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Report to Congressional Committees

October 2012

RECOVERY ACT

Most DOE Cleanup Projects Are Complete, but Project Management Guidance Could Be Strengthened

GAO-13-23

October 2012

GAO Highlights

Accountability * Integrity * Reliability

Highlights of GAO-13-23, a report to congressional committees

RECOVERY ACT

Most DOE Cleanup Projects Are Complete, but Project Management Guidance Could Be Strengthened

Why GAO Did This Study

The Recovery Act aimed to stimulate the economy and create jobs. DOE received $6 billion in Recovery Act funds that it is using to clean up 17 sites contaminated by radioactive and hazardous wastes from decades of nuclear research and weapons production. The cleanup is primarily carried out by contractors. The National Defense Authorization Act for Fiscal Year 2010 requires GAO to periodically report on DOE's Recovery Act-funded EM cleanup projects. In response to this mandate, GAO examined (1) the number of Recovery Act-funded FTEs by quarter; (2) the status and performance of cleanup projects; and (3) project management issues, if any, that arose during project implementation and any lessons learned. In addition, the Recovery Act requires GAO to comment and report quarterly on estimates of jobs funded and counted as measured by the number of FTEs and to conduct bimonthly reviews on the use of the act's funds. GAO examined Recovery Act FTEs, spending, project performance data, and lessons learned from Recovery Act projects; and interviewed DOE and contractor officials.

What GAO Recommends

GAO recommends, among other things, that DOE (1) clarify guidance on developing and documenting project performance baselines and (2) issue a policy that sets out the criteria with greater specificity for reclassifying capital asset projects over $10 million into smaller operation activity projects under $10 million. DOE agreed with GAO's recommendations.

View GAO-13-23. For more information, contact Mark Gaffigan at (202) 512-3841 or gaffiganm@gao.gov.

What GAO Found

From October 2009 through March 2012, the number of full-time equivalent (FTE) employees funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) and working on Department of Energy's (DOE) Office of Environmental Management (EM) cleanup projects peaked at about 11,000 FTEs in the quarter ending September 2010, according to data on the federal government's Recovery Act website. By the second quarter of fiscal year 2012, as projects were completed, FTEs had decreased to about 1,400 FTEs; 12 of 17 sites reported no Recovery Act FTEs; and about $5.6 billion of a total $6 billion in Recovery Act funds had been spent.

According to EM data, as of April 30, 2012, 78 of the 112 Recovery Act-funded cleanup projects were complete, and 72 of the 78 projects met DOE's performance standard of completing project work scope without exceeding the cost target by more than 10 percent. According to EM officials, the completed Recovery Act projects have helped accelerate the cleanup at the sites. GAO, however, found several inconsistencies in how EM set and documented projects' scope, cost, and schedule targets. Without clear scope, cost, or schedule targets in performance baselines, it becomes difficult to assess project performance. For example, in some cases, EM set scope targets differently in different documents and claimed project success even if key performance parameters were not achieved. Current guidance on setting performance baselines is more comprehensive for capital asset projects, such as building or demolishing facilities or constructing remediation systems, than for projects known as operation activity projects, such as operating a groundwater treatment plant. In addition, capital asset projects costing under $10 million are classified as operation activity projects.

Some of EM's long-standing project management problems occurred during its implementation of several Recovery Act projects, primarily insufficient early planning before setting performance baselines. For example, a project to remove wastes from a landfill at one site exceeded its $111 million cost target by $20 million because, after beginning the project, officials determined that the site would need to be excavated to a depth of almost double that planned. In addition, EM's new initiative to reclassify projects as either capital asset or operation activity projects raised concerns about how projects were reclassified. EM does not have a clear policy that sets out under what conditions and how EM should break a capital asset project into smaller, discrete operation activity projects. Project classification is important, however, because some requirements apply only to capital asset projects. EM's guidance for projects classified as operation activity projects under this initiative states that certain approval and reporting requirements will not be applied, and others will be applied as appropriate. Some DOE and other officials expressed concern that projects could be broken into smaller projects to avoid the requirements. For example, a $30 million project, partially funded with Recovery Act funds, was divided into 18 smaller projects, each below the $10 million threshold. The cost for one of these smaller projects eventually doubled—from $8 million to $16 million—but was not reclassified as a capital asset project. EM has been gathering information on lessons learned from Recovery Act projects, some of which could be applied as corrective measures to other EM cleanup work.

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Abbreviations

DOE	Department of Energy
EM	Office of Environmental Management
FTE	full-time equivalent
IPABS	Integrated Planning, Accountability, and Budgeting System
OMB	Office of Management and Budget
Recovery Act	American Recovery and Reinvestment Act of 2009

GAO
Accountability * Integrity * Reliability

United States Government Accountability Office
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Congressional Committees

Since the 1940s, the Department of Energy (DOE) and its predecessor agencies have operated a nationwide complex of facilities used to research, design, and manufacture nuclear weapons and related technologies. Organizationally, DOE supports a wide range of activities managed by mission-based offices. These include the Office of Environmental Management (EM), which leads the department's often complex and challenging program to clean up nuclear, chemical, and other hazardous wastes. EM carries out its work at numerous DOE sites and facilities around the country, and like other offices in DOE, EM carries out its work primarily through contractors that manage the facilities and work under contract to DOE. DOE has estimated that the total cost to clean up these sites could exceed $300 billion and take several decades.

In addition to its annual appropriations, EM received $6 billion under the American Recovery and Reinvestment Act of 2009 (Recovery Act).[1] The act is intended to promote economic recovery, make investments, and minimize or avert reductions in state and local government services. Enacted on February 17, 2009, the act directed that priority be given to projects that could be started quickly. The administration referred to such projects as "shovel-ready." EM is using its $6 billion to expand and accelerate cleanup activities at 17 sites. EM set as one of its Recovery Act cleanup goals to reduce EM sites' footprint of 931 total square miles by 40 percent (or 372 square miles) by the end of fiscal year 2011. EM defined this as remediating an area to meet all regulatory requirements. According to EM officials, EM met its footprint reduction goal in April 2011, and had reduced its footprint by 70 percent by the end of April 2012.

The National Defense Authorization Act for Fiscal Year 2010 requires that GAO review and periodically report on EM's efforts to carry out Recovery Act projects. As a result, we have been periodically providing—every 120 days—information to EM's authorizing and appropriating committees on

[1]Pub. L. No. 111-5, 123 Stat. 115 (2009). EM also received about $6 billion to spend under its 2009 annual appropriation.

the progress of these projects. This report primarily serves as a periodic update, as required by the mandate. In addition, the Recovery Act requires us to comment and report quarterly on estimates of jobs funded and counted as measured by the number of full-time equivalent (FTE) employees that were reported by recipients of Recovery Act funds[2] and to conduct bimonthly reviews of how the act's funds are used. This is one of a series of GAO reports that comment on recipient job estimates and reports on our reviews of the use of funds made available under the act.[3,4]

In response to these mandates, we examined (1) the number of FTEs that EM funded quarterly with Recovery Act funds from October 2009 through March 2012; (2) the status of EM's Recovery Act-funded cleanup projects and the extent to which completed projects met performance baselines (i.e., cost, schedule, and scope targets); and (3) project management issues, if any, that arose during the implementation of EM's Recovery Act projects and any lessons EM has learned that it could apply to other cleanup efforts.

To conduct our work, we reviewed pertinent provisions of the American Recovery and Reinvestment Act of 2009; and Office of Management and Budget (OMB) and DOE policies, procedures, and guidance on Recovery Act implementation. To describe the number of FTEs that EM funded with Recovery Act monies, we examined data on FTEs—the units specified by OMB's guidance for reporting Recovery Act jobs.[5] To understand the

[2]Pub. L. No. 111-5 § 1512(e), 123 Stat. 115, 288. FTE data provide insight into the use and impact of the Recovery Act funds, but recipient reports cover only direct jobs funded by the Recovery Act. These reports do not include the employment impact on suppliers (indirect jobs) or on the local community (induced jobs). Both data reported by recipients and other macroeconomic data and methods are necessary to understand the overall employment effects of the Recovery Act.

[3]See http://www.gao.gov/recovery for related GAO products.

[4]In addition to conducting our analyses of EM Recovery Act cleanup projects, we continued, as in prior reports, to perform edit checks and analyses on all prime recipient reports to assess data logic and consistency and identify unusual or atypical data.

[5]OMB Memorandum "Updated Implementing Guidance for the American Recovery and Reinvestment Act of 2009," Apr. 3, 2009, called for cumulative FTE counts each calendar quarter for all reporting quarters. OMB, Memorandum, "Updated Guidance on the American Recovery and Reinvestment Act – Data Quality, Non-Reporting Recipients, and Reporting of Job Estimates," Dec.18, 2009 asked recipients of Recovery Act funding to report job estimates on a purely quarterly, rather than cumulative, basis.

accuracy of FTE data, we discussed DOE's review process with DOE and EM officials. To assess the status and performance of EM projects funded by the Recovery Act, we reviewed project documentation and analyzed information in EM's database for managing Recovery Act projects. We analyzed the performance of projects that were administratively complete by the end of April 2012 (i.e., when an authorized official approves the projects' closure, which occurs after completion of cleanup activities). To assess the reliability of the data that EM used to assess projects' performance, we interviewed officials in EM's Recovery Act program office about the Recovery Act data in the Integrated Planning, Accountability, and Budgeting System (IPABS) database—which EM uses to capture data for all Recovery Act projects—and found these data sufficiently reliable for purposes of this report. We also interviewed these officials to determine how EM evaluates these data to assess project performance and reviewed its performance analysis of completed projects. We interviewed officials in DOE's Office of Project Management to discuss DOE's project management policy and the assessment of project performance.[6] We selected a nonprobability sample of two EM cleanup sites to visit in order to better understand how sites manage their Recovery Act projects.[7] To examine project management issues that arose during the implementation of EM's Recovery Act projects and any lessons EM has learned that it could apply to other cleanup efforts, we reviewed lessons learned that site officials had documented or reported and interviewed Recovery Act officials. We also reviewed DOE documents, such as DOE's root cause analysis and corrective action plan, both of which identified the department's and EM's project management issues, to determine whether these issues also arose during Recovery Act projects. Appendix I presents a more detailed description of our objectives, scope, and methodology.

We conducted this performance audit from May 2011 to October 2012 in accordance with generally accepted government auditing standards.

[6]As the result of reorganization, effective May 2012, the responsibility for project management policy in DOE's Office of Engineering and Construction Management was placed in the Office of Project Management, which is within the Office of Acquisitions and Project Management that is under the Office of Management. In this report, we refer only to the Office of Project Management.

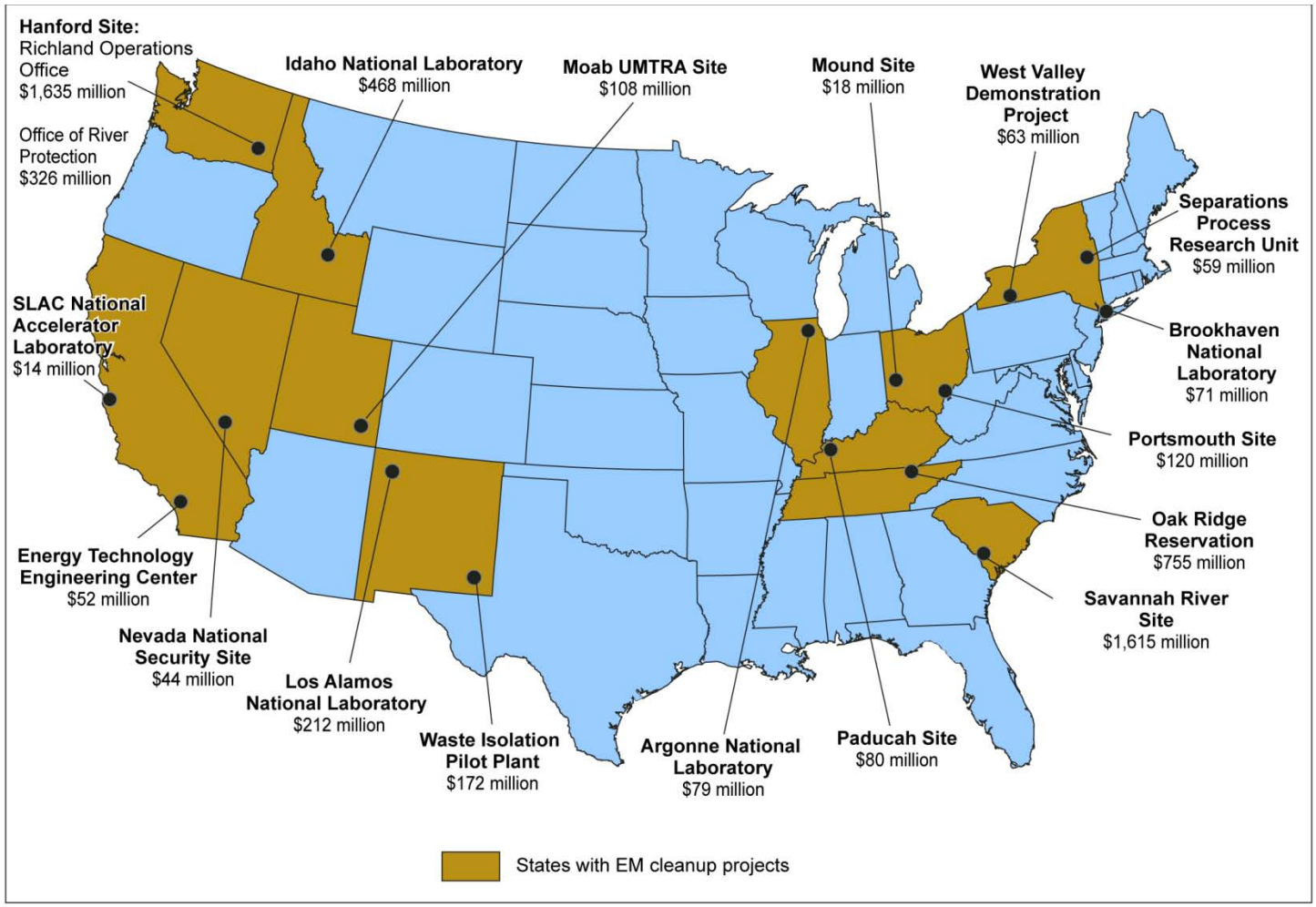
[7]Because this was a nonprobability sample, the information derived from our site visits is not generalizeable to all EM cleanup sites but provides illustrative examples of how sites manage their Recovery Act projects.

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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

EM selected projects at 17 DOE sites in 12 states for Recovery Act funding, with 4 sites receiving most of the money—the Hanford Site in Washington State, the Savannah River Site in South Carolina, the Oak Ridge Reservation in Tennessee, and the Idaho National Laboratory (see fig. 1). Recovery Act funds must be expended by the end of fiscal year 2015, but EM initially planned to expend these funds and complete work by the end of fiscal year 2011. In developing these projects, EM establishes a baseline against which it measures project performance. This performance baseline includes targets for work scope, or key work activities that should be completed; cost; and schedule.

Figure 1: The Amount of Recovery Act Funds Provided for Cleanup Projects at 17 Sites



Sources: GAO analysis of DOE data; Map Resources (map).

The cleanup projects EM selected for Recovery Act funding fall into the following four major categories:

- *Decontaminating and demolishing facilities.* For example, EM used the funding to remove hazardous contamination and demolish the K-33 building at the Oak Ridge Reservation, which was a two-level structure that covered 32 acres and was constructed in 1954 to process and enrich uranium for use in nuclear weapons. (See fig. 2.)

- *Removing contamination from soil and groundwater.* For example, EM used the funding to remove and dispose of radioactive and hazardous contaminants from soil and groundwater at the Mound Site, a former production site for explosives and other weapons' components.

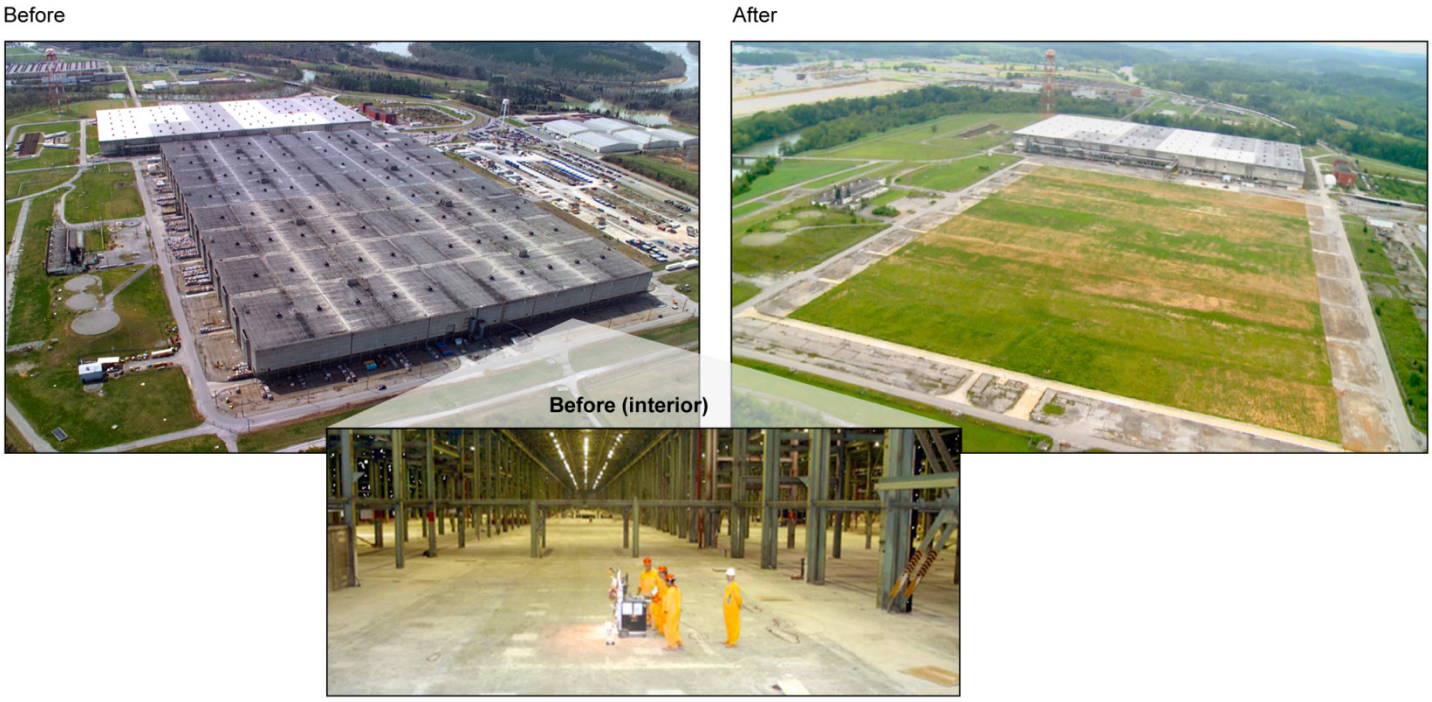
- *Packaging and disposing of transuranic and other wastes*.[8] For example, EM used Recovery Act funding to characterize and package transuranic wastes at multiple DOE sites for shipment to the department's deep geologic repository for permanent disposal.[9] (See fig. 3.) Transuranic wastes typically consist of discarded rags, tools, equipment, soils, or other solid materials that have been contaminated by radioactive elements, such as plutonium or americium.

- *Supporting the maintenance and treatment of liquid tank waste.* For example, EM used the funds to upgrade the infrastructure used to stabilize and maintain the tanks that store chemical and radioactive waste at the Hanford Site.

[8]Transuranic waste is waste containing more than 100 nanocuries of alpha-emitting transuranic elements (radiation) per gram with half-lives greater than 20 years with certain exceptions. A half-life is the amount of time required for an element to decay by half, and nanocuries are a measure of radioactivity. Alpha-emitting radiation cannot pass through objects, including human skin, but it is extremely dangerous if inhaled or ingested.

[9]Because these wastes remain radioactive for extremely long periods—hundreds of thousands of years in some cases—most are headed for disposal at the Waste Isolation Pilot Plant, a deep geologic repository near Carlsbad, New Mexico, designed for transuranic waste disposal.

Figure 2: Views Before and After the Demolition of Building K-33, East Tennessee Technology Park, Oak Ridge Reservation



Source: DOE.

Figure 3: Workers Packaging Transuranic Waste, Savannah River Site

Source: DOE.

In 1990, we first designated DOE's contract management, including both contract administration and project management, at high risk for fraud, waste, abuse, and mismanagement.[10] In the decades that followed, DOE has taken steps to improve its project and contract management. For example, in 2000, DOE issued, and has periodically updated, Order 413.3, which established a management process with five major milestones—or critical decision points—that span the life of a project, from the identification of need through project completion.[11] However, we have consistently reported that EM faced difficulties in developing and achieving realistic cost and schedule targets for its cleanup activities, in part because of challenges in addressing complex technical issues, negotiating contracts, coordinating with regulators, and ensuring safety.[12]

In 2009, EM developed a new initiative to improve project management, called the new management framework. Under this initiative—which was first applied to Recovery Act projects—EM separated large projects—which are composed of a mix of projects at various stages between planning and completion that could overall last for decades—into smaller discrete projects of shorter duration that the agency deemed easier to oversee and manage. The smaller cleanup projects are classified into two major types as follows:

[10]GAO designated DOE's contract management as high risk in 1990 and then evaluated and reported on the fundamental causes of problems in this high-risk area in: *High-Risk Series: Department of Energy Contract Management*, GAO/HR-93-9 (Washington, D.C.: December 1992).

[11]Critical decision 2, for instance, marks the approval of the project's performance baseline, specifying the planned scope (particularly, specific requirements known as key performance parameters); cost; and schedule that should be met at project completion. At this critical decision point, DOE completes its preliminary design and develops a definitive cost estimate for the work.

[12]See, GAO, *Department of Energy: Actions Needed to Develop High-Quality Cost Estimates for Construction and Environmental Cleanup Projects*, GAO-10-199 (Washington, D.C.: Jan. 14, 2010); GAO, *Department of Energy: Major Construction Projects Need a Consistent Approach for Assessing Technology Readiness to Help Avoid Cost Increases and Delays*, GAO-07-336 (Washington, D.C.: Mar. 27, 2007); GAO, *Department of Energy: Further Actions Are Needed to Strengthen Contract Management for Major Projects*, GAO-05-123 (Washington, D.C.: Mar. 18, 2005); GAO, *Hanford Waste Treatment Plant: Contractor and DOE Management Problems Have Led to Higher Costs, Construction Delays, and Safety Concerns*, GAO-06-602T (Washington, D.C.: Apr. 6, 2006).

- *Capital asset projects.* These projects cost $10 million or more and include construction, such as the expansion of a waste disposal facility; environmental remediation construction, such as digging wells to remove contaminated groundwater; and cleanup activities, such as excavating contaminated soil or demolishing facilities contaminated with hazardous chemical or radioactive substances.

- *Operation activity projects.* These projects can either be "project like," with definable start and end dates, discrete scopes of work, and measurable accomplishments or routine or recurring operations, according to EM's operations protocol.[13] For example, operation activity projects include construction and cleanup projects that are similar to capital asset projects but that cost less than $10 million; operation activities, such as packaging, storing, transporting, and disposing of waste and nuclear materials; operating a groundwater treatment plant; and program activities, such as maintaining and repairing inactive facilities.[14]

In February 2011, recognizing improvements DOE had made, we narrowed the focus of the high-risk designation but retained EM's contract and project management on our high-risk list because DOE had not yet consistently improved EM's contract and management performance.[15] In particular, we reported that DOE must ensure that the corrective action measures it is taking to improve its cost-estimating policies and procedures ultimately result in cost estimates for its major projects that are more accurate and reliable.

[13]Office of Environmental Management, *Operations Activities Protocol*, February 28, 2012.

[14]DOE does not consider operation activities, as discussed in this report, to be "projects" as designated under the DOE order that is applicable for capital asset projects. However, for purposes of this report, we refer to these operation activities as projects because we are collectively referring to all Recovery-Act funded efforts as projects.

[15]GAO, *High-Risk Series: An Update*, GAO-11-278 (Washington, D.C.: February 2011).

EM Recovery Act-Funded Jobs Peaked at about 11,000 FTE Employees Late in Fiscal Year 2010

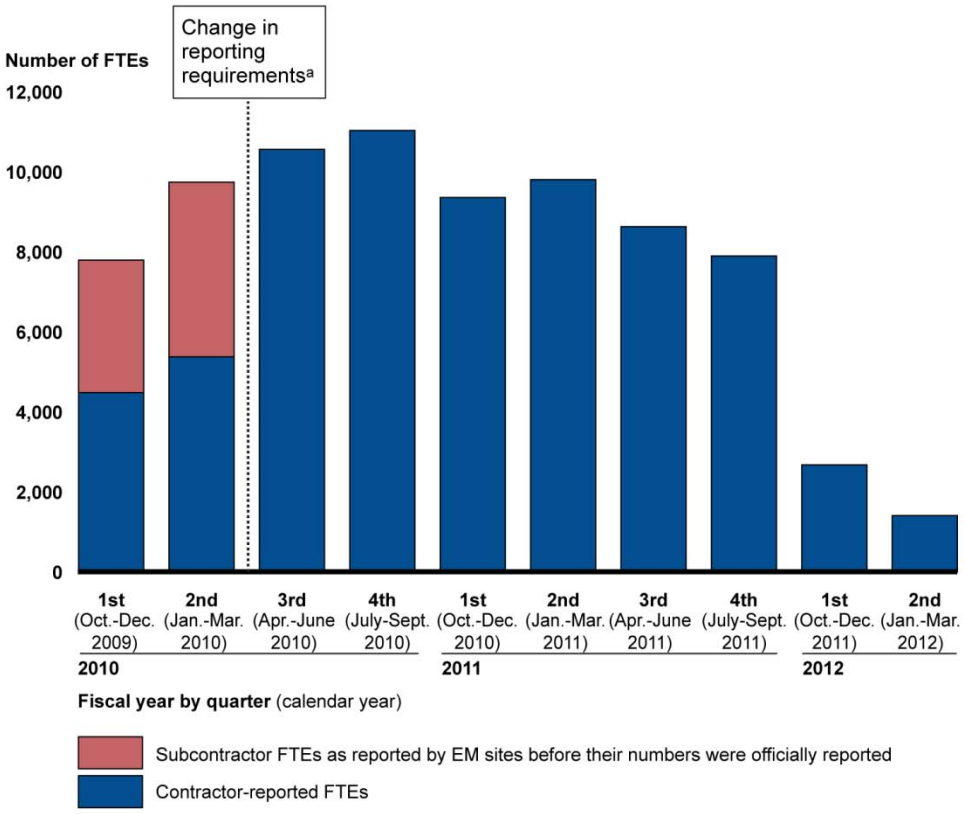
From October 2009 through March 2012, the number of FTEs EM funded with Recovery Act funds peaked at a high of 11,000 FTEs in the last quarter of fiscal year 2010 and decreased to about 1,400 FTEs in the second quarter of fiscal year 2012,[16] according to the data on the federal government's Recovery Act website. In fiscal year 2011, the number of FTEs fluctuated from about 8,000 to 10,000 FTEs per quarter, as some projects were completed and other projects (called buy-back projects) were started with excess funds from those completed.[17] According to EM officials, these excess funds resulted when contractors performed work more efficiently or avoided potential problems that would have required spending management reserves or contingency funds.[18] In the first quarter of fiscal year 2012, the number of FTEs dropped sharply—to about 2,700—as EM completed more projects. (See fig. 4.) These trends were largely in line with EM's initial plan to start Recovery Act projects quickly and to generally complete them by the end of fiscal year 2011. The number of FTEs is expected to continue to decline through fiscal year 2013, as EM completes the last of the projects funded by the Recovery Act.

[16]Under OMB guidance, agencies should calculate FTEs by totaling the number of hours that workers charge to Recovery Act projects in a given quarter of the fiscal year and dividing the sum by the total number of work hours representing a full-time work schedule. OMB, Memorandum, "Updated Guidance on the American Recovery and Reinvestment Act – Data Quality, Non-Reporting Recipients, and Reporting of Job Estimates," Dec.18, 2009.

[17]By the end of the second quarter of fiscal year 2012, DOE had started a total of 20 buy-back projects.

[18]A management reserve is a portion of the contract price managed by the contractor and is available to address realized risks that are within the scope of the contract. A government contingency fund, which is controlled by the government and is not part of the contract price, is used to manage risks affecting cost and schedule, such as changed requirements and delays in government-furnished services, equipment, and items; and other influences outside the contractor's control.

Figure 4: FTEs Funded by the Recovery Act by Quarter, First Quarter Fiscal Year 2010 through Second Quarter Fiscal Year 2012



Source: GAO analysis of DOE data.

[a]Since the third quarter of fiscal year 2010, EM's prime, or chief, contractors for projects at each site have been required to report quarterly on the number of FTEs—their own as well as the FTEs of subcontractors they hired to perform specific portions of the work—funded with Recovery Act funds. Before that time, only prime contractor FTEs were reported. As a result, comparable information is not available for the first and second quarters of fiscal year 2010. EM sites reported subcontractor FTEs for these quarters, which are shown in red.

As of the end of the second quarter of fiscal year 2012, the 17 EM cleanup sites were in different stages of reducing their number of Recovery Act-funded FTEs. Twelve of the 17 EM cleanup sites reported no FTEs,[19] and 5 sites—Argonne National Laboratory, Richland Office at

[19]Some of these 12 sites reported less than one-half FTE for the quarter, which rounds to zero FTE.

the Hanford Site, Idaho National Laboratory, Oak Ridge Reservation, and Savannah River Site—continued to report FTEs, but their FTEs had decreased significantly from the fourth quarter of fiscal year 2010 when the overall number of EM FTEs peaked. (See table 1.)

Table 1: EM FTEs Funded by the Recovery Act in the Fourth Quarter of Fiscal Year 2010 and Second Quarter of Fiscal Year 2012

	FTEs funded[a]	
Sites	**4th quarter FY 2010**	**2nd quarter FY 2012**
1. Argonne National Laboratory (IL)	86	42
2. Brookhaven National Laboratory (NY)	97	0
3. Energy Technology Engineering Center (CA)[b]	12	0
4. Hanford Site		
Office of River Protection (WA)	581	0
Richland Office (WA)	3,114	316
5. Idaho National Laboratory (ID)	949	160
6. Los Alamos National Laboratory (NM)	382	0
7. Moab UMTRA Site (UT)	230	0
8. Mound Site (OH)	32	0
9. Nevada National Security Site (NV)	76	0
10. Oak Ridge Reservation (TN)	2,240	302
11. Paducah Site (KY)	193	0
12. Portsmouth Site (OH)	399	0
13. Savannah River Site (SC)	1,997	572
14. Separations Process Research Unit (NY)	94	2
15. SLAC National Accelerator Laboratory (CA)	35	0
16. Waste Isolation Pilot Plant (NM)	323	0
17. West Valley Demonstration Project (NY)	103	0
Other[c]	89	10
Total	**11,030[d]**	**1,405[d]**

Source: GAO analysis of DOE data.

Note: Overall, FTEs peaked in the fourth quarter of fiscal year 2010. FTEs for sites reporting less than one-half of an FTE were rounded to zero.

[a]FTEs funded include both prime contractor and subcontractor FTEs.

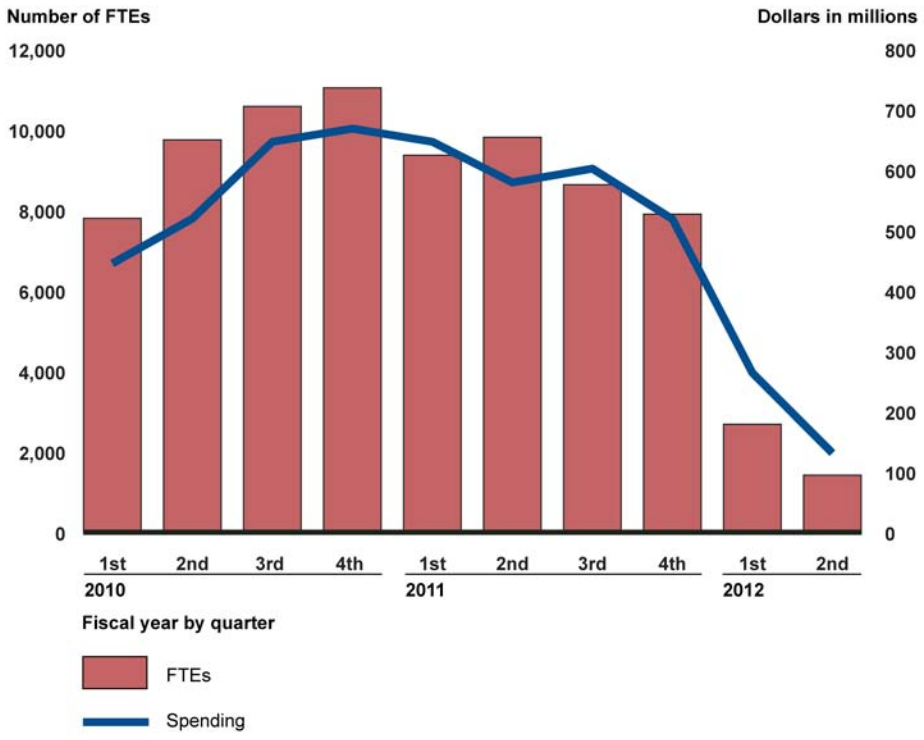
[b]At the Energy Technology Engineering Center, DOE works in a partnership with the Environmental Protection Agency (EPA). According to DOE officials, the FTEs for EPA's efforts are separately reported and are not included in the counts in this table.

[c]Other includes FTEs for managing the direction of the Recovery Act program, which are at DOE sites as well as DOE headquarters, according to an EM official, and FTEs associated with the Title X uranium and thorium reimbursement program.

[d]The total number of FTEs may not equal the sum of all sites' FTEs because of rounding.

EM's spending on Recovery Act projects has largely been consistent with EM's plan to start Recovery Act projects quickly. As figure 5 shows, EM's quarterly spending has generally tracked the rise and fall of FTEs. Its quarterly Recovery Act spending peaked at $668 million in the fourth quarter of fiscal year 2010 and thereafter quarterly spending generally fell as EM completed projects.

Figure 5: FTEs and Recovery Act Spending for EM Cleanup Projects, First Quarter of Fiscal Year 2010 through Second Quarter of Fiscal Year 2012



Source: GAO analysis of DOE data.

EM had initially expected to spend all Recovery Act funds by the end of fiscal year 2011 but, according to an EM document, had actually spent 88 percent of the funds by that time. By the end of the second quarter of fiscal year 2012, EM had spent about $5.6 billion of its $6 billion of Recovery Act funds, leaving about 6 percent to be spent. According to

EM officials, EM now expects to spend its remaining Recovery Act funds by the end of fiscal year 2013.

According to an EM official, three factors contributed to slower than expected spending. First, EM recognized early in the program that technical and contracting award delays required extending some projects' completion beyond fiscal year 2011.[20] Second, as projects were being undertaken, EM recognized that performance issues at some sites would delay projects and thus spending. Third, EM was planning new buy-back projects but generally had to complete the original projects before it could use excess funds from them to begin buy-back projects.

Sites have spent all or almost all of their allotted Recovery Act funds (see table 2). By the end of the second quarter of fiscal year 2012, six sites reported spending 100 percent of their Recovery Act allotted funds; eight other sites spent from 96 to 99 percent of their funds; and three sites spent from 85 to 90 percent of their funds.

Table 2: EM's Recovery Act Funds and Spending through Second Quarter of Fiscal Year 2012

Dollars in thousands			
		Allotted funds that have been spent	
	Total Recovery Act funds allotted	Amount	Percentage
1. Argonne National Laboratory (IL)	$79,000	$70,302	89
2. Brookhaven National Laboratory (NY)	70,810	70,808	100
3. Energy Technology Engineering Center (CA)	51,675	51,675	100
4. Hanford Site			
Office of River Protection (WA)	326,035	326,000	100
Richland Office (WA)	1,634,500	1,613,912	99
5. Idaho National Laboratory (ID)	467,875	451,310	96
6. Los Alamos National Laboratory (NM)	211,975	211,748	100
7. Moab UMTRA Site (UT)	108,350	108,204	100
8. Mound Site (OH)	17,900	17,526	98

[20]Technical delays included discovery of unanticipated wastes or the inability to obtain needed materials or equipment in a timely manner. For example, DOE officials stated that containers needed to ship transuranic waste to the Waste Isolation Pilot Plant were not issued a certification of compliance by the Nuclear Regulatory Commission until June 2010, thus delaying project progress.

Dollars in thousands			
		Allotted funds that have been spent	
	Total Recovery Act funds allotted	Amount	Percentage
9. Nevada National Security Site (NV)	44,325	44,301	100
10. Oak Ridge Reservation (TN)	755,110	640,991	85
11. Paducah Site (KY)	80,400	79,705	99
12. Portsmouth Site (OH)	119,800	118,393	99
13. Savannah River Site (SC)	1,615,400	1,459,872	90
14. Separations Process Research Unit (NY)	58,575	58,033	99
15. SLAC National Accelerator Laboratory (CA)	14,300	14,300	100
16. Waste Isolation Pilot Plant (NM)	172,175	169,385	98
17. West Valley Demonstration Project (NY)	62,875	61,570	98
Other[a]	108,920	95,237	[a]
Total[b]	**$6,000,000**	**$5,663,271**	**94%**

Source: GAO analysis of DOE data.

Note: Numbers are as provided by DOE and are not adjusted for inflation. Because of rounding, some percentages show 100 percent even if the allotted and spent amounts are not equal.

[a]Other includes DOE's Title X uranium and thorium reimbursement program, which is funded with Recovery Act funds, as well as funding for management and oversight of the Recovery Act program. DOE was unable to provide us with spending data for $11 million of the nearly $109 million allotted because, according to a DOE official, DOE combines these Recovery Act funds with other funds for department-level management and oversight of Recovery Act programs and does not separately track them.

[b]Because DOE was unable to provide us with spending data for $11 million of the allotted funds in the other category, we did not report any spending for these funds. If DOE has spent all of the funds, total spending could actually be as high as $5,674 million, or 95 percent, of the $6 billion of Recovery Act funds.

EM Has Completed Most Projects, but Inconsistent Data Make Assessing Project Performance Difficult

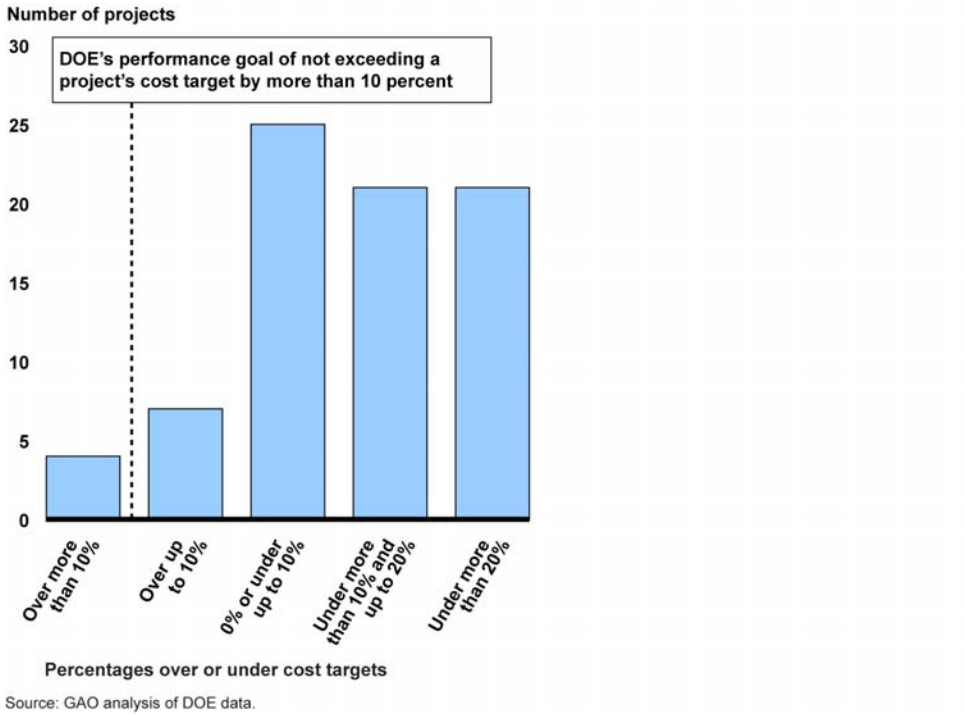
According to EM data, as of April 2012, EM had administratively completed 78 of the 112 Recovery Act-funded projects, but inconsistent data on projects' scope, cost, and schedule targets make it difficult to assess the extent to which completed projects met performance baselines.

EM's Analysis of Reported Data Indicate That Most Recovery Act Projects Were Completed, Generally Below Planned Costs

Of the 112 Recovery Act-funded projects, 78 projects were completed and approved for closure, called administrative completion, as of April 2012, according to EM data (see app. II for a list of the completed projects). EM expects to complete the remaining projects by the end of fiscal year 2013. According to EM officials, the Recovery Act projects have helped accelerate the cleanup of contaminated facilities and land, including the completion of EM's cleanup responsibilities at the Mound site and the SLAC National Accelerator Laboratory. EM analyzed project performance using information in project closure documents and the IPABS database and concluded that 72 of the 78 projects (92 percent) met scope and cost targets. DOE's standard for performance is to complete all scope targets without exceeding the cost targets by more than 10 percent. For the remaining 6 projects, some ended without completing all scope targets and some of the projects' exceeded their cost targets by more than 10 percent. For example, a project to accelerate the demolition of a graphite research reactor at Brookhaven National Laboratory in New York State exceeded its original estimated cost by over 25 percent. EM demolished the remaining portion—approximately 37 percent—of one structure using a project funded with annual appropriations.

As shown in figure 6, most projects finished significantly below their cost targets. Specifically, EM documents show that 42 of these 78 projects (54 percent) were completed more than 10 percent under their cost targets, with 22 finishing from 20 to 70 percent under their cost targets.

Figure 6: Percentages that the Projects' Final Costs Are Over or Under their Targets for 78 Administratively Completed Recovery Act Projects, as of April 2012



Source: GAO analysis of DOE data.

DOE and EM officials told us that Recovery Act-funded projects could be completed under their cost targets for any number of reasons. According to EM officials, when projects come in under their cost targets, it is generally because contractors found more efficient ways of completing the project scope and did not encounter risks that required the use of management reserves or contingency funds. In addition, some EM officials stated that the Recovery Act projects may have been budgeted with assumptions supporting the higher end of reasonably estimated costs to ensure that projects did not go over cost targets. For instance, site officials at the Savannah River Site in South Carolina told us that one project included infrastructure work in its budget, such as roadway projects that would be required to support the additional Recovery Act work at the site. Upon the project's completion, officials found that $32 million of the planned funding for these infrastructure projects was not needed, in part because less roadwork was needed than assumed.

For projects that were more than 20 percent under their cost targets, however, EM and other DOE officials told us that, typically, cost

efficiencies and risk avoidance could not explain why these projects were so far under their cost targets. Instead, these projects were likely to have had their scope significantly altered or had their scope completed in an entirely different way than was considered when the cost targets were established. However, there was no complex-wide information to explain why these projects were completed so far below cost targets. The EM Consolidated Business Center, which is responsible for ensuring that EM cost and schedule estimates are reliable, was unable to provide additional information on why final costs were below those in the performance baselines. Officials at the center told us that they track final project costs to improve future estimates but do not compare targets and final costs. According to Office of Project Management officials, DOE does not currently designate a project's performance as unsuccessful if its final cost fell too far below its cost targets. However, these officials did say that it is a poor project management practice to obligate significantly more funding to projects than required. These funds could be put to a more productive use by assigning them to other projects that require additional funding or by beginning additional cleanup work. Under EM's Recovery Act program, when original projects were completed or both the headquarters and site office teams were certain the originally funded effort could be completed, any excess funds then became available to fund additional cleanup projects, which allowed another 20 Recovery Act projects to begin by mid-April 2012.

Problems with Establishing Scope, Cost, or Schedule Targets Raise Questions about Actual Project Performance

In analyzing EM data, we identified a variety of issues with how EM established and documented scope, cost, or schedule targets. Scope targets were not consistently set and documented for some capital asset and operation activity projects; cost targets were flexibly set for operation activity projects; and schedule completion targets for both capital asset and operation activity projects were typically set for the end of a fiscal year, regardless of when a project was actually expected to be completed. Without clear scope, cost, or schedule targets in performance baselines, it becomes difficult to assess project performance.

Inconsistencies in How EM Established and Documented Projects' Scope Targets

For both capital asset and operation activity projects, our analysis showed that scope targets—or the key performance parameters that are to be completed in order for a project to be deemed complete and successful—were neither consistently established nor consistently used by EM to measure project completion and success. At times, key performance parameters were articulated in very general terms (e.g., demolish a building); at other times, they were articulated in specific terms (e.g., remove 1.6 million cubic yards of soil). Such variability in key

performance parameters can make it difficult to accurately determine when a project has truly been completed or whether it has successfully achieved its goals. Examples include the following:

- A project at the Paducah Site in Kentucky included only a single general key performance parameter requiring the demolition of one building. This parameter did not describe what activities the demolition was to entail, such as the removal of the building's foundation, removal of equipment, or cleanup of the site. Even though many of these activities were described in a separate description of the project's scope, the key performance parameter itself did not explicitly specify any of these activities as being required for the project to be determined complete or successful. By not doing so, the key performance parameter did not identify what successful demolition would actually entail when completed.

- A project to expand a waste disposal facility at the Hanford Site in Washington State, on the other hand, included a key specific performance parameter for excavating 1.6 million cubic yards of soil, but the project's design specifications defined the project in terms of the size of the pit from which soil was to be removed. EM determined that the project was complete when the pit met the dimensions stated in the design document (1,000 feet long by 500 feet wide by 70 feet deep) even though the amount of soil removed was 1.5 million cubic yards. EM officials told us that the original key performance parameter of 1.6 million cubic yards was a planned-for approximation, not a hard-and-fast functional requirement for project completion.

Capital asset projects are subject to specific requirements set forth in Order 413.3B, whereas operation activity projects are not. This order requires that scope targets incorporating key performance parameters are to be documented in a critical decision memorandum usually issued at the end of a planning period. Nevertheless, we found that either key performance parameters were not specified in critical decision memorandums or project success at closure was assessed against more than one scope target. Specifically, over one-third (13 out of 33) of completed Recovery Act capital asset projects did not specify scope targets or key performance parameters and, in other cases, projects were assessed against more than one scope target description. Following are some examples:

- For a project to expand a waste disposal facility at the Oak Ridge Reservation in Tennessee, neither the critical decision memorandum

nor the execution plan specified scope targets or key performance parameters. Yet on the basis of other documents—design drawings and specifications—the project closure report stated that all key performance parameters had been completed. Office of Project Management officials told us that when a critical decision memorandum lacks key performance parameters, such parameters sometimes cannot be reconstructed to establish scope targets. In such cases, they said, no audit trail exists to compare planned key performance parameters with those cited at project completion, making it difficult to demonstrate the extent to which projects were successfully completed.

- For a waste remediation project at the Hanford Site, two different scope targets were used as measures of success. One project plan called for the *complete* remediation of 24 waste sites [emphasis added], whereas another project plan called for the remediation of 53,000 cubic meters of soil at 18 sites. The closure report for this project pieced together both of these scope targets, stating that 1 of 24 sites was not completely remediated because unexpected contamination was found, and remediating that contamination would have exceeded 53,000 cubic meters of soil. Thus, depending on which source is used to describe the project scope, the project could be assessed as having failed to completely remediate 24 sites or as having successfully remediated 18 sites plus 6 more sites, to the called-for maximum amount of soil.

Because operation activity projects are not subject to Order 413.3B, EM has greater flexibility in terms of when it sets scope targets and where targets are documented. According to an EM official, operation activity projects are to be assessed against key performance parameters as documented in the IPABS database. EM's 2011 guidance on preparing closure documents for Recovery Act projects, on the other hand, directs sites to measure success against key performance parameters in project plans. Moreover, we found cases in which a project's scope targets as documented in the project plan differed from the scope targets documented in IPABS. Examples we found include the following:

- The scope set forth in IPABS for a project to clean up a nuclear facility at Argonne National Laboratory in Illinois included shipping up to 15 casks of material for disposal. At the end of the project, however, EM's closure document labeled the project a success because it met the key performance parameter found in the project plan, which was

stated in terms of linear inches of nuclear fuel packaged into shipping tubes.

- An EM official told us that another project, at Brookhaven National Laboratory, had failed because it did not complete a key scope requirement—the removal of an exhaust stack for air cooling in a facility—as recorded in IPABS. The official stated the site's closure document inappropriately indicated that all key performance parameters were completed on the basis of a more limited scope described in the project plan.

Such uses of two different scope targets may thus lead to differing or inaccurate assessments of performance.

In addition to inconsistencies in how and where EM set and documented scope targets, we found flaws in EM's evaluation of project performance—in particular, claims of project success even if key performance parameters were not achieved. According to EM officials, EM is committed to implementing Order 413.3B principles as applicable to all EM activities, including operation activity projects. In discussions with us, EM officials offered a number of explanations for determining that certain key project parameters of operation activity projects were successfully completed, even though these explanations ran counter to specific provisions in Order 413.3B, and an official from the Office of Project Management questioned the validity of these explanations. Following are some examples:

- According to EM officials, an operation activity project at the Energy Technology Engineering Center in California—a project including site characterization and analyses to support site cleanup—was deemed successful even though not all key performance parameters were completed. EM officials stated that these parameters were not completed for reasons outside of the office's control because Recovery Act funding arrived later than expected and because state regulators changed regulatory requirements. However, an Office of Project Management official told us that if the provisions in Order 413.3B applied, the unavailability of funds when expected appears to result from EM's inadequate up-front planning rather than a matter outside of its control. Moreover, the official observed, under Order 413.3B, EM would have had to demonstrate that the state had changed its regulatory requirements or its agreement with DOE before EM could argue that a change in project scope was justified.

- A project to demolish contaminated buildings at the Portsmouth Site in Ohio did not fulfill a key performance parameter—the removal of two buildings' concrete slab foundations—because after officials had set the parameters, they determined that these slabs could be used as a staging area for future cleanup work, and it was, therefore, in the government's interest to retain them. Nevertheless, an Office of Project Management official told us that not meeting a key performance parameter would have been considered a failure under Order 413.3B. He stated that regardless of a later determination of what is in the government's interest, setting the removal of the buildings' foundations as a key performance parameter appears to be a failure of front-end project planning.

Cost Targets Were Not Consistently Documented for Operation Activity Projects

Planned costs for operation activity projects—unlike those of capital asset projects, for which Order 413.3B establishes specific requirements—were more flexibly set. Specifically, operation activity projects had no single original cost targets they were to adhere to, and EM sometimes altered cost targets, in response to changes in funding or planning circumstances, to final cost targets while the projects were under way. Without a fixed cost target against which to measure a project's success, it is possible that EM could claim that a project was on budget by successively altering the cost targets.

For example, EM asserted that a project to ship and dispose of contaminated waste from the Hanford Site was successfully completed at a cost of $47.5 million—slightly below its final cost target of $47.9 million—even though IPABS information indicated that the project's cost target was originally approximately $43 million. Thus, rather than coming in under budget, this project exceeded its original cost target by more than 10 percent. According to EM officials, resetting to a higher original cost target was appropriate because the commercial costs of waste treatment and disposal had gone up since the original performance baseline was established. An EM official told us that this decision was consistent with changing cost targets under Order 413.3B. An Office of Project Management official, however, noted that the possibility of changing commercial costs should have been taken into consideration during project planning stages and, therefore, did not constitute a basis for changing this project's cost target under Order 413.3B.

Schedule Targets Usually Did Not Reflect Expected Project Completion Dates

EM's data do not generally support a meaningful assessment of whether Recovery Act projects were completed within schedule targets. According to EM officials, the target completion dates for Recovery Act projects were generally set to be the end of a fiscal year and not at the point when

projects were actually expected to be completed. For 72 of the 78 completed projects, EM data showed a target completion date either at the end of EM's Recovery Act program (initially slated for the end of fiscal year 2011) or the end of EM's budget period at the end of fiscal year 2012.

Using the end-of-program or budget periods as the target date for project completion raises concerns about the accuracy of resulting assessments of individual project's schedule performance. Our analysis of EM headquarters' data shows that some projects appeared to be completed as much as 50 to 80 percent earlier than planned. However, the closure documentation for these projects sometimes presented a very different picture about the scheduled completion of work at the site. For example, EM's headquarters data show that the project to prepare the K-27 building for demolition at Oak Ridge had a target date for completion at the end of fiscal year 2012, but all elements of the project's scope were actually completed on December 30, 2010, over 21 months earlier. A review of project-specific documentation, however, revealed that the work was completed only a few weeks early compared with target dates in that documentation. According to an EM official, schedule completion dates for Recovery Act projects were left at the end of the fiscal year to provide additional flexibility in completing the projects on time. After final contracts were agreed upon, he told us, EM did not change schedule dates to the target completion date in the contract because the office believed that the contractor schedule estimates were generally too optimistic and might not fully reflect risks that could delay the projects.

Guidance for Both Capital Asset and Operation Activity Projects Has Gaps

Guidance is available for both capital asset and operation activity projects, but the guidance for capital asset projects—DOE Order 413.3B—is more comprehensive than the protocols for operation activity projects. Nevertheless, according to Office of Project Management officials, Order 413.3B does not address how to develop key performance parameters for capital asset cleanup projects or provide examples. Rather, it is up to individual sites to develop such parameters on a case-by-case basis. This shortage of specific guidance, including examples, for how to develop key performance parameters may contribute to the inconsistencies we describe in this report.

EM's 2012 operations protocol, the available guidance for operation activity projects, omits a number of key elements related to setting scope, cost, and schedule targets in performance baselines. For example, key performance parameter is mentioned only in the glossary. Moreover, unlike Order 413.3B, which defines permissible changes to projects'

performance baselines, the protocol for operation activity projects provides only a partial list of such changes. Moreover, the protocol does not define when and how projects' performance baselines are to be documented—documentation critical for accurately assessing a project's success or failure.

Project Management Problems Occurred on EM Recovery Act Projects, and EM Is Taking Steps to Identify Lessons Learned

Some of EM's long-standing project management problems occurred during its implementation of Recovery Act projects, primarily insufficient early planning before setting a performance baseline; new problems also occurred, particularly about how projects were classified as capital asset or operation activity projects. EM has been gathering information on lessons learned from Recovery Act projects, some of which could apply to other EM cleanup work, but some lessons may have limited applicability for future work, and the lessons to date do not provide a basis for EM to assess the effectiveness of its initiative.[21]

Some Recovery Act Projects Demonstrated Insufficient Early Planning before EM Set Project Performance Baselines

DOE noted in its 2008 root cause analysis of project management issues that a key issue affecting project performance was insufficient front-end planning before setting project baselines.[22] According to Order 413.3B for capital asset projects, project planning, including site characterization, should be conducted prior to establishing a project's performance baseline to help ensure the project can be completed within that baseline. Similarly for operation activity projects, EM's initiative stated that EM would monitor the projects using credible performance baselines with well-defined scope. Nevertheless, according to our analysis of EM documents, several Recovery Act capital asset and operation activity projects did not seem to benefit from sufficient early project planning. Consequently, the projects' final scope, cost, or schedule did not conform to their performance baselines. Some examples are as follows:

[21]In June 2011, a House committee report directed EM to develop lessons learned, including problems encountered and best practices identified in its Recovery Act projects. EM's resulting report is expected to provide the committee with specific recommendations on how those lessons learned can and will be applied to managing ongoing and future projects. (H.R. Rep. No. 112-118 (2011).

[22]Department of Energy, *Root Cause Analysis: Contract and Project Management* (Washington, D.C.: April 2008).

- *Unexpected volumes of wastes changed project scope*. The scope of a Recovery Act capital asset project at the Los Alamos National Laboratory in New Mexico to remove hazardous and radioactive wastes from a landfill dating to the 1940s increased significantly when it was determined that the site would need to be excavated to a depth of 30 feet rather than the planned for 12 to 18 feet. EM site officials reported that more site characterization would have helped identify the extent of contamination, but more characterization was not done because of schedule and budget constraints. The cost of the project increased from $111 million to $130 million when the amount of waste needing excavation exceeded the original target. At the Mound Site in Ohio, a Recovery Act capital asset project was to remove and dispose of three types of waste to certain maximums: 406,000 cubic feet of low-level waste, 27,000 cubic feet of mixed low-level waste, and 15,000 cubic feet of hazardous waste.[23] According to EM documents, the project was completed under planned cost but with an actual scope almost unrelated to that in its performance baseline. The project disposed of all the waste at the site, but the mixture of wastes disposed of was completely different than expected: 73 percent more low-level waste was disposed of than planned, 1 percent of the planned mixed low-level waste was disposed of, and no hazardous waste was found.

- *Unexpected challenges affected project cost or schedule.* At Idaho National Laboratory, during the decommissioning and demolition of a former nuclear reactor, the contractor discovered asbestos contamination that had not been identified before the project's scope and cost targets had been established, which slowed work while the contractor planned how to address this unexpected contamination; this delay contributed to the operation activity project's missing its completion date of the end of fiscal year 2011. Similarly, at the Brookhaven National Laboratory, the contractor demolishing a radioactively contaminated concrete shield around a former reactor found that the shield was much denser than expected, which delayed the completion of the capital asset project and raised costs; the additional funds EM provided were also exhausted before the

[23]The Environmental Protection Agency defines hazardous waste as waste that is dangerous or potentially harmful to health or the environment. Low-level waste includes radioactively contaminated debris, rubble, and soils from the decommissioning and cleanup of nuclear facilities. Mixed low-level waste contains both radioactive and chemically hazardous waste.

contractor completed the project, and the remaining demolition was transferred to a project funded with annual appropriations. Furthermore, as part of a Recovery Act capital asset project at the Separations Process Research Unit site in New York state, EM was demolishing a building that had been contaminated from nuclear research dating to the 1950s. In September 2010, a wrecking crew's work resulted in the accidental spread of radioactive contamination. The building's footprint was posted as a contamination area, and demolition work was suspended while the contractor prepared a corrective action plan to ensure no further accidents occurred. Moreover, in part because the cost to remediate the accident was expected to exceed $1 million, EM conducted an accident investigation, which concluded that the contractor's failure to fully characterize the building before demolition contributed to the accident.

According to DOE's 2008 corrective action plan, one obstacle to sufficient planning is managers' strong desire to begin executing their projects.[24] According to a senior EM official, when deciding how much site characterization to conduct in determining scope, EM faces a trade-off: (1) spend little time and money on site characterization and then face the risk of finding more or different contamination than expected when the cleanup project begins or (2) spend significant time and money on site characterization, although additional contamination may still be found when cleanup project begins.

EM's plan to complete Recovery Act work by the end of fiscal year 2011 added to existing pressures to complete planning quickly and start executing projects. According to an official at EM's Consolidated Business Center, most hiring would occur to execute jobs, not plan the projects. Even though EM sought to begin Recovery Act projects quickly, Office of Project Management officials told us that, for the sake of establishing better cost targets, EM should resist external pressures to start projects without sufficient site characterization; otherwise, EM's performance baselines will need large contingencies to cover the risks of finding more contamination than expected.

According to an EM document, these types of scoping problems would be partially addressed by its initiative, which was intended to break very

[24]Department of Energy, *Root Cause Analysis: Contract and Project Management Corrective Action Plan* (Washington, D.C.: July 2008).

large projects—composed of a mix of projects at different stages of being defined or executed—into smaller, discrete, projects that could be better defined. Discrete projects were also a key element of DOE's corrective action plan to address the department's long-standing project management issue of ensuring that performance baselines are sufficiently planned. According to EM documents, this approach, in combination with better planning, including site characterization, would allow EM to have better performing projects, as well as better estimated final costs.

However, some of the Recovery Act cleanup projects were actually work segments of larger projects rather than discrete projects. The lines between the Recovery Act projects and large projects funded with annual appropriations sometimes became blurred, making it difficult to determine the scope, cost, and schedule targets for the Recovery Act-funded work. Following are some examples:

- The scope of a Recovery Act capital asset project included constructing three of several tent-like structures over excavation sites, according to the project's closure document. This project was part of a larger overall project to retrieve buried waste contaminated with solvents, transuranic waste, and uranium at the Idaho National Laboratory. However, an EM official told us that one of these tents was mistakenly included in the project's approved performance baseline, and it was instead constructed by an annual appropriations-funded project. The Recovery Act project also removed contaminated waste—part of an effort supported by other Recovery Act and annual appropriations-funded projects.

- Since the Recovery Act funding for a capital asset project to expand a waste disposal facility at the Oak Ridge site was unavailable when the site wanted to take advantage of the full construction season, according to the project's closure documents, the project's initial steps, including site preparation, were funded with annual appropriations. When the site later realized that an additional expansion would be built for the waste disposal facility, certain final construction activities for the Recovery Act project were moved to the new construction project.

- The scope for a Recovery Act project at the Energy Technology Engineering Center included submitting to state regulators a work plan for the study of feasible technologies to support site cleanup and closure, but that work was completed using annual appropriations prior to the start of the Recovery Act project. As a result, EM used the

freed-up Recovery Act funds for other work at the center, including completing the model to predict the flow of contaminated groundwater at the site, an analysis that had been started with annual appropriations.

EM's Initiative to Reclassify Projects

Project classification dictates whether EM must follow Order 413.3B in implementing a project. Capital asset projects have to be managed according to the order, which established a management process with five major milestones—called critical decision points—involving multiple reviews and approvals. EM's initiative allowed EM considerable flexibility in determining whether it classified some Recovery Act projects as capital asset or operation activity projects. EM does not have a clear policy that sets out under what conditions and how EM should break a capital asset project into smaller, discrete projects. According to EM's initiative, the classification of capital asset and operation activity projects depends, in part, on project costs, with a total project cost of $10 million or more being classified as a capital asset project; below this threshold, the project is classified as an operation activity project.[25] In effect, this classification could allow EM to determine which projects would, or would not, be passing through critical decision points by breaking larger projects into smaller projects. According to EM's initiative, EM would manage operation activity projects much as it does capital asset projects but would not use critical decision points.

EM's 2012 operations protocol provides considerable flexibility about what project management principles from Order 413.3B the office applies to operation activity projects. The protocol clarifies that critical decisions and another control mechanism required under Order 413.3B will not be

[25]Cleanup work, the cost of which could determine its project type, includes construction projects and the construction phase of environmental remediation; the decommissioning of nuclear facilities, radiological facilities, and contaminated facilities; and, the demolition of nonnuclear facilities and noncontaminated facilities. Other cleanup work, such as operating a waste processing plant, is classified by its nature—regardless of its cost—as an operation activity project and not a capital asset project.

applied to operation activity projects.[26] Beyond addressing these specific exclusions from Order 413.3B, EM's protocol states only that project management principles will be applied as appropriate and that some operations are project-like and others are routine or recurring operations.[27] This distinction would seem to imply that at least routine and recurring operations may not appropriately be managed as projects with predetermined scope targets. According to an EM official, one advantage of separating operation activity projects from larger capital asset projects and the requirements of Order 413.3B is the greater flexibility to adjust the scope of operations—by slowing down or stopping work—to manage realized risks rather than having to apply contingency funds that have been set aside.[28] This de-emphasis on managing to a scope target for operation activity projects is illustrated in a Recovery Act closure document for an Oak Ridge project. According to this document, key performance parameters are not applicable for this operation activity project, which had successfully met its objective of operating the waste treatment facilities at Oak Ridge National Laboratory at exactly the planned cost over the contract period. That is, this project's success was defined in terms of operating within a cost and schedule—without reference to completing a defined scope.

Office of Project Management officials supported the concept behind the project management initiative, noting that it could be useful to break out projects into smaller, discrete capital asset projects. However, they

[26]In addition to the management process in Order 413.3B, it contains another control mechanism, known as earned value management system, which provides a measure for gauging progress against a cost and schedule baseline. Earned value data in this system make it possible for managers and others to determine how a project has been performing and to predict future performance trends. DOE Order 413.3B (and its version applicable when the Recovery Act began in 2009) requires this system's use for capital asset projects costing $20 million or more, and EM's 2009 initiative also requires it for operation activity projects.

[27]EM's first version of its operations protocol (April 2010) also established flexibility; that is, EM headquarters and the sites could reach an agreement on which project management principles from DOE's order for capital asset projects would apply to operation activity projects. It further indicated that EM should apply more of the project management principles to project-like activities than to routine or recurring operations.

[28]EM's 2010 version of its operations protocol, but not its 2012 revision, explicitly describes managing scope as a contingency: "If a program risk is realized and contingency is required, a baseline change proposal shall be processed to move scope to future years, or delete scope, if appropriate, from the baseline to remain within the funding target for the execution year or request additional funding."

expressed concern that an integrated capital asset project could be inappropriately divided into smaller project fragments that would be classified as operation activity projects costing less than $10 million. As a result of such classification, they were concerned that these smaller projects would be subject to less stringent controls than required by Order 413.3B.

Office of Project Management officials told us this classification issue arose on several occasions. At the Hanford and Savannah River Sites, Office of Project Management officials noticed scope within Recovery Act-funded operation activity projects that the office saw as integral to larger capital asset projects funded by annual appropriations. For example, at Hanford, EM had designated a project to remediate soil and groundwater contamination as an operation activity project, but EM officials told us that they determined, in consultation with the Office of Project Management, that about half of this $90 million project was, in fact, part of a capital asset project.[29] According to Office of Project Management officials, EM was constructing wells and a groundwater pump and treatment facility that should be considered part of an existing capital asset project funded by annual appropriations, and only EM's pumping and treating of contaminated water should be considered an operation activity project. In addition, closure documents indicated that the operation activity project had also included the construction of a maintenance facility complex that included utility upgrades, 27 mobile office and restroom facilities, and four shop and warehouse buildings of approximately 15,450 square feet each. In another project—to clean up contaminated soil and buildings at the SLAC National Accelerator Laboratory in California—Office of Project Management officials told us that they and EM officials originally agreed that the project was a capital asset project. The project was to cost approximately $30 million using both Recovery Act and annual appropriations. However, EM subsequently divided the project's scope into 18 separate operation activity projects, each costing under $10 million. Furthermore, according to our analysis of EM documents on the Recovery Act-funded portion of the overall project, EM took advantage of the flexibility under the initiative to create a Recovery Act project costing $8 million and designated it as an operation activity project. However, EM later added to the scope and increased the Recovery Act funding to this

[29]As noted earlier, some cleanup work, such as operating a waste processing plant, is classified by its nature—regardless of its cost—as an operation activity project and not a capital asset project.

project, increasing its cost at completion to almost $16 million, but the office never reclassified the project as a capital asset project.

Office of Project Management officials did not know how many Recovery Act operation activity projects might actually be part of a capital asset project because projects that EM starts as operation activity projects are not likely to be reviewed by the Office of Project Management, which does not participate in the classification of operation activity projects. Moreover, these officials expressed concerns that EM may be misclassifying capital asset projects as operation activity projects, with the result that projects are implemented without the appropriate project controls required by Order 413.3B. They said the disagreement over project classifications applies to work funded by both EM's Recovery Act and annual appropriations. In a report about its partnership with EM to help improve project management on some projects funded by annual appropriations, the Army Corps of Engineers made similar observations, stating that the Corps had observed EM efforts to disaggregate projects by size and type to avoid the application of Order 413.3B for project management. According to the report, these practices of overly subdividing projects are inconsistent with good project management practice and can result in a fragmented view of overall project health.[30]

In contrast, EM officials stated that EM appropriately avoids critical decision points for an aptly classified operation activity project, and the more streamlined decision making does not preclude managing the project in accordance with best project management principles. Particularly given the pressure to quickly execute Recovery Act projects, according to another EM official, being freed from formal critical decision steps required by the order allowed EM to more quickly start operation activity projects. However, without a clear principle for establishing the boundaries of project scope, the expediency of avoiding the requirements of Order 413.3B could become the decisive factor in classifying work as not a capital asset project. For instance, a project review team at the Idaho National Laboratory suggested that the site consider subdividing the financial accounts of a Recovery Act-funded capital asset project with an aggregate cost of over $10 million—separating the demolishment of shielded rooms for working with radioactive materials (hot cells) from the

[30]U.S. Army Corps of Engineers, *Report to the Department of Energy, Office of Environmental Management: Analysis of USACE-DOE Project Management Partnership Potential* (Washington, DC: June 3, 2011).

demolishment of the surrounding building—because as a capital asset project, the work must follow the Order 413.3B requirement for a critical decision point approval, potentially delaying the project's execution by several months.

Some of EM's Lessons Learned May Be Applicable to Other EM Projects

EM has been analyzing which lessons learned from its Recovery Act program are applicable to other cleanup efforts. EM has gathered lessons learned from the 17 sites on Recovery Act projects and plans to report on lessons learned in August 2012, according to the Director of EM's Recovery Act Program Office.

EM may be able to use some of the materials that the sites submitted to identify lessons learned to improve project management, particularly in areas that have been problems in the past, such as early planning and contracting, which DOE determined it had addressed as part of DOE's corrective action plan. Some examples are as follows:

- *Early planning.* Some of the lessons learned reported as of June 2012 discussed how early planning can affect a project's success. For example, before demolishing an obsolete nuclear research building at Los Alamos National Laboratory, managers for the Recovery Act project coordinated with managers for a project funded by annual appropriations responsible for remediating under-building soil and developed a characterization plan for the potentially contaminated soil under the building's basement concrete floor. Early work showed that no contaminants needed to be removed, enabling the site to place uncontaminated fill into this basement rather than undertaking a more costly removal of the basement's walls and floor that would have involved greater safety risks for workers. Conversely, at the SLAC National Accelerator Laboratory, sufficient early site characterization of contaminated soil had not been performed before starting excavation. Without this characterization, the project experienced costly downtime for work crews when more contamination was found at the edges of the initial excavation and further characterization had to be done.

- *Contracting.* Some of the lessons learned discussed the importance of using an appropriate type of contract for the work to be performed—

specifically fixed-price contracts or cost reimbursement contracts.[31] According to the lessons learned, DOE's use of fixed-price contracting was appropriate when projects were, among other things, well-defined. When projects were not well-defined, however, cost overruns and schedule delays could occur under such a contract. For example, one lesson learned stated that a fixed-price contract worked well for the demolition of the Oak Ridge site's K-33 building, a former uranium enrichment facility, because the project's well-defined scope limited the possibility of unexpected conditions, changes to the contract, and cost adjustments. The Los Alamos National Laboratory, however, used a fixed-price contract for a landfill excavation project that did not have a well-defined scope, and significant cost adjustments resulted when the contractor found unexpected types and volumes of waste.

Other lessons may have limited applicability to non-Recovery Act work because they address issues specific to EM's Recovery Act program. For example, some lessons learned address personnel issues, such as methods to rapidly hire and train large numbers of new employees for a window of a few years of Recovery Act funding. These lessons learned may not be applicable unless EM receives another large-scale boost in funding for environmental cleanup projects. Similarly, a few lessons learned that addressed methods of coordinating the new Recovery Act projects with projects funded by annual appropriations may have limited use after Recovery Act funding is exhausted.

Furthermore, some lessons learned may have resulted from unique circumstances that also may not be replicated in future EM projects. For instance, one Savannah River Site official said that depressed market conditions resulted in very strong competition among subcontractors for work to decommission reactors; as a result, the site contracted for the work at a price that was lower than expected. Another official at Savannah River told us that the site was able to negotiate a unit cost for waste treatment that was about 40 percent below the cost expected when the Recovery Act project's performance baseline was set. In this case, the official said there is no lesson learned about cost savings for future

[31]Under a cost-reimbursement contract, the government pays a contractor's allowable incurred costs to the extent provided in the contract, regardless of whether the work is completed. Under a fixed-price contract, a contractor accepts responsibility for completing a defined amount of work for a fixed price, which places the risk of cost overruns on the contractor rather than the government.

projects because the Recovery Act funding allowed the site to get the reduced rates by sending higher volumes of waste for treatment, but after the Recovery Act funds are expended and volumes of waste treated are reduced, the site will not be able to get the lower rates. In addition, EM selected shovel-ready projects that it expected could be completed quickly, and these lessons therefore may not be applicable to its more complex projects.

The main features of EM's initiative—such as breaking projects into smaller and shorter-term capital asset projects and operation activity projects and increasing project oversight—were not addressed in the lessons learned that had been developed through June 2012. EM did not specifically ask sites to comment on how the initiative affected their ability to manage Recovery Act projects, and the sites did not so comment. However, without lessons learned about the initiative, EM may not be able to determine whether this initiative will better support its cleanup efforts in the future. Furthermore, in response to our 2010 recommendation for EM to assess project management and oversight steps adopted for Recovery Act projects, EM stated it would determine whether such steps, such as the initiative, have proven beneficial for Recovery Act projects and whether they would be effective and appropriate for cleanup projects funded by annual appropriations.[32] In May 2012, EM officials told us that a quantitative study has not yet been done to do such an assessment, but that it will be based on the lessons learned submitted by the sites. However, these lessons learned as of June 2012 have not focused on the effectiveness of the initiative.

Conclusions

When EM received $6 billion in Recovery Act funds—an amount nearly equal to its 2009 annual appropriation for its cleanup efforts—it faced a daunting task to quickly plan and begin this cleanup work. EM was generally successful in several areas—quickly selecting and starting dozens of cleanup projects, funding thousands of FTEs, accelerating cleanup work, and reducing the number of remaining facilities and the size of the areas needing to be cleaned up. Of the projects completed, most were completed at a lower-than-planned cost—some projects so much so that they raised questions about whether EM has effectively

[32]GAO, *Recovery Act: Most DOE Cleanup Projects Appear to Be Meeting Cost and Schedule Targets, but Assessing Impact of Spending Remains a Challenge* GAO-10-784 (Washington, D.C.: July 29, 2010).

addressed its long-standing challenge of developing realistic performance baselines.

The Recovery Act-funded work is almost complete, but effective EM project management remains a critical area because completing EM's cleanup work will take decades and cost billions of dollars. First used for Recovery Act projects, the new initiative—which breaks large projects into smaller projects to better manage them—holds potential as a way to help improve DOE project management. The guidance describing how projects can be broken out, however, does not clearly set out the conditions under which and how EM should break a capital asset project into smaller, discrete projects. Without a clear policy guiding how a project should be broken out, the initiative could allow managers to avoid DOE's more stringent Order 413.3B project controls by classifying some larger capital asset projects as smaller operation activity projects. Officials in the Office of Project Management, who are responsible for project management policy, told us that they did not know how many Recovery Act operation activity projects might actually be part of capital asset projects and have expressed concern that, under the initiative, some capital asset projects had been broken into operation activity projects in a way that bypasses project controls required by Order 413.3B. The project controls, established to improve project management, are only required for capital asset projects. Order 413.3B has been an important step in DOE's efforts to improve project management. Even this order and associated guides, however, do not adequately address how to develop key performance parameters for capital asset cleanup projects or provide examples of such parameters in a way that would help ensure that scope is always defined so that it would help officials and others accurately assess project performance. EM's 2012 operations protocol, the guidance for operation activity projects, is less specific than Order 413.3B and allows for wide variation in how and when performance baselines are established and documented. Without sufficient project controls and sufficient guidance to ensure that specific performance baselines are established at a consistent point in a project's development and clearly documented, it may continue to be difficult for EM and others to assess project performance, as we have previously reported.

Recommendations for Executive Action

To help ensure that EM more effectively manages all its projects, we recommend that the Secretary of Energy direct the Senior Advisor for Environmental Management and the Director of the Office of Management, as appropriate, to take the following four actions:

- Develop and issue a policy that clearly sets out the criteria with more specificity for reclassifying capital asset projects over $10 million into smaller operation activity projects under $10 million in value.

- Provide the Office of Acquisition and Project Management with information on EM's project classification decisions to ensure that all capital asset projects have been appropriately classified and are managed in accordance with DOE Order 413.3B.

- Develop guidance to supplement DOE Order 413.3B to explain how EM should develop scope targets—specifically key performance parameters—for capital asset cleanup projects and include specific examples for such parameters to help ensure that scope is always defined in a way that it would help officials and others accurately assess project performance, including cleanup projects.

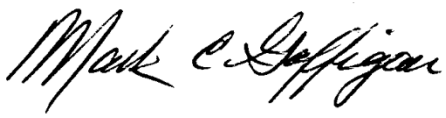
- Clarify guidance for operation activity projects to specify how and when performance baselines (i.e., for scope, cost, and schedule targets), which EM calls key performance metrics for operations activity projects, are to be established and documented to help ensure consistent assessment of performance.

Agency Comments and Our Evaluation

We provided DOE with a draft of this report for review and comment. In written comments, which are reproduced in appendix III, DOE did not comment on the report findings but agreed with the recommendations in our report, subject to some wording modifications. We incorporated most of DOE's suggested wording changes. However, DOE objected to our referring to operation activity projects as "projects" because it wants to avoid any confusion about the applicability of its project management order that applies to only capital asset projects. We understand the distinction DOE is making and explained that distinction in the report. For purposes of this report, we refer to the operation activities as projects because we are collectively referring to all Recovery-Act funded efforts as projects. DOE also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the Secretary of Energy, appropriate congressional committees, and other interested parties. In addition, the report is available at no charge on the GAO website at http://www.gao.gov

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or gaffiganm@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix IV.



Mark Gaffigan
Managing Director, Natural Resources and Environment

List of Committees

The Honorable Carl Levin
Chairman
The Honorable John McCain
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Joseph I. Lieberman
Chairman
The Honorable Susan M. Collins
Ranking Member
Committee on Homeland Security and Governmental Affairs
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Committee on Appropriations
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The Honorable Darrel E. Issa
Chairman
The Honorable Elijah Cummings
Ranking Member
Committee on Oversight and Government Reform
House of Representatives

The Honorable Rodney P. Frelinghuysen
Chairman
The Honorable Peter Visclosky
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
House of Representatives

Appendix I: Objectives, Scope and Methodology

To determine the number of full-time equivalent (FTE) jobs the Department of Energy's (DOE) Office of Environmental Management (EM) funded with Recovery Act funds from October 2009 through March 2012, we reviewed pertinent provisions of the American Recovery and Reinvestment Act of 2009 and Office of Management and Budget (OMB) guidance on reporting FTEs. We obtained data from EM on the number of FTEs that EM's contractors reported to the government's official Recovery Act website since October 2009. To assess the accuracy of the FTE data, we discussed DOE's process for reviewing these data with officials from DOE's Office of the Chief Financial Officer and EM's Recovery Act Program Office. These officials told us that DOE does accuracy reviews, including EM's comparison of the information contractors submitted to the website with the information that contractors provide directly to EM site officials. We also compared the quarterly FTE data that EM provided us from the government website with two other sources—from the Recovery.gov website, as downloaded by GAO, and from contractors, as directly collected by EM at sites. The FTE counts from the three sources generally do not vary more than a few percentage points. In accordance with Recovery Act reporting requirements, prime contractors reported only prime, and not subcontractor, FTEs for the first and second quarters of fiscal year 2010.[1] To provide a meaningful FTE trend, we used subcontractor FTEs reported by EM sites for those two quarters to reconstruct a combined total for prime and subcontractors. We believe the counts for subcontractors are sufficiently reliable for the purposes of this report because the site-reported counts for prime contractors' FTEs for the same quarters are no more than 5 percent different than the numbers in the government's website. Overall, on the basis of these steps, we concluded the FTE data included in our report are sufficiently reliable for our reporting purposes.

To determine the status of EM's Recovery Act-funded cleanup projects and the extent to which completed projects met performance baselines, we reviewed pertinent DOE and EM policies and guidance on project management, including for Recovery Act projects; analyzed project documents and data recorded in EM's corporate database—called the Integrated Planning, Accountability, and Budgeting System (IPABS); and interviewed DOE, EM, EM's Recovery Act Program Office, and Office of

[1]Only starting in the third quarter of fiscal year 2010 were EM prime contractors at each site required to report FTEs for both prime and subcontractors combined.

Project Management officials. We reviewed data for both original Recovery Act projects and additional projects, known as buy-back projects, which were started later when some original projects finished with unused funds.[2] We selected a nonprobability sample of two EM cleanup sites to visit in order to better understand how sites manage their Recovery Act projects.[3] These sites—the Hanford Site and the Oak Ridge Reservation—together were allotted about $2.7 billion of the total $6 billion in Recovery Act funding for environmental cleanup. At each site visited, we reviewed project documentation, interviewed officials, and observed Recovery Act work under way.

To assess project performance, we evaluated Recovery Act funded-projects that were complete. Specifically, we obtained EM's performance analysis and its approved project closure packages for projects that were administratively complete by April 30, 2012—that is, projects complete both in terms of cleanup work and closure paperwork. Using the assessment procedures that EM's Recovery Act Program Office stated it would apply to Recovery Act projects, we compared the scope, cost, and schedule targets in performance baselines with actual scope, cost, and schedule when the project was complete. We used DOE criteria to measure project performance. Specifically, projects should be completed within the planned scope, and within 110 percent of the cost target at project completion, unless otherwise impacted by a directed change.[4] We discussed projects with EM Recovery Act officials when our assessment of project performance differed from EM's to identify the reasons for the differences. Because we found that the schedule targets for Recovery Act projects were generally not specific to the projects, which is necessary for a meaningful assessment, we chose to discuss this issue in the report but do not draw conclusions about the extent to which projects met schedule

[2]We did not count as projects any of three project codes that EM identified as payment activities, such as for Recovery Act administrative purposes, or "embedded buyback activities" that involved using a project's excess funds to do additional scope managed under its existing project code.

[3]Because this was a nonprobability sample, the information derived from our site visits is not generalizeable to all EM cleanup sites but provides illustrative examples of how sites manage their Recovery Act projects.

[4]According to DOE Order 413.3B, a directed change is a change caused by some DOE policy directives (such as those that have force and effect of law and regulation), regulatory, or statutory action and is initiated by entities external to the Department, to include external funding reductions.

targets. We also interviewed EM officials about the reliability of the IPABS database because of its use to document performance baselines for operation activity projects. We believe the data are insufficiently reliable for the purposes of drawing conclusions about the extent to which projects met schedule targets, but are otherwise sufficiently reliable for assessing overall project performance in conjunction with other data we obtained.

To identify management issues, if any, that arose during EM's Recovery Act projects and any lessons EM has learned that it could apply to other cleanup efforts, we reviewed GAO reports, including our High-Risk series,[5] which discuss EM project management issues; DOE reports and other documents, including DOE's root cause analysis and corrective action plan; and other recent reports and documents addressing previously identified EM project management issues. We also reviewed EM Recovery Act Program Portfolio Management Framework (2009), its 2010 and 2012 operations protocols, and other documents to understand the management issues that the initiative was intended to address. To identify any management issues that arose during EM's Recovery Act program, we examined project closure documents and interviewed EM and Office of Project Management officials. With regard to lessons learned, because EM was still in the process of gathering and assessing lessons learned for inclusion in a report to be issued in August 2012, we were unable to determine what EM considered the lessons learned from its Recovery Act program. To understand EM's potential lessons learned, we reviewed the materials that sites submitted about Recovery Act projects. Specifically, we reviewed lessons learned captured in EM's lessons learned database. We also attended EM's lessons learned "information exchange" conference held on March 1, 2012, and reviewed presentations given. All 17 sites receiving Recovery Act funding submitted lessons to the database or at the conference. We analyzed the lessons learned to see if each addressed one or more of areas of possible improvement identified by EM or others. In addition, we reviewed the lessons learned to evaluate the potential for applying them to other EM cleanup projects and discussed this issue with EM officials. We also determined if any of the lessons addressed the effectiveness or other aspects of the initiative for EM's Recovery Act projects, such as implementing smaller, shorter-term projects, breaking larger EM projects

[5]See GAO-11-278.

into capital asset and operation activity projects, increasing project oversight and reporting, and for disbursing Recovery Act funding in phases.

We conducted this performance audit from May 2011 to October 2012 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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Administratively Completed Recovery Act Projects Available for GAO Analysis as of April 30, 2012

Project number	Project description
Argonne National Laboratory (IL)	
1. CH-ANLE-0040.NEW.R1.1	Building 310
2. CH-ANLE-0040.NEW.R1.2	Building 330
3. CH-ANLE-0040.NEW.R1.3	AGHCF waste & materials disposition
4. CH-ANLE-0040.NEW.R1.4	TRU Waste Disposition
Brookhaven National Laboratory (NY)	
5. BRNL-0040.R1	Graphite Research Reactor D&D
6. BRNL-0041.R1	High Flux Beam Reactor
7. BRNL-0041.NEW.R1	High Flux Beam Reactor
Energy Technical Engineering Center (CA)	
8. CBC-ETEC-0040.R1.2	Area IV Soil and Groundwater Remediation
Hanford Site – Office of River Protection (WA)	
9. ORP-0014.R1.1	Tank Farm Infrastructure Upgrades
10. ORP-0014.R1.2	Other Infrastructure Upgrades
11. ORP-0014.R1.3	Facility Upgrades
12. ORP-0014.R1.4	Waste Feed Infrastructure Upgrades
13. ORP-0014.R1.5	SY Transfer Line Upgrade
Hanford Site – Richland Office (WA)	
14. RL-0013C.R1.1	MLLW Treatment
15. RL-0013C.R1.2	TRU Waste
16. RL-0030.R1.1	Soil & Groundwater Treatment
17. RL-0030.R1.2[a]	Soil & Groundwater Operation Activities
18. RL-0040.R1.2	Outer Zone D&D
19. RL-0041.R1.1	100 K Area Remediation
20. RL-0041.R1.2	ERDF Cell Expansion
21. RL-0041.R1.3	Accelerated Remediation & Disposal
22. RL-0041.R1.4	Super Cell 10
23. RL-0041.R2	618-10 Trench Remediation
Idaho National Laboratory (ID)	
24. ID-0013.R1	TRU Waste
25. ID-0030B.R1.1	Buried Waste
26. ID-0030B.R1.2	In Situ Grouting
27. ID-0030B.R1.3	Soil & Groundwater Operations
28. ID-0030B.R1.4	Soil & Groundwater Buy-Back
29. ID-0040B.R1.1	D&D (NTB)

Project number	Project description
Los Alamos National Laboratory (NM)	
30. VL-LANL-0030.R1.2	Monitory Well Installation Program
31. VL-LANL-0040-D.R1.1	D&D - TA-21
32. VL-LANL-0040-N.R1.1	D&D-TSTA
33. VL-LANL-0040-N.R1.2	D&D-Non Def Buy-Back
Moab UMTRA Site (UT)	
34. CBC-MOAB-0031.R1	Moab Recovery Act Project
Mound Site (OH)	
35. OH-MB-0031.NEW.R1	Mound Operable Unit 1
Nevada National Security Site (NV)	
36. VL-NV-0030.R1	Soil and Water Remediation
37. VL-NV-0030.R2	NNSS ARRA Buy-Back
Oak Ridge National Laboratory (TN)	
38. OR-0040.R1.1	K-27 Demolition Preparation
39. OR-0040.R1.2	K-33 Demolition
40. OR-0041.NEW.R1.1	Y-12 Excess Material Disposition
41. OR-0041.NEW.R1.2	Y-12 Biology Complex
42. OR-0041.NEW.R1.3	Y-12 9206 Filter House D&D
43. OR-0041.R1.1	Y-12 Facility D&D
44. OR-0041.R1.3	Disposal Facility Expansion - EMWMF Expansion
45. OR-0041.R1.4	Disposal Facility Expansion-Sanitary Landfill Expansion
46. OR-0042.R1.2	Facility Demolition - Building 3026/Wooden Facilities
47. OR-0042.R1.3	Defense Remedial Actions
48. OR-0042.R1.5	ORNL Bethel Valley Burial Grounds
49 OR-0042.R1.10	ORNL Waste Operations
50. OR-0042.NEW.R2.2	ORNL Non-Defense Misc. Facility Demolition – 2000 Complex
Paducah Site (KY)	
51. PA-0040.R1.1	C-410 D&D
52. PA-0040.R1.2	C-340 D&D
53. PA-0040.R1.3	C-746-A D&D
54. PA-0040.R1.4	Paducah Buy-Back
Portsmouth Site (OH)	
55. PO-0013.R1.1	UMC Disposition
56. PO-0040.R1.1	X-701B Plume Remediation

Project number	Project description
57. PO-0040.R1.2	X-533 D&D
58. PO-0040.R1.3	X-633 D&D
59. PO-0040.R1.4	X-760 D&D
60. PO-0040.R1.5	D&D Buy-Back
61. PO-0040.R1.6	Waste Disposal Buy-Back
Savannah River Site (SC)	
62. SR-0013.R1.1	Solid Waste Disposition
63. SR-0014C.R1.1	Liquid Waste Systems Recapitalization
64. SR-0014C.R1.2	Saltstone Disposal Unit #2
65. SR-0030.R1.2	P Reactor Decommissioning Project
66. SR-0030.R1.3	P Ash Basin Remediation Project
67. SR-0030.R1.4	R Reactor Decommissioning Project
68. SR-0030.R1.5	R Ash Basin Remedial Action Project
69. SR-0030.R2.1	M and D Area Completion GPP and Operations
70. SR-0030.R3.1	Site Wide Completion GPPs and Operations
71. SR-0030.R3.2	Heavy Water Components Test Reactor Decommissioning Project
72. SR-0040.R1	Inactive facility S&M
SLAC National Accelerator Laboratory (CA)	
73. CBC-SLAC-0030.R1	SLAC Recovery Act Project
Separations Process Research Unit (NY)	
74. VL-SPRU-0040.R1.1	Building G2 and H2 D&D
75. VL-SPRU-0040.R1.2	Contaminated Soil Removal - North Field
West Valley Demonstration Project (NY)	
76. OH-WV-0013.R1	TRU and Solid Waste
77. OH-WV-0040.R1.1	Main Plant D&D
78. OH-WV-0040.R1.2	Other D&D

Source: GAO analysis of DOE data.

[a]In a closure document, EM designated a portion of the scope of RL-0030.R1.2 as RL-0030.R1.3, We are referring to both projects as the single project RL-0030.R1.2 because an EM official explained that they were managed as a single project with a single baseline.

Appendix III: Comments from the Department of Energy

Department of Energy
Washington, DC 20585

September 28, 2012

Mr. Mark Gaffigan
Managing Director
Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Gaffigan:

This letter provides the Department of Energy's (DOE) response to the August 21, 2012, Draft Audit Report on "Recovery Act: Most DOE Cleanup Projects are Complete, but Project Management Guidance Could Be Strengthened" (GAO-12-805).

Thank you for the opportunity to review and comment on the draft audit report regarding the Office of Environmental Management's (EM) management and implementation of the American Recovery and Reinvestment Act (ARRA or Recovery Act; Pub. L. 111-5) Program for funding work activities at recipient sites across DOE. The mandates of the Recovery Act Program were to quickly infuse funding into local economies to spur employment while advancing the Department's nuclear cleanup mission at Cold War sites nationwide.

EM demonstrated tremendous success in accelerating the environmental cleanup of contaminated facilities and lands by utilizing the $5.99 billion received in ARRA funds. Across the entire Program, more than 129 specific projects/cleanup activities were initiated at 17 sites across 12 states. As of August 31, 2012, 103 of the projects/cleanup activities are complete. In its study, the Government Accountability Office (GAO) reviewed 78 projects/cleanup activities, of which only four capital assets projects and two operations activities did not meet EM's own success metrics. While we understand it is appropriate for the GAO to focus on these shortcomings, we believe it equally important to highlight the success rate of the Program. In large part because of the Recovery Act investments, the Program has now reduced the footprint of its cleanup operations by nearly 75 percent complex-wide, far surpassing the original goal of 40 percent footprint reduction.

The Department remains committed to continuing to improve our programs and ensure that every one of our projects is implemented effectively. We will continue to work with the GAO to address their concerns and implement their recommendations.

DOE has reviewed the draft report and provides the following responses to the recommendations.

RECOMMENDATIONS

To help ensure that EM more effectively manages all its projects, we recommend that the Secretary of Energy direct the Senior Advisor for Environmental Management and the Director of the Office of Acquisition and Project Management, as appropriate, to take the following four actions:

Response: Concur subject to the specific modifications noted below. Direction should be provided to the Senior Advisor for Environmental Management and the Director, Office of Management.

1. *Develop and issue a policy that sets out the criteria for reclassifying capital asset projects over $10 million into smaller operations activity projects under $10 million in value.*

Response: Concur subject to the following specific modifications. Develop and issue a policy that sets out the criteria with more specificity for reclassifying a portion of a capital asset project whose total value is over $10 million into projects under $10 million, which EM manages as operations activities. Rationale: EM already exercises authority under Department of Energy Order 413.3B and EM Recovery Act Program Portfolio Management Framework to break down a large capital asset project greater than $10 million into smaller, discrete, projects less than $10 million, which EM manages as operations activities. DOE will provide additional specificity in a policy that sets out the criteria.

2. *Subject EM's project classification decisions to a review by the Office of Acquisition and Project Management to ensure that all capital asset projects have been appropriately classified as such and are therefore subject DOE Order 413.3B.*

Response: Concur subject to the following specific modifications. Provide the Office of Acquisition and Project Management visibility into EM's project classification decisions to ensure that all capital asset projects have been appropriately classified per the federal construction statues if applicable, and are-managed in accordance with DOE Order 413.3B. Rationale: A formal classification review of all decisions could become unduly burdensome and lead to inefficiencies. Visibility into EM's decision making process for classifying capital asset projects should be sufficient for the Office of Acquisition and Project Management to confirm that capital asset projects are appropriately classified and managed in accordance with DOE Order 413.3B.

3. *Develop guidance to supplement DOE Order 413.3B or update the order to explain how EM should develop scope targets -specifically key performance parameters (KPPs) - for capital asset cleanup projects and include specific examples for such parameters to help ensure that scope is always defined in a way that it would help officials and others accurately assess project performance, including cleanup projects.*

Response: Concur subject to the following specific modifications. Develop or update existing guidance to supplement DOE Order 413.3B to explain how EM should develop scope targets

specifically key performance parameters (KPPs) for capital asset cleanup projects and provide specific KKP examples to help ensure that scope is always sufficiently defined to allow officials and others to accurately assess project performance, including cleanup projects. Rationale: Examples on how to define KPPs should be done within guides rather than in the order.

4. *Clarify guidance for operation activity projects to specify how and when key performance baselines (i.e., for scope, cost, and schedule) are to be established and documented to help ensure consistent assessment of performance.*

Response: Concur subject to the following specific modifications. Clarify guidance for operations activities to specify how and when key performance metrics (KPMs) (i.e., for scope, cost, and schedule) are established and documented to ensure consistent assessment of performance. Rationale: As defined in the EM Recovery Act Program Portfolio Management Framework, operations activities are not projects. In DOE Order 413.3B, the designation of projects is limited to capital asset scope. So as to not confuse the two, projects should have well defined and measurable KPPs, while operations activities should utilize KPMs for comparable scope. EM is finalizing guidance to field offices regarding the development of annual work plans with associated key performance metrics. This process is expected to be functional for operations activity work beginning in fiscal year 2013.

If you have any questions or require additional information, please contact me at (202) 586-7709 or J. E. Surash, Deputy Assistant Secretary for Acquisition and Project Management, at (202) 586-3867.

Sincerely,

David Huizenga
Senior Advisor
for Environmental Management

cc: Janet Frisch, GAO
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Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Mark Gaffigan (202) 512-3841, or gaffiganm@gao.gov

Staff Acknowledgments

In addition to the individual named above, the following staff members made key contributions to this report: Janet Frisch, Assistant Director; Thomas Beall; Antoinette Capaccio; Ellen W. Chu; Eli DeVan; James Espinoza; Terry Hanford; Yvonne Jones; Eli Lewine; Mehrzad Nadji; Josie Ostrander; Carol Patey, Anne Rhodes-Kline; Beverly Ross; Carol Herrnstadt Shulman; Jonathan Stehle; and Kiki Theodoropoulos.