



OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

AUDIT REPORT

DOE-OIG-17-05

April 2017

**DEPARTMENT OF ENERGY'S
WEST VALLEY DEMONSTRATION
PROJECT**



Department of Energy
Washington, DC 20585

April 26, 2017

MEMORANDUM FOR THE SECRETARY

April Stephenson

FROM: April Stephenson
Acting Inspector General

SUBJECT: INFORMATION: Audit Report on the “Department of Energy’s West Valley Demonstration Project”

BACKGROUND

From 1966 to 1972, Nuclear Fuel Services Inc. operated a commercial nuclear fuel reprocessing plant at the Western New York Nuclear Services Center near West Valley, New York. The plant was the first and only U.S. plant in history to commercially reprocess uranium and plutonium from spent nuclear fuel. Operations at the plant generated more than 600,000 gallons of liquid high-level waste, which was stored on-site in underground tanks. In 1980, Congress passed the *West Valley Demonstration Project Act*, which required the Department of Energy, in cooperation with the State of New York, to solidify high-level waste, develop containers suitable for permanent disposal of the high-level waste, transport the waste to a permanent Federal repository, dispose of low-level and transuranic waste, and decontaminate and decommission the associated facilities and tanks.

The Department reported that it had developed suitable containers and solidified the high-level waste via vitrification by 2002, fulfilling its first two responsibilities under the *West Valley Demonstration Project Act*. The Department then commenced interim activities for decontaminating and decommissioning the facilities and managing wastes until it issued its Record of Decision in 2010. In this Record of Decision, the Department settled on a phased approach to complete the remainder of cleanup actions at the site. Phase I decommissioning actions included near-term removal of some facilities. During Phase I, further characterization of site contamination and additional scientific studies would be completed to support Phase II decommissioning decisions. In June 2011, the Department awarded a \$333 million, 6-year contract to CH2M Hill B&W West Valley LLC (Contractor) for the facility disposition portion of the Phase I work. We initiated this audit to determine whether the Department was effectively managing the West Valley Demonstration Project (West Valley) cleanup efforts.

RESULTS OF AUDIT

We identified several significant issues with the management of the West Valley cleanup effort. In particular, we found substantial weaknesses related to the Department’s project and contract

management that contributed to the inability to meet the major milestones established in the Phase I – Facility Disposition contract. Specifically, we found the following:

- Although the West Valley Phase I activities had been underway since 2011 and had incurred costs of \$264 million by October 2015, the project was not administered using basic project management principles. For instance, neither the Department nor the Contractor had adequate baselines, well-defined scopes of work, or adequate systems to plan, measure, control, and forecast the work necessary to achieve the Phase I – Facility Disposition objectives. These elements are essential to ensure that work is on track, performance problems are identified and corrected, and forecasts are reasonable and accurately reflect future schedule and budgets.
- The Department had omitted or had not explicitly described critical activities from the Phase I contract’s original scope. As of November 2015, the contract value had increased by \$196 million as a result of differing site conditions and inaccurate scope. For instance, the Department and the Contractor identified differing site conditions that were valued at \$92 million within the first 2 months of the contract. Work scope necessary to satisfy contract objectives was also not included in the contract and contributed to additional cost increases. For example, we found that when the Department awarded the contract, it had:
 - Omitted the relocation of 222 containers of high-dose, remote-handled transuranic waste stored in the main plant building, yet it required the Contractor to demolish that building;
 - Not explicitly described the decontamination of 275 high-level waste containers prior to relocating them to interim storage;
 - Not included unfinished work from the prior contract, even though the Department acknowledged during the procurement process that the prior contractor could not complete the work; and
 - Inaccurately described inventories of low-level, mixed low-level and transuranic waste.

The Department should have been better equipped to ensure the success of the new Phase I – Facility Disposition contract after lessons learned from earlier attempts to clean up the West Valley site. Specifically, the Department had overseen an earlier capital asset project to prepare the West Valley buildings for demolition. However, the Department’s Office of Environmental Management (Environmental Management) deemed that project a failure, and a January 2012 Department review indicated that the site’s more recent efforts encountered many similar difficulties. In particular, the review team found that the project had major deficiencies in cost estimating, schedule development, scope definition, risk management, project management, and quality assurance and safety planning. The review team concluded that the project could not be completed within assumed available funding. Although the site drafted a corrective action plan to address the review team’s findings, both the site and Environmental Management determined that because the work was not considered to be a capital project, implementation was not required.

These conditions occurred, in part, because the Department had not ensured that project management policies and procedures were followed. Despite the requirements established in the Office of Management and Budget's *Capital Programming Guide*, Department Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, and *Environmental Management's Portfolio Management Framework*, the site did not manage the West Valley decontamination and decommissioning work as a capital project. With Environmental Management's concurrence, the site instead characterized the work as deactivation, an operational activity that precedes decontamination and decommissioning. According to site personnel, the operational work was guided by fiscal year work plans. However, the fiscal year work plans track only activities on an annual basis but provide no firm tracking or detailed commitment to meeting the overall project scope, cost, and schedule to completion. Thus, the site did not have key management tools needed to plan, measure, and control progress of large projects. Additionally, Environmental Management had not ensured that site personnel had the appropriate skill level to manage the complex characterization and remediation work at West Valley or that its streamlined procurement efforts captured the scope of work to be performed when it solicited the contract.

After the Department fulfills its requirements at West Valley, it plans to return the site to its owner, the State of New York. However, with no baseline and no effective strategy for managing the work, neither Environmental Management nor the Department can realistically estimate resource needs or inform Congress of the true cost to complete the West Valley cleanup effort. As a result, the West Valley cleanup project will likely continue to experience escalating costs and schedule delays, particularly in light of project risks involving radioactive contamination at the site, waste uncertainties, and deteriorating facility infrastructure.

In an effort to improve guidance for classifying Environmental Management activities as either capital projects or operational activities, Environmental Management drafted interim guidance via a new Portfolio Management Framework in 2014. While this draft framework may assist the Environmental Management sites and the Department in resolving some of the issues identified in this report, it has not been fully implemented. For example, although Environmental Management's new framework stated that cleanup efforts focused on achieving the final end-state should be classified as capital projects, the West Valley site planned to manage only the actual demolition of the buildings as a capital asset project. To minimize future cost overruns and schedule delays, we made a series of recommendations designed to assist management and improve oversight of the West Valley project.

MANAGEMENT RESPONSE

Management concurred with our recommendations and identified a series of actions that were either underway or were planned to address our recommendations. Management noted that substantial improvements had been made since the audit was conducted, and stated that a recent review reinforced its view that corrective actions already taken were effective. Management's actions are responsive to our recommendations.

cc: Deputy Secretary
Chief of Staff
Chief Financial Officer

**DEPARTMENT OF ENERGY’S WEST VALLEY
DEMONSTRATION PROJECT**

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DEPARTMENT OF ENERGY'S WEST VALLEY DEMONSTRATION PROJECT

DETAILS OF FINDING

In its 2010 Record of Decision, the Department of Energy described its plan for fulfilling responsibilities under the *West Valley Demonstration Project Act*. The Department, in cooperation with the New York State Energy Research and Development Authority and other Federal and local regulatory authorities, agreed upon a phased approach that would focus on near-term removal actions for Phase I and site closure actions for Phase II. Phase I involved disposing of and/or storing various waste streams, demolishing the site's two main process buildings as well as other ancillary buildings, soil remediation, and characterization work and studies to facilitate decision making for Phase II actions. Phase II actions included permanent waste disposal actions, such as closure of disposal areas and tank farms.

The Department further divided the Phase I activities into two sequential actions. Phase I – Facility Disposition included the disposal or storage of certain waste streams, demolition of the two process buildings to grade, and removal of other ancillary facilities. After the successful completion of the Facility Disposition work, the Department planned to award another contract for the Phase I – Soil Remediation work.

In June 2011, the Department awarded a \$333 million, 6-year contract to CH2M Hill B&W West Valley LLC (Contractor) for the Phase I – Facility Disposition work. As reflected in the contract, the Department expected the Contractor to complete the Facility Disposition activities by 2017 and included four milestones geared toward that objective. Specifically, the Contractor was to achieve its end-state by completing the following critical activities:

- Milestone 1 – Relocate high-level waste by July 2015;
- Milestone 2 – Process, ship, and dispose of all legacy waste by November 2014;
- Milestone 3 – Demolish the main plant and vitrification facilities by August 2017; and
- Milestone 4 – Complete performance work statement, including disposition of balance of site facilities by August 2017.

Department Management of the Facility Disposition Effort

We identified several weaknesses in the Department's project and contract management, factors significantly affecting its ability to meet major project milestones. As of November 2015, the Department had not met, nor was it on track to meet, any of the major milestones established in the Phase I – Facility Disposition contract. We also noted that neither the Department nor the Contractor had adequate baselines, well-defined scopes of work, or adequate systems to plan, measure, control, and forecast the work necessary to complete Phase I – Facility Disposition objectives. Further, the Department had omitted significant critical activities from the work scope during contract acquisition, contributing to a \$196 million cost increase and nearly 3-year schedule extension to the contract. The lack of adequate baselines, coupled with changes in contract requirements, made it difficult to determine the status of progress on the West Valley

Demonstration Project (West Valley) cleanup efforts or estimate the total cost or completion date. As such, the Department was unable to satisfactorily demonstrate how much progress had been made, how much work had yet to be accomplished, and how realistic the Contractor's latest estimates were.

Project Management

By October 2015, the Department had been managing the West Valley Phase I activities for 4 years and had incurred costs of \$264 million, yet it had not ensured that the project was governed by basic project management principles. For example, the Department did not have a performance baseline capable of accurately monitoring the Phase I – Facility Disposition scope. A performance, or near-term, baseline establishes the scope, cost, and schedule framework within which the project is executed and performance is assessed. Baselines are required for all capital projects costing over \$10 million and are subject to periodic independent reviews to validate the cost, scope, and schedule. However, the Department had not implemented a performance baseline to monitor its progress on the Phase I – Facility Disposition work, either for the Phase I work as a whole, or in part for discrete work scopes like decontaminating, decommissioning, and demolishing buildings.

Furthermore, the Department had not ensured that the Contractor had an adequate baseline to monitor and forecast its performance under the contract. In accordance with the contract's terms, the Contractor was required to have a performance measurement baseline, to assess its performance against the contract's performance work statement, and to have a certified Earned Value Management System (EVMS) to plan, measure, control, and forecast the contract baseline work. These essential tools are required to objectively track performance, provide the Department with an early warning system on potential problem areas, and assist in applying corrective actions. The site approved the performance measurement baseline in June 2012. However, after 4 years, the Contractor's performance measurement baseline and EVMS still had not proven capable of withstanding an independent validation process. An April 2014 EVMS review found that the system could not be certified. Of particular concern were findings related to inadequate performance measurement baseline control, artificially high positive schedule variances, inaccurate critical path, and lack of traceability between schedules.

While the site stated it had taken a number of steps to correct these deficiencies, significant problems remained uncorrected at the time of our audit. In a December 2014 followup site visit, the EVMS review team observed that the Contractor had not made substantial progress in addressing the 35 recommendations made by the original review team to correct the EVMS. Furthermore, the team recommended the Contractor first develop a detailed integrated schedule capable of withstanding critical review before addressing individual corrective actions. In January 2015, the Department suspended Contractor fee because the Contractor had not provided an integrated baseline schedule that the Department could rely on to determine progress. The Department modified the contract in December 2015 to attach fee to specific milestones and removed the ability for the Contractor to earn provisional fee for the cost incentive. As of September 2016, more than 5 years after the contract was awarded, a followup EVMS certification review had not been performed.

Contract Management

In addition, the Department had not adequately managed the Phase I contract. Specifically, the Department had not ensured that the 2011 Phase I – Facility Disposition contract captured the scope from which to develop a comprehensive baseline. Moreover, required activities were not fully incorporated until February 2015. In some instances, the Department had omitted critical activities that were essential for the completion of the Phase I objectives; in other instances, the Department had not clearly described the site conditions. During contract transition, the Department and the Contractor agreed on \$92 million in readily discernible differences between the contract’s performance work statement and the actual work required to accomplish the Phase I objectives. For example, one such omission was the Department’s failure to include the task of relocating 222 high-dose, remote-handled transuranic waste containers that were stored in a building slated to be demolished. Similarly, while the Department included the task to relocate 275 high-level waste containers that were also stored in the building, it had not explicitly described its expectation that the 2-ton containers be decontaminated prior to relocation.

Not only had the Department omitted key activities from the contract’s work statement, it had also failed to adequately describe the beginning site conditions. For instance, the Department’s work statement assumed that certain activities would be completed under the prior contract, even though the Department acknowledged during the procurement process that the prior contractor could not complete the work. The Department and the Contractor agreed on differences found during transition that included the conditions of cells in the Main Plant Process Building, status of site facilities, and inventories of legacy waste. While it is usually expected that a certain amount of true-up would occur after contract implementation, the Department’s approach resulted in a significant amount of contract modifications. By November 2015, the Department had added \$196 million and 3 years to the \$333 million, 6-year contract as a result of scope that had been omitted or not explicitly described.

Historical Problems

We found the above-noted project and contract weaknesses to be particularly troubling considering that the Department had been aware of similar problems at West Valley for a number of years. Under the prior contract awarded in 2007, the Department expected that the main plant and vitrification buildings would be demolition-ready by 2011, the end of that contract’s term. However, the Department’s Office of Environmental Management (Environmental Management) deemed the project a failure because buildings were still years from being demolition-ready in 2011. With the lessons learned from the failed project and the Record of Decision clarifying its path, the Department should have been better equipped to develop project baselines and well-defined scopes to ensure that its new contract for the Phase I – Facility Disposition work was successful. Nevertheless, an External Independent Review performed shortly after the new contract was awarded indicated that the project encountered many similar difficulties. In particular, the review team found in 2012 that the project, as planned, was incapable of being completed within proposed available funding, and the project scope was not sufficiently defined. While the Department had once planned to have the buildings demolition ready in 2011, its current plan, which, according to site officials, incorporates a change in technical approach, has a demolition ready milestone date of 2019.

Requirements, Oversight, and Strategy

These conditions occurred, in part, because the Department had not ensured that project management policies and procedures were followed or that its oversight team was adequately staffed with the requisite skills and expertise in managing the Phase I activities. Further, the Department's procurement efforts did not capture the scope of work to be performed when it solicited the contract.

Project Management Policies

The site had not complied with project management directives for managing cleanup projects. In particular, we noted that although decontamination and decommissioning (D&D) work on West Valley's main plant and vitrification buildings met the attributes of a capital project, the site did not manage the work as such. Specifically, the Office of Management and Budget's *Capital Programming Guide* establishes that D&D work is considered to be capital in nature. Likewise, Department Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, further stipulates that D&D projects are capital projects and sets forth the requirements that the Department must abide by in managing capital projects. Further, Environmental Management's 2009 *Environmental Management Recovery Act Program Portfolio Management Framework* (Framework) and its draft 2014 Framework both state that D&D work similar to West Valley's met the criteria for a capital project. Specifically, the 2009 Framework specified that cleanup work following a Record of Decision should be managed as a capital project, as should work that focuses on an end-state, as described in the draft 2014 guidance. The current West Valley contract was derived from the Department's Record of Decision, and was specifically structured to achieve an end-state culminating in the demolition of buildings.

Despite these directives, the site determined that the work was deactivation, an operational activity that precedes a D&D project, and therefore not required to adhere to capital project management requirements. According to site officials, they relied on guidance from Environmental Management in making this determination. However, according to Department Order 413.3B, deactivation is the process of placing a facility in a stable condition to limit long-term costs of surveillance and maintenance and does not include decontamination necessary for the demolition phase of decommissioning. The West Valley contract itself reflects that the focus of the work is on demolition, not on placing the facilities in a long-term mode. Regardless, the site did not manage the work as a capital project, and thus it did not employ key management tools that are necessary to properly plan, measure, and control progress on multimillion dollar projects such as the West Valley cleanup work. Specifically, the Department did not have a fully defined baseline, scope, and schedule, nor had it completed certain planning documents that are required prior to capital project acquisitions, such as a project execution plan and Federal risk management plan. Failure to adopt these controls and the mischaracterization resulted in a 3-year delay in the review of the Contractor's EVMS, allowing system issues to go unidentified until 2014. According to site officials, corrective actions had been implemented to improve the EVMS, however their adequacy had not yet been validated. The Contractor's schedule, a necessary component of both the baseline and EVMS, likewise had not been validated.

The Department's Office of Project Management Oversight and Assessments (PMOA), which is responsible for supporting and overseeing contract and project management across the complex, also determined the D&D work at West Valley should be managed as a capital project. PMOA performed both the External Independent Review and the EVMS review mentioned earlier and had identified several major deficiencies, including ill-defined project cost, scope, and schedule and concluded that the project team was not prepared for Department Order 413.3B's Critical Decision process. In total, PMOA identified 46 findings, including 19 major findings, during its External Independent Review. However, because both Environmental Management and the site maintained that work was not subject to Department Order 413.3B, several major project management deficiencies were not addressed. As a result, PMOA could not validate corrective actions. Nevertheless, according to site officials, some corrective actions in response to the findings had been initiated.

Project Management Oversight

The Department had not ensured that site personnel had the appropriate skill level to manage the complex work, even though earlier D&D efforts had been unsuccessful. According to West Valley site officials, the site's Federal staff, while competent in their respective disciplines, lacked strong project management skills and may not have fully understood the project management process. This concern had also been previously expressed by two different teams from PMOA. One team reported that the project staff, including the Federal project director, had not clearly demonstrated ownership of the project. In particular, the review team noted that it was apparent that risk management was not an integral element within the project management process and that lessons learned were not fully considered. In addition, an independent cost review team stated that the project's staff was "stretched thin" due to insufficient Department staff to oversee the project. Site officials indicated in February 2014 that they were trying to get more project support staff to strengthen their oversight, and in 2015 they hired an Administrative Officer to provide an analysis of the technical capabilities of the West Valley staff. Additionally in 2015, the site replaced a support service contractor with one employee who is on the Project Control and Integration Team to manage the Federal baseline schedule and support oversight of the contract's project controls. While the site had made progress in this area, we believe it is incumbent on the Department to ensure the adequacy of the site's project management personnel.

Procurement Strategy

The Department did not have an adequate procurement strategy when it entered into the Phase I – Facility Disposition procurement. Rather than ensuring that the solicitation and subsequent contract realistically captured the work to be performed, the Department instead outlined an approach to streamline the acquisition with the intention of requesting additional funds after the contract was awarded. The Department had been aware that the prior contractor would not complete a significant amount of work before the new contract was in place and had de-scoped a portion of the prior contractor's work months prior to issuing the Phase I contract's request for proposal. However, during a review of the acquisition plan, the Department stated that completion was highly unlikely and additional workers would be needed for 2–3 years. According to West Valley site management and procurement officials we spoke to, it was well known that the previous contractor could not accomplish its remaining work by the end of its

contract term. Nonetheless, the Department omitted the work from the request for proposals for the new contract. Procurement officials also told us that the Department planned to add the additional work scope to the new contract and ask for additional funds after the new contract was awarded.

The Department subsequently modified the contract to add the omitted items and the differences in site conditions. However, we remain concerned that if it continues to enter into procurement actions without careful analysis of the work to be performed, the Department may likewise exclude significant work scope from the competitive bid process of West Valley's follow-on contracts, thereby diminishing its leverage during the negotiation of contract modifications. For example, as of November 2015, West Valley contract modifications represent \$196 million or nearly 40 percent of the project scope that was not subject to competitive bid.

Project Risks and Costs

Without improvements to the management of the West Valley work, the Department's operational and financial responsibilities under the *West Valley Demonstration Project Act* may extend beyond those anticipated. Upon completion of the Phase I and Phase II work, the Department plans to transfer the site back to the State of New York. The Department had estimated costs of about \$2.03 billion for the Phase I work and some limited Phase II activities. However, as of November 2015, the Department had already committed \$1.5 billion of that amount through 2020 for the Phase I – Facility Disposition work, leaving \$530 million to complete the Phase I – Soil Remediation work and some limited Phase II activities. Site officials contend that the remaining \$530 million is sufficient to complete the remaining work, considering that 50 percent of the cost of the soil remediation scope will be funded by the State of New York. However, without a viable cost, scope, and schedule baseline, the Department will be unable to adequately forecast and inform Congress of the future resources needed to fulfill its responsibilities. Further, the Department heightens its risk of cost increases and schedule delays in the absence of rigorous project management controls over the complete scope of the Phase I West Valley work.

Although future costs cannot be determined at this time, we have noted the effect on some near-term costs as a result of project delays. For example, contract modifications included \$75 million for site services such as fire protection and security during the 3-year extension of the Phase I – Facility Disposition work. Further, delays in demolition of the site's infrastructure will continue to result in escalating maintenance costs. Just halfway through the contract term, the Department had already incurred more than \$13 million in major maintenance costs when only \$9 million had been budgeted for the entire contract. A recent West Valley deferred maintenance review reported that the main plant facility structure, ventilation systems, and electrical systems were well beyond their useful lives. Considering that these systems must be maintained until facility demolition is commenced, we believe additional unbudgeted expenditures are likely. Cost and schedule overruns will not only affect the West Valley site but the Environmental Management complex as a whole, as cleanup projects compete for limited available funding.

Other Matters

In addition to the management issues noted in this report, the Department faces other challenges in completing the Phase I objective for waste disposition. In particular, there is currently no repository in the country capable of accepting non-defense transuranic waste. The Department's Waste Isolation Pilot Plant is limited to accepting transuranic waste generated by defense activities. West Valley was the only commercial spent nuclear fuel reprocessing plant in the country, and the transuranic waste generated from its activities does not have a disposition path and cannot be shipped to the Waste Isolation Pilot Plant without legislative action. Despite these circumstances, the disposition of this waste is included in the Phase I scope, outlined in the Record of Decision.

RECOMMENDATIONS

To improve the Office of Environmental Management's planning and management of its cleanup projects, we recommend the Acting Under Secretary for Management and Performance ensure:

1. The Office of Project Management Oversight and Assessments and Environmental Management resolve differences between and finalize guidance for determining when cleanup projects are capital projects subject to Department Order 413.3B;

To improve the management of the West Valley site, we recommend the Acting Assistant Secretary for Environmental Management ensure:

2. Environmental Management has an effective project management strategy, in accordance with clarified guidance, to carry out the requirements of the *West Valley Demonstration Project Act*;
3. The West Valley cleanup work complies with the Department's Program and Project Management directives, to include clarified guidance;
4. Federal staff levels are adequate and include project management skills necessary to oversee and manage the West Valley work; and
5. Life-cycle cost estimates reflect current expected costs to complete the Department's responsibilities under the *West Valley Demonstration Project Act*.

To improve the planning, control, and measurement of the West Valley work, we recommend the Director, West Valley Demonstration Project ensure the:

6. Contractor has developed an adequate contract budget baseline and a certified earned value management system;
7. Project has a Federal near-term baseline with a well-defined scope and realistic cost estimates, with independent validation; and
8. Performance work statement in the current Phase I – Facility Disposition contract accurately reflects the scope needed to complete the Phase I objectives.

MANAGEMENT RESPONSE

In its response provided to the Office of Inspector General on March 1, 2017, management concurred with our recommendations and identified a series of actions that were either underway or were planned to address our recommendations. Management noted that it had made substantial progress since the audit work was performed, and stated that it was working with the Office of Project Management Oversight and Assessments to develop a policy document that will address planning and management of Environmental Management's cleanup projects and operations activities. Further, management stated that the results of a recent Project Peer Review reinforced its view that the project was well-positioned and that corrective actions already taken were effective.

AUDITOR COMMENTS

The Department's actions are responsive to our recommendations. We believe that management's cooperative efforts with the Office of Project Management Oversight and Assessments to develop a policy document addressing cleanup projects will assist field sites in appropriately characterizing cleanup efforts. Management's comments and corrective actions are included in Appendix 3.

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The objective of the audit was to determine whether the Department of Energy was effectively managing the West Valley Demonstration Project (West Valley) cleanup efforts.

Scope

The audit was performed from September 2013 through April 2017 at the West Valley site in West Valley, New York; the Environmental Management Consolidated Business Center in Cincinnati, Ohio; and at Department Headquarters in Washington, DC. The audit reviewed Department and Contractor activities performed under the Phase I – Facility Disposition contract from July 2011 through December 2015. The audit was conducted under Office of Inspector General project number A13OR057.

Methodology

To accomplish the audit objective, we:

- Reviewed applicable Federal and Department regulations related to project management and capital assets;
- Reviewed the plan and estimated timeline for the West Valley decontamination and decommissioning actions and compared it to work accomplished;
- Held discussions with key Department and CH2M Hill B&W West Valley LLC officials to determine actions taken to identify and/or mitigate strategic planning risks;
- Identified and evaluated management challenges and risk areas associated with meeting Phase I – Facility Disposition goals; and
- Reviewed contract requirements, performance measures, and progress reports for the West Valley Demonstration Project.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, we assessed internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. We assessed performance measures in accordance with the *GPRA Modernization Act of 2010* and concluded that the Department had established performance measures related to the audit area. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. Finally, we relied on a limited

amount of computerized data to perform fieldwork; however, it did not materially support the findings, conclusions, or recommendations of the audit objective. Therefore, a reliability assessment was not performed.

An exit conference was held with management officials on March 29, 2017.

RELATED REPORTS

- Report on [*Observations on Project and Program Cost Estimating in NNSA and the Office of Environmental Management*](#) (GAO-13-510T, May 2013). As of May 2013, the Government Accountability Office (GAO) was conducting an ongoing review of the Department of Energy's cost-estimating practices. Its preliminary observations indicated that while the Department followed through on some of GAO's January 2010 recommendations to improve cost-estimating practices, such as revising the Department's project management order to better align it with some cost-estimating best practices, it had not addressed other recommendations with which it initially concurred. For example, GAO's preliminary observations indicated that the Office of Cost Analysis had been disbanded, and the Department may not have developed a cost-estimating policy.
- Report on [*Actions Needed to Develop High-Quality Cost Estimates for Construction and Environmental Cleanup Projects*](#) (GAO-10-199, January 2010). The Department had not had a policy that established standards for cost estimating in place for over a decade, and its guidance was outdated and incomplete, making it difficult for the Department to oversee the development of high-quality cost estimates by its contractors. The Department's only cost-estimating direction resided in its project management policy that did not indicate how cost estimates should be developed. In addition, the Department did not have appropriate internal controls in place that would allow its project managers to provide contractors a standard method for building high-quality cost estimates. The Department had drafted a new cost-estimating policy and guide, but was expected to miss its deadline for issuing them by more than a year.
- Report on [*Action Needed to Improve Accountability and Management of DOE's Major Cleanup Projects*](#) (GAO-08-1081, September 2008). Nine of the 10 cleanup projects GAO reviewed had life-cycle baseline cost increases, from a low of \$139 million for one project to a high of nearly \$9 billion for another, and life-cycle baseline schedule delays from 2–15 years. These changes occurred primarily because the baselines reviewed included schedule assumptions that were not linked to technical or budget realities, and the scope of work included other assumptions that did not prove true. Also, most of the 10 projects had cost increases and schedule delays because the previous baselines (1) had not fully foreseen the type and extent of cleanup needed, (2) assumed that construction projects needed to carry out the cleanup work would be completed on time, or (3) had not expected substantial additional work scope.
- Report on [*Agreement Among Agencies Responsible for the West Valley Site is Critically Needed*](#) (GAO-01-314, May 2001). As of May 2001, the Department had almost completed solidifying the high-level wastes at West Valley, but major additional cleanup work remained. Major additional cleanup steps to be taken included decontaminating and decommissioning structures, remediating soil and groundwater, and removing nuclear wastes stored and buried onsite. These and other steps could take up to 4 decades, with West Valley cleanup costs totaling about \$4.5 billion, according to Department projections.

MANAGEMENT COMMENTS



Department of Energy
Washington, DC 20585

FEB 01 2017

MEMORANDUM FOR MICHELLE ANDERSON
DEPUTY INSPECTOR GENERAL

THROUGH: GENA E. CADIEUX *gc*
ACTING UNDER SECRETARY
FOR MANAGEMENT AND PERFORMANCE

FROM: SUSAN M. CANGE *S.M. Cange*
ACTING ASSISTANT SECRETARY
FOR ENVIRONMENTAL MANAGEMENT

SUBJECT: Office of Environmental Management Review of Office of
Inspector General Draft Audit Report - *Department of Energy's
West Valley Demonstration Project*

The Office of Environmental Management (EM) appreciates the work done by the Department of Energy's (DOE) Office of the Inspector General (OIG) in conducting a review of the DOE's West Valley Demonstration Project (WVDP). EM agrees with OIG's eight recommendations to improve planning and management of cleanup projects at WVDP. The recommendations have been or are being implemented at WVDP, and we are seeing the results of these efforts already.

EM recognizes that the majority of the substantive audit work for this audit was conducted in the 2014 timeframe and significant progress has been made since that time. Cost and schedule performance has substantially improved at the project, with High-Level Waste Canister Relocation completed well ahead of schedule and under cost, and demolition of the Vitrification Facility expected to begin ahead of schedule. The results of a recent Project Peer Review reinforces our view that the corrective actions are effective and the project is well positioned to execute the upcoming capital asset project.

The attachment provides a status of actions already underway or to be taken to address your recommendations. If you have any questions regarding this response, please contact Ms. Leslie Thomas, Office of Program Planning, at 202-586-8899 or Leslie.Thomas@em.doe.gov.

Attachment



Attachment

<i>Management Response to Draft Audit Report Recommendations</i>		
Recommendation	Response	Actual (A) or Target (T) date
To improve the Office of Environmental Management's (EM) planning and management of its cleanup projects, we recommend the Deputy Under Secretary for Management and Performance ensure:		
1. The Offices of Project Management Oversight and Assessments (PMOA) and E M resolve differences between and finalize guidance for determining when cleanup projects are capital projects subject to Department of Energy (DOE) Order 413.3B;	EM is working with PMOA to develop a document policy addressing EM planning and management of cleanup projects and operations activities.	June 2017
To improve the management of the West Valley (WV) site, we recommend the Assistant Secretary for EM ensure:		
2. EM has an effective project management strategy, in accordance with clarified guidance, to carry out the requirements of the West Valley Demonstration Project (WVDP) Act;	An effective project management strategy is in place to plan and manage the work at WVDP. In May 2016, DOE O 413.3B was updated to institutionalize recent Secretarial policies to improve project Management. WVDP will comply with DOE O 413.3B.	Ongoing
3. The WV cleanup work complies with the Department's Program and Project Management directives, to include clarified guidance;	The WVDP cleanup work will comply with all the Department's Program and Project Management directives.	Ongoing
4. Federal staff levels are adequate and include project management skills necessary to oversee and manage the West Valley (WV) work; and	Similar to the rest of the EM, federal staffing challenges will continue to exist at WVDP due to ongoing funding constraints. WVDP has increased staff in recent years, but WVDP expects substantial attrition over the next 3 -5 years. Project management skills will be obtained through direct hiring, augmentation with other Federal staff from the EM Consolidated Business Center (CBC), and through support service contractors.	Ongoing

Attachment

<p>5. Life-cycle cost estimates reflect current expected costs to complete the Department's responsibilities under the WVDP.</p>	<p>EM believes that the current life cycle cost (LCC) for WVDP is accurate. The current contract in place will be completed in 2020 which includes removal of Balance of Site Facilities, demolition of the Main Plant Process Building and Vitrification Facility to grade, and disposal of all legacy waste. The remaining scope for Phase 1 Decommissioning is soil remediation scope, and monitoring and maintenance. Given the remaining scope, the current LCC is reasonable and achievable.</p> <p>The current LCC does not include the discrete scope for Phase 2 Decommissioning. The LCC was developed using the lowest cost alternative (In-Place Closure). Since the Phase 2 Decommissioning Decision has not been made, the cost for this Phase 2 Decommission scope is carried as an Environmental Liability Adjustment. In addition, the liability to disposition waste without a pathway for disposal is carried as an EM-Headquarter liability, and is not included in the site's LCC. Upon completion of the Phase 2 Record of Decision, the LCC will be adjusted as needed.</p>	<p>Complete</p>
<p>To improve the planning, control, and measurement of the WV work, we recommend the Director, WVDP ensure the:</p>		
<p>6. Contractor has developed an adequate contract budget baseline and a certified Earned Value Management System (EVMS);</p>	<p>DOE approved the Contract Budget Baseline (CBB) on June 4, 2012. The CBB has been maintained in alignment with the contract since its approval. Both CH2M Hill and DOE-WVDP have processes in place to manage baseline changes.</p> <p>The PMOA conducted an assist visit on April 6, 2016, and concluded that WVDP is not a priority site for an EVMS certification review. Accordingly, the Federal staff at WV conducted a year-long assessment of the contractor's EVMS. The assessment used the same guidance and review criteria as outlined in the PMOA EVMS Interpretation Handbook. The assessment identified one (1) concern, forty-one (41) findings, and eight (8) comments.</p> <p>To address the Office of the Inspector General recommendation and to support Critical Decision -3 for the site's capital asset projects, the contractor prepared a corrective action plan for the EVMS assessment and implemented all corrective actions.</p>	<p>Conduct an EVMS Compliance Surveillance September 2017 (T)</p>

Attachment

	<p>The site requested an EVMS certification review, however, since the capital asset project is being conducted in phases, with endorsement from PMOA and the Project Management Risk Committee, and there are no projects \$100M or greater (one at \$21M, and the other at about \$50M), certification from PMOA is not required. The contractor is required to maintain their EVMS compliant with EIA-748. Prior to the end of the fiscal year, EM will conduct a focused surveillance review to ensure that the EVMS is compliant.</p>	
<p>7. Project has a Federal near-term baseline with a well-defined scope and realistic cost estimates, with independent validation; and</p>	<p>The site has completed a thorough review of the Phase I Decommissioning scope (Facility Disposition and Soil Remediation) and has identified ten activities that are not currently considered in the Federal baseline. It would be advantageous to complete four of these activities during the current Facility Disposition contract (see Recommendation 8). The site has prioritized the development of scope statements, and will obtain realistic cost estimates through either the EMCBC or through an existing contract with the U.S. Army Corps of Engineering (USACE). PMOA will conduct an independent cost estimate prior to establishing a project baseline if any of these activities result in a capital asset project over \$100M.</p>	<p>Revise Federal Baseline - September 2017 (T)</p>
<p>8. Performance work statement in the current Phase I - Facility Disposition contract accurately reflects the scope needed to complete the Phase I objectives.</p>	<p>The site has completed a thorough review of the Phase I Decommissioning - Facility Disposition contract and has identified four activities that are needed to complete the contract objectives. The site has prioritized these four activities for the development of scope statements, and will obtain realistic cost estimates through either the EMCBC or through an existing contract with the USACE. Three of the four activities involve infrastructure improvements that will have long-term benefits to the site, will reduce risk and will likely reduce the site LCCs. PMOA will conduct an independent cost estimate prior to establishing a project baseline if any of these activities result in a capital asset project over \$100M.</p>	<p>Complete contract modification - August 2017 (T)</p>

FEEDBACK

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