, the cleanup standards have not been determined. The National Contingency Plan recognizes an allowable risk range of 10^{-4} to 10^{-6} and the state regulator also recognizes this same risk range for unrestricted use. Stanford University has requested all cleanup standards be based on $1x10^{-6}$ risk. The cost of meeting this more conservative cleanup standard has not been determined but could be substantial, especially when the facility is finally shutdown by the Office of Science and full site cleanup is performed before returning the land back to Stanford University. Negotiations between Office of Science, EM and Stanford University are ongoing to establish cleanup standards for the site.

Interdependencies

Transition to Office of Science

The intent is to transfer responsibility for environmental management of Stanford Linear Accelerator Center to the Office of Science. It is expected that EM completion will achieve protection of groundwater and residential land use standards for accessible areas. DOE's lease with Stanford requires final end-state of "leaving the premises in safe, clean and neat condition".

Contract Synopsis

The Stanford Linear Accelerator Center is a national research facility operated by Stanford University under contract with DOE. The term of Stanford University's lease with DOE (then the Atomic Energy Commission) began in 1962 and extends to 2012. The Management and Operating contract expires September 30, 2007.

Cleanup Benefits

Stanford Linear Accelerator Center's location on the densely populated San Francisco peninsula with Stanford University as the Stanford Linear Accelerator Center property owner produces significant visibility and public awareness of EM's cleanup performance. In addition, the land on which Stanford Linear Accelerator Center is built is zoned residential, and property values in the area are among the highest in the nation. Therefore, there is substantial benefit in mitigating the existing environmental legacy risks at this site.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Removal Actions for 8 sites
- Install Dual Phase Extraction system at Plating Shop Area.
- Perform maintenance and operation for all groundwater treatment systems
- Prepare a Feasibility Study/Remedial Action Plan for the Groundwater OU
- Prepare and submit the Remedial Investigation report for the West Campus OU to the regulator.
- Remain compliant with the Water Board Cleanup order.

FY 2009 Accomplishments

- Removal Actions for 9 sites.
- Prepare and obtain approval of the RI and risk assessment for the Research Yard.
- Prepare and submit the Risk Assessment report for the West Campus OU to the regulator.
- Prepare Implementation Report and Operating & Maintenance (O&M) Plan for the Groundwater OU
- Remain compliant with the Water Board Cleanup order
- EM project is completed

FY 2010 Accomplishments

- Transfer of site responsibility from EM to SC.

FY 2011 Accomplishments

- Not applicable.

FY 2012 Accomplishments

- Not applicable.

West Valley Demonstration Project

Five Year Funding Profile

(dollars in thousands)

FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
75,000	55,995	75,000	75,000	74,750	74,750

Site Details

Site Overview

The West Valley Demonstration Project is being executed at the site of the only commercial nuclear fuel reprocessing facility to have operated in the United States. The West Valley Demonstration Project is located on the site of the Western New York Nuclear Service Center whose title is held by the New York State Energy Research and Development Authority. The principal mission of DOE is to satisfy the mandates established by the West Valley Demonstration Project Act of 1980 (Public Law 96-368):

- Solidify, in a form suitable for transportation and disposal, the high-level waste;
- Develop containers suitable for permanent disposal of the solidified high-level waste;
- Transport, in accordance with applicable law, the solidified waste to an appropriate federal repository for permanent disposal;
- Dispose low-level waste and transuranic waste produced by high-level waste solidification activities;
- Decontaminate and decommission tanks and facilities used for solidification of high-level waste, as well as any material and hardware used in connection with the Project, in accordance with such requirements as the Nuclear Regulatory Commission may prescribe.

Site Description

The West Valley Demonstration Project is located approximately 40 miles south of Buffalo, New York. For purposes of conducting the West Valley Demonstration Project, DOE has operational responsibility for approximately 165 acres located near the center of the larger 3,345 acre Western New York Nuclear Service Center owned by the state of New York.

Site Cleanup Strategy/Scope of Cleanup

DOE has completed the first two mandates of the West Valley Demonstration Project Act – solidification of the liquid high-level waste and development of containers suitable for permanent disposal of the high-level waste. There are currently 275 high-level waste canisters that have been produced in accordance with federal repository requirements that are in safe storage within the former spent fuel reprocessing plant. The remaining work to be completed by DOE per the West Valley Demonstration Project Act includes (1) shipment of the high-level waste canisters to a federal repository, (2) disposal of Project-generated low-level waste and transuranic waste, and (3) facility decontamination and decommissioning. Additionally, in accordance with the DOE and New York State Energy Research and Development Authority spent fuel agreement, DOE shipped 125 spent fuel assemblies to the Idaho National

Environmental and Engineering Laboratory in July 2003. The technical, schedule and cost considerations associated with decommissioning of the West Valley Demonstration Project are being considered during development of the Decommissioning and/or Long-Term Management Environmental Impact Statement. A Record of Decision determining the actions needed for final decommissioning is planned for issuance in 2008. As such, DOE will focus its near-term efforts on Project waste disposition, process building decontamination and removal of non-essential facilities that can proceed in the near-term while the Decommissioning Environmental Impact Statement is developed.

Site Completion (End State)

Until DOE completes evaluation and analysis of various closure alternatives in the Decommissioning Environmental Impact Statement and issues a Decommissioning Record of Decision, DOE plans to proceed toward Interim End State completion in CY 2011. The West Valley Demonstration Project Interim End State is defined as:

- Shipment of all low-level waste and transuranic waste generated by DOE as a result of the high-level waste solidification project;
- Deactivation, demolishment and removal of all DOE-managed facilities (foundations remain), with the exception of: 1) former spent nuclear fuel reprocessing facility (i.e. process building) and any other support facilities required for the interim storage of the high-level waste canisters, and 2) Remote-Handled Waste Processing Facility;
- Removal of major components and decontamination of the process building; and
- Configuring utilities and infrastructure to achieve cost effective long-term storage and maintenance of the process building and other facilities, including the tank farm, until off-site transport of the high-level waste canisters can be facilitated.

Following publication of the Decommissioning Environmental Impact Statement Record of Decision, currently planned for 2008, DOE will proceed toward implementation of actions necessary to achieve EM Completion. Pending the Record of Decision, the end state for EM completion includes the following actions:

- Decommissioning of the tank farm;
- Remediation of lagoons, sludge ponds and water treatment systems, as applicable;
- Removal and disposal of facility foundations and contaminated soil, as applicable;
- Decommissioning and removal of Remote-Handled Waste Processing Facility;
- Installation of erosion controls and environmental monitoring requirements;
- Multi-Agency Radiation Survey and Site Investigation Manual survey and sampling;
- Implementation of other actions as required by the Decommissioning Environmental Impact Statement Record of Decision.

Activities to be implemented to achieve the Final End State for the West Valley Demonstration Project once transport of the high-level waste canisters to a federal repository can be facilitated include:

- Construction of high-level waste canister Load-out facility;
- Shipment of the high-level waste canisters off-site;
- Final decommissioning of the Process Building consistent with Decommissioning Environmental Impact Statement Record of Decision;

- Demolition and removal of any other interim storage support facilities; and
- Transition of the site back to the State of New York.

Regulatory Framework

West Valley Demonstration Project Act (Public Law 96-368): Signed by President Carter in October 1980, the West Valley Demonstration Project Act required the Secretary of Energy to carry out a high-level radioactive waste management project at the Western New York Nuclear Services Center. Specifically, the West Valley Demonstration Project Act required the Department of Energy to conduct the following:

- Solidify, in a form suitable for transportation and disposal, the high-level waste;
- Develop containers suitable for permanent disposal of the solidified high-level waste;
- Transport, in accordance with applicable law, the solidified waste to an appropriate federal repository for permanent disposal;
- Dispose low-level waste and transuranic waste produced by high-level waste solidification activities;
- Decontaminate and decommission the tanks and facilities used for solidification of high-level waste, as well as any material and hardware used in connection with the Project, in accordance with such requirements as the Nuclear Regulatory Commission may prescribe.

Cooperative Agreement between DOE and New York State Energy Research and Development Authority: Signed in October 1980 with the New York State Energy Research and Development Authority and amended in September 1981, this agreement was entered into for implementation of the West Valley Demonstration Project Act of 1980. It allows DOE use and control of the 165-acre West Valley Demonstration Project premises and facilities thereon for the purposes and duration of the Project. In addition, this agreement sets forth specific definitions, roles and responsibilities applicable to the Project, use of facilities and Project completion.

Memorandum of Understanding between DOE and Nuclear Regulatory Commission: Published in the Federal Register in September 1981, this memorandum identifies roles, responsibilities, terms and conditions agreed to by the DOE and Nuclear Regulatory Commission regarding Nuclear Regulatory Commission review and consultation during the course of the Project.

Agreement between New York State Energy Research and Development Authority and DOE on U.S. DOE Spent Nuclear Fuel located at the Western New York Nuclear Service Center: Signed in July 1986, this agreement relates to shipment of spent nuclear fuel from the Project site to Idaho.

Stipulation of Compromise Settlement: Reached in May 1987, this settlement represents the legal compromise reached between the Coalition on West Valley Nuclear Waste and Radioactive Waste Campaign and the DOE regarding development of a comprehensive Environmental Impact Statement for the Project and for on- and off-site disposal of low-level waste.

Supplemental Agreement to the Cooperative Agreement: Signed in February 1991, this supplemental agreement sets forth special provisions for the preparation of a joint Environmental Impact Statement between the DOE and New York State for facility decommissioning.

Resource Conservation and Recovery Act 3008(h) Administrative Order on Consent: Expanded and signed in March 1992, this four-party agreement is between the United States Environmental Protection Agency, the New York State Department of Environmental Conservation, DOE and New York State Energy Research and Development Authority. Among the requirements of this agreement, DOE is to complete Resource Conservation and Recovery Act facility investigations and perform corrective measures for Resource Conservation and Recovery Act-regulated solid waste management units on the Project premises.

Federal and State Facility Compliance Agreement and Addendum: Completed in 1993, this agreement defines requirements for preparing and submitting a site treatment plan for mixed low-level waste (radioactive waste mixed with hazardous chemicals) to the New York State Department of Environmental Conservation, including options and schedules for treatment of identified waste.

Cooperative Agreement between the Seneca Nation of Indians and Ohio/West Valley Demonstration Project: Signed in June 1996, this agreement establishes a framework for inter-governmental relationships between the Seneca Nation of Indians and the DOE with respect to Project activities.

Critical Site Uncertainties and Assumptions

The following assumptions support the planning basis for achieving Interim End State completion in FY 2011:

- The Project will be able to disposition higher activity (Class B and C) low-level waste off-site, without obstruction, consistent with the Project's 2005 Waste Management Record of Decision.
- Supplemental analyses and amendments to the Record of Decision, as necessary, will allow for off-site disposition of other Project waste (e.g. transuranic waste).
- A disposition pathway for the Project's transuranic waste will be determined by the end of FY 2008, and Project transuranic disposition will be integrated onto the complex wide shipping schedule to support off-site disposition beginning in FY 2009.
- New York State Energy Research Development Authority will continue as a joint lead agency in the Environmental Impact Statement process.

The critical path to achieving Interim End State completion at the West Valley Demonstration Project is continued decontamination operations in the former spent nuclear fuel reprocessing facility and final off-site disposal of the resulting waste.

Implementation of closure for the tank farm and other facilities under DOE's responsibility will become critical path following publication of the Decommissioning Environmental Impact Statement Record of Decision in order to achieve EM completion. Efforts will include final site survey and possible transfer to another organization for oversight and maintenance for long-term surveillance and monitoring with the exception of process building oversight and maintenance, high-level waste canister transport, and final decommissioning of the process building consistent with the Decommissioning Environmental Impact Statement Record of Decision after the high-level waste canisters have been shipped off-site. Completion of West Valley Demonstration

Project Act mandates will be satisfied once West Valley Demonstration Project facilities can be returned to the state of New York.

Interdependencies

Completing the West Valley Demonstration Project Act requires off-site disposal of low-level waste, mixed low-level waste, transuranic waste, and high-level waste. Thus, the project is dependent on other sites for these disposal services. In addition, the State holds title to the high-level waste per the Act, and therefore is responsible for payment of the repository disposal fee.

Contract Synopsis

The current prime contract at the West Valley Demonstration Project that was to expire in December 2006 was extended for six months. The acquisition process to competitively award a new contract for completion of the Interim End State at West Valley Demonstration Project is ongoing to support contract transition in the 2007 timeframe.

Cleanup Benefits

Work planned for performance through FY 2007 includes significant progress toward off-site shipment of legacy low-level waste and initiating disposition of the West Valley Demonstration Project transuranic waste. Additionally, the former spent nuclear fuel reprocessing facility will be in the process of being decontaminated, reducing overall risks.

West Valley Demonstration Project plans to achieve Interim End State completion in FY 2011. At that point, all of the work that can be accomplished with current regulatory authority will have been completed including off-site disposition of low-level waste and transuranic waste, decontamination and demolishment of facilities and infrastructure no longer needed to support safe site operations, and decontamination of the former spent nuclear fuel reprocessing facility. The site will be ready for implementation of the Decommissioning Environmental Impact Statement Record of Decision planned for issuance in 2008, which will include final decommissioning for the high-level waste tanks. The high-level waste canisters will be safely stored on-site awaiting disposition to a federal repository.

Outyear Accomplishment Priorities and Assumptions by Year

FY 2008 Accomplishments

- Provide security for site facilities
- Provide maintenance and surveillance of remaining project facilities and waste (to maintain safety envelope)
- Maintain ventilation for highly contaminated cells
- Continue pump and treatment of ground water plume
- Continue management of radiologically contaminated site water (from disposal area, roofs, waste tank farm)
- Continue interim storage of the high-level waste (HLW) canisters
- Complete Draft Decommissioning/Long Term Stewardship EIS and issue for public comment
- Ship remaining legacy LLW (approx. 600 m3)
- Continue processing high-activity waste through the Remote Handled Waste Facility.

- Ship LLW from Main Plant Process Building D&D
- Decontaminate 14 cells/areas in the Main Plant Process Building and 2 cells/areas in Vitrification Facility

FY 2009 Accomplishments

- Provide security for site facilities
- Provide maintenance and surveillance of remaining project facilities and waste (to maintain safety envelope)
- Maintain ventilation for highly contaminated cells
- Continue pump and treatment of ground water plume
- Continue management of radiologically contaminated site water (from disposal area, roofs, waste tank farm)
- Continue interim storage of the high-level waste (HLW) canisters
- Ship LLW from Main Plant Process Building D&D
- Decontaminate 14 cells/areas in the Main Plant Processing Building and 8 in the Vitrification Facility
- Decontaminate and Disposition 2 areas / structures / facilities on the Balance of the Site
- Complete asbestos abatement in Main Plant Process Building
- Continue off-site disposition of project LLW wastes and begin off site shipments of TRU waste
- Continue processing high-activity waste through the Remote Handled Waste Facility.
- Complete Decommissioning/Long Term Stewardship EIS and issue final Record of Decision (ROD)

FY 2010 Accomplishments

- Provide security for site facilities
- Provide maintenance and surveillance of remaining project facilities and waste (to maintain safety envelope)
- Maintain ventilation for highly contaminated cells
- Continue pump and treatment of ground water plume
- Continue management of radiologically contaminated site water (from disposal area, roofs, waste tank farm)
- Continue interim storage of the high-level waste (HLW) canisters
- Ship LLW from Main Plant Process Building D&D
- Decontaminate 4 cells/areas in the Main Plant Processing Building and 1 area in the Vitrification Facility
- Decontaminate and Disposition 10 areas / structures / facilities in the Balance of the Plant
- Continue off-site disposition of project LLW and TRU wastes
- Continue processing high-activity waste through the Remote Handled Waste Facility
- Implement EIS Record of Decision activities

FY 2011 Accomplishments

- Provide security for site facilities
- Provide maintenance and surveillance of remaining project facilities and waste (to maintain safety envelope)

- Maintain ventilation for highly contaminated cells
- Continue pump and treatment of ground water plume
- Continue management of radiologically contaminated site water (from disposal area, roofs, waste tank farm)
- Continue interim storage of the high-level waste (HLW) canisters
- Ship LLW from Main Plant Process Building D&D
- Complete the decontamination of the remaining cells/ventilation system in the Main Plant Processing Building and disposition the 100-ton crane in the Fuel Receiving and Storage area.
- Complete processing and disposition of legacy TRU through the Remote Handled Waste Facility
- Continue off-site disposition of project LLW and TRU wastes
- Decontaminate the Remote Handled Waste Facility
- Achieve Interim End State Completion
- Initiate deactivation, decontamination and disposition of remaining facilities and areas consistent with the Long term Stewardship EIS and ROD.
- Implement EIS Record of Decision activities

FY 2012 Accomplishments

- Provide security for site facilities
- Provide maintenance and surveillance of remaining project facilities and waste (to maintain safety envelope)
- Maintain ventilation for highly contaminated cells
- Continue pump and treatment of ground water plume
- Continue management of radiologically contaminated site water (from disposal area, roofs, waste tank farm)
- Continue interim storage of the high-level waste (HLW) canisters
- Disposition the Remote Handled Waste Facility
- Deactivation, decontamination and disposition of remaining facilities and areas consistent with the Long term Stewardship EIS and Record of Decision
- Continue off-site disposition of Project wastes