



September 2022

NUCLEAR WASTE CLEANUP

Actions Needed to Determine Whether DOE's New Contracting Approach Is Achieving Desired Results

Accessible Version

GAO Highlights

Highlights of [GAO-22-105417](#), a report to congressional committees

Why GAO Did This Study

The ESCM uses single-award indefinite delivery/indefinite quantity contracts with task orders for defined scopes of work after contract award. This represents a key difference from EM's prior contracting approach, which generally required developing detailed scopes of work for the full length of the contract prior to award.

Senate Report 117-39 accompanying S. 2792, a bill for the National Defense Authorization Act for Fiscal Year 2022, includes a provision for GAO to review the ESCM. This report (1) describes the current status of the ESCM and EM's reasons for implementing it, (2) examines EM's strategy for ESCM implementation, and (3) examines how EM has administered ESCM contracts. GAO reviewed EM documentation on awarded ESCM contracts and relevant policies and guidance; and interviewed EM officials, industry stakeholders, and relevant contractor personnel.

What GAO Recommends

GAO recommends that DOE (1) pursue its own recommendation to use an independent entity to assess its workforce capacity; (2) implement a formal, structured process to assess ESCM contracts; and (3) develop measures to assess the model's performance. DOE agreed with GAO's recommendations and stated that it is taking steps to implement them by September 30, 2023.

View [GAO-22-105417](#). For more information, contact Nathan Anderson at (202) 512-3841 or AndersonN@gao.gov.

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Actions Needed to Determine Whether DOE's New Contracting Approach Is Achieving Desired Results

What GAO Found

The Office of Environmental Management (EM), within the Department of Energy (DOE), uses contractors to carry out its mission of cleaning up radioactive and hazardous materials at DOE's 15 active environmental cleanup sites. In 2019, EM began using a new contracting approach, the End State Contracting Model (ESCM), with the goal of more effectively moving cleanup sites toward completion. As of June 2022, EM had awarded six contracts worth up to a combined \$47 billion, using the ESCM. EM plans to use the model as its preferred contracting strategy for additional large environmental cleanup contracts going forward. According to EM documentation, the agency sought to incorporate elements of prior successful cleanup projects into the ESCM and to gain key benefits, such as a streamlined procurement process and more realistic pricing. Following the contract award, EM negotiates with the contractor for task orders that define scopes of work and costs for specific cleanup activities (see fig.).

Overview of the End State Contracting Model Process



Source: GAO analysis of Department of Energy documentation. | GAO-22-105417

Text of Overview of the End State Contracting Model Process

Pre-award	Award	Post-award
The Office of Environmental Management (EM) employs a simplified, streamlined procurement process that requires prospective contractors to include less information in their contract proposals when compared with EM's prior contracting approaches.	EM evaluates contractor proposals and awards a single-award indefinite delivery/indefinite quantity contract to the best value contractor.	EM site officials are responsible for developing task orders that detail the cleanup work to be performed. These officials then negotiate each task order's requirements, such as costs and schedules, with the selected contractor.

Source: GAO analysis of Department of Energy documentation. | GAO-22-105417

EM developed a program plan to guide its implementation of the ESCM and has identified and shared lessons learned. However, EM officials said that ongoing challenges with the ESCM include ensuring that EM has the workforce capacity

to effectively implement it, especially during the post-award phase. EM recently analyzed this issue but chose not to pursue its own recommendation to use an independent entity to assess its workforce capacity. Such an assessment would provide the impartial information that EM needs to better align its workforce to successfully administer the ESCM.

GAO's analysis of ESCM contracts found weaknesses with the model's post-award phase, such as the use of undefinitized contract actions, which authorize work to begin before EM and contractors reach final agreement on contract terms. Despite these weaknesses, EM has not systematically assessed its awarded ESCM contracts or developed performance goals or associated measures to assess whether the model is achieving its intended benefits. Implementing a formal, structured process to assess the ESCM's rollout and developing performance measures could help EM to better identify and address weaknesses and ensure that the model is achieving desired results before it awards billions more through the ESCM.

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Abbreviations

DOE	Department of Energy
EM	Office of Environmental Management
ESCM	End State Contracting Model
FAR	Federal Acquisition Regulation
FTE	full-time equivalent
IDIQ	indefinite delivery/indefinite quantity
PMI	Project Management Institute
UCA	undefinitized contract action

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September 28, 2022

Congressional Committees

In 2019, the Department of Energy’s (DOE) Office of Environmental Management (EM) began using a new contracting approach to support its mission of cleaning up vast quantities of radioactive and hazardous materials remaining from decades of nuclear weapons production and energy research. Specifically, EM began using the End State Contracting Model (ESCM) in an effort to move activities at DOE’s 15 active environmental cleanup sites closer to completion. This model uses a different contracting approach than EM has used in the past. It relies on single-award indefinite delivery/indefinite quantity (IDIQ) contracts with associated task orders issued for defined scopes of work; such contract types are typically used when the exact quantities and timing for products or services are not known at the time of contract award.

Under the ESCM, EM competitively awards a contract for up to 15 years of cleanup work.¹ EM then negotiates with the selected contractor for task orders that define the scopes of work, costs, and schedules for specific cleanup activities at the site. By defining scopes of work and associated costs and schedules after the contract has been awarded, the ESCM represents a significant change from EM’s prior contracting approach, which generally required developing detailed scopes of work for the full length of the contract prior to award.

As of June 2022, ESCM contracts represented about \$3.3 billion—or about 45 percent—of EM’s total estimated annual contract value for major projects in its cleanup portfolio.² This amount will increase as EM awards more ESCM contracts.

The EM Advisory Board and the National Academies of Sciences, Engineering, and Medicine each reviewed the ESCM and identified

¹ESCM contracts have a 10-year ordering period. However, a task order may be issued on the last day of the ordering period for up to 5 years, effectively creating a 15-year period of performance.

²As of June 2022, EM had 32 active major contracts—defined as those valued at more than \$25 million—across its portfolio, with a total estimated annual contract value of more than \$7.5 billion. Of those 32 active major contracts, six were ESCM contracts, according to EM officials.

potential vulnerabilities in EM's ability to implement it.³ Specifically, the EM Advisory Board reported in 2019 that ensuring that EM had a right-sized and qualified workforce in place to administer ESCM contracts would be critical to the model's success.⁴ The National Academies also raised questions in two recent reports about EM's ability to manage ESCM contracts and the potential risks in using single-award IDIQ contracts.⁵ For example, the National Academies cited risks associated with EM's capacity to manage a significant number of ESCM task orders and contractors' ability to heavily influence the scopes of work and costs of these task orders.

We have reported, more generally, on the challenges that EM faces in managing its contracts. EM's contract management has been on our High Risk List for years.⁶ For example, in our March 2021 update to our High Risk List, we reported that while EM had made some progress in improving its contract management activities, it still faced many challenges, including in developing reliable cost and schedule estimates for its cleanup efforts.⁷ Additionally, in November 2021, we reported that DOE did not have enough staff or staff with the right skills to properly manage contracts.⁸ We also reported that DOE had not taken steps to determine the appropriate size of its acquisition workforce and any gaps in skills and competencies to ensure that contracts are effectively managed.

³The EM Advisory Board is internal to EM and provides independent and external advice, information, and recommendations to the Assistant Secretary for EM on issues related to environmental cleanup and risk reduction.

⁴Environmental Management Advisory Board, *Office of Environmental Management Assessment of Human Resources to Implement the End State Contracting Approach* (September 2019).

⁵National Academies of Sciences, Engineering, and Medicine, *Review of the Effectiveness and Efficiency of Defense Environmental Cleanup Activities of the Department of Energy's Office of Environmental Management: First Report* (2021); and *Effectiveness and Efficiency of Defense Environmental Cleanup Activities of the Department of Energy's Office of Environmental Management: Report 2* (2022).

⁶In 1990, we began reporting on government operations we identified as high risk. This High Risk List has generally coincided with the start of each new Congress and includes status updates on agency progress in addressing high-risk areas.

⁷GAO, *High-Risk Series: Dedicated Leadership Needed to Address Limited Progress in Most High-Risk Areas*, [GAO-21-119SP](#) (Washington, D.C.: Mar. 2, 2021).

⁸GAO, *Department of Energy: Improvements Needed to Strengthen Strategic Planning for the Acquisition Workforce*, [GAO-22-103854](#) (Washington, D.C.: Nov. 16, 2021).

Senate Report 117-39 accompanying S. 2792, a bill for the National Defense Authorization Act for Fiscal Year 2022, includes a provision for GAO to assess EM's implementation of the ESCM. This report (1) describes the current status of the ESCM and EM's reasons for implementing it, (2) examines EM's strategy for ESCM implementation, and (3) examines how EM has administered initial ESCM contracts.

To describe the current status of the ESCM and EM's reasons for implementing it, we reviewed relevant DOE and EM policies and guidance documents on EM's contracting process, more broadly, and on the ESCM, specifically, such as the *ESCM Program Plan*. We also reviewed selected pre- and post-award phase documentation for all six ESCM contracts that had been awarded as of June 30, 2022. In addition, we reviewed pre-award phase documentation for two ESCM contracts that EM plans to award in fiscal year 2023. We also interviewed officials at EM headquarters, EM's Consolidated Business Center, and EM sites to solicit perspectives on the benefits of using the ESCM and to collect information on the status of each ESCM contract.

To examine EM's strategy for ESCM implementation, we reviewed EM information on ESCM lessons learned and two recent analyses that EM conducted to assess its acquisition workforce capacity for managing contracts. We also reviewed recent ESCM assessments by the EM Advisory Board and the National Academies, including each report's findings and recommendations. We interviewed EM Advisory Board members to solicit their perspectives on the ESCM. In addition, we interviewed a nongeneralizable sample of eight industry stakeholders, identified using a snowball sampling approach and selected based on their knowledge of contracting for environmental cleanup projects more generally and the ESCM specifically, to gather their perspectives on ESCM implementation, including potential risks. We also interviewed officials from the U.S. Army Corps of Engineers to collect information on how the Corps uses single-award IDIQ contracts for environmental cleanup work. Views from this sample of stakeholders cannot be generalized to those we did not select and interview. We compared EM's actions with Office of Personnel Management guidance on workforce planning and our prior work on strategic workforce planning.⁹

⁹Office of Personnel Management, *Migration Planning Guidance Information Documents: Workforce Planning Best Practices* (Washington, D.C.: Oct. 7, 2011) and GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003).

To examine how EM has administered initial ESCM contracts, we reviewed documentation for each of the six contracts EM had awarded as of June 30, 2022, including information on EM obligations for these task orders as of this same date. We also interviewed EM officials at headquarters, EM's Consolidated Business Center, and the EM sites with awarded ESCM contracts. Further, we conducted semistructured interviews of EM site officials and contractor personnel responsible for administering ESCM contracts to obtain information on the rollout of EM's first six ESCM contracts and to identify any challenges that may have affected EM's ability to effectively administer them. We conducted a content analysis to identify the most commonly cited challenges. We also interviewed EM officials responsible for administering the two additional ESCM contracts that EM planned to award during fiscal year 2023.¹⁰ We assessed this information against our prior work and Project Management Institute (PMI) principles on using pilot programs to inform decisions on implementing new approaches.¹¹ We also assessed EM's efforts to administer ESCM contracts and the ESCM more broadly against standard program management principles for including key planning elements in agency programs identified by PMI.¹² In addition, we assessed EM's efforts against our prior work on establishing performance measures to assess progress toward achieving goals and using performance information to inform agency decision-making and to improve

¹⁰Since these contracts had not been awarded as of June 30, 2022, there was not a selected contractor to interview.

¹¹For more information, see GAO, *Climate Change: A Climate Migration Pilot Program Could Enhance the Nation's Resilience and Reduce Federal Fiscal Exposure*, [GAO-20-488](#) (Washington, D.C.: July 6, 2020); and *Data Act: Section 5 Pilot Design Issues Need to Be Addressed to Meet Goal of Reducing Recipient Reporting Burden*, [GAO-16-438](#) (Washington, D.C.: Apr. 19, 2016). Also see Project Management Institute, Inc., *Implementing Organizational Project Management: A Practice Guide* (2014). This guide provides a framework to align project, program, and portfolio management practices with organizational strategy and objectives. PMI is a not-for-profit association that provides standards for managing various aspects of projects, programs, and portfolios.

¹²Project Management Institute, Inc., *The Standard for Program Management*, Fourth Edition (2017). This guide describes how goals and objectives for a program can be elaborated and how expected program outcomes and benefits can be defined.

performance, as necessary.¹³ A more detailed discussion of our scope and methodology is in appendix I.

We conducted this performance audit from September 2021 to September 2022, 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.

Background

EM's Mission

EM was established in 1989 with the purpose of cleaning up 107 sites that had been contaminated by decades of nuclear waste from weapons production dating back to World War II. Since its establishment, EM has spent more than \$170 billion on cleanup activities. As of June 2022, EM had completed cleanup at 92 sites, most of which DOE generally views as the smallest and least contaminated sites. EM's work continues at the 15 remaining sites, which represent its most challenging and difficult projects.

EM's environmental cleanup activities at these sites include addressing contaminated soil and groundwater; deactivating and decommissioning contaminated facilities; and designing, constructing, and operating facilities to treat radioactive waste. These activities are organized into six broad work areas, outlined in figure 1 below.¹⁴

¹³GAO, *Veterans Justice Outreach Program: VA Could Improve Management by Establishing Performance Measures and Fully Assessing Risks*, [GAO-16-393](#) (Washington, D.C.: Apr. 28, 2016); *Performance Measurement and Evaluation: Definitions and Relationships*, [GAO-11-646SP](#) (Washington, D.C.: May 2011); and *Managing For Results: Enhancing Agency Use of Performance Information for Management Decision Making*, [GAO-05-927](#) (Washington, D.C.: Sept. 9, 2005).

¹⁴EM has another work area—safeguards and security—that it has categorized as operations activities, but EM does not track this area's performance. This area includes protective forces, physical security systems, information and personnel security, cybersecurity, and law enforcement. EM also has additional support work areas, such as technology development, community and regulatory support, mission support, and program direction.

Figure 1: The Office of Environmental Management’s (EM) Six Areas of Environmental Cleanup Work

Spent nuclear fuel stabilization and disposition	Nuclear materials stabilization and disposition	Radioactive liquid waste stabilization and disposition	Nuclear facility decontamination and decommissioning	Solid waste stabilization and disposition	Soil and water remediation
					
<p>Safe shipping, receipt, storage, and disposition of spent nuclear fuel and heavy water^a</p>	<p>Management, disposition, safe surveillance, and maintenance of nuclear materials^b</p>	<p>Treatment, management, and permanent disposal of radioactive liquid waste stored in storage tanks</p>	<p>Deactivation, decontamination, and decommissioning of EM-owned nuclear, radioactive, and industrial buildings and structures</p>	<p>Receipt, treatment, storage, and disposal of legacy and newly generated^c low-level waste, mixed low-level waste, transuranic waste, hazardous waste, and sanitary waste^d</p>	<p>Cleanup of contaminated soil and water</p>

Source: GAO. | GAO-22-105417

Text of Figure 1: The Office of Environmental Management’s (EM) Six Areas of Environmental Cleanup Work

- **Spent nuclear fuel stabilization and disposition:** safe shipping, receipt, storage, and disposition of spent nuclear fuel and heavy water^a
- **Nuclear materials stabilization and disposition:** management, disposition, safe surveillance, and maintenance of nuclear materials^b
- **Radioactive liquid waste stabilization and disposition:** Treatment, management, and permanent disposal of radioactive liquid waste stored in storage tanks
- **Nuclear facility decontamination and decommissioning:** Deactivation, decontamination, and decommissioning of EM-owned nuclear, radioactive, and industrial buildings and structures
- **Solid waste stabilization and disposition:** Receipt, treatment, storage, and disposal of legacy and newly generated^c low-level waste, mixed low-level waste, transuranic waste, hazardous waste, and sanitary waste^d
- **Soil and water remediation:** Cleanup of contaminated soil and water

^aHeavy water contains deuterium, an isotope of hydrogen, and is used as a moderator and to cool certain commercial nuclear reactors.

^bNuclear materials include uranium and plutonium.

^cIn this report, we use the term “legacy waste” to mean waste generated in the course of nuclear weapons production and energy research, and the term “newly generated waste” to mean waste generated primarily in the course of environmental cleanup.

^dLow-level waste is contaminated with relatively small amounts of radioactivity. Mixed low-level waste contains both radioactive and hazardous waste. Transuranic waste is contaminated by nuclear elements heavier than uranium, such as plutonium.

Source: GAO. | GAO-22-105417

EM Contracting Processes

EM is taking a new approach to contracting for environmental cleanup work with the ESCM. Under the ESCM, EM uses single-award IDIQ contracts, which are used when the exact quantities and timing for products or services are not known at the time of award. Such contracts provide for the issuance of task orders for specific products or services—such as environmental cleanup work—after the contract has been awarded, or during its post-award phase. IDIQ contracts can be single-award contracts, which are awarded to a single contractor, or multiple-award contracts, which are awarded to more than one contractor. Key differences between these two contract types are described in table 1.

Table 1: Comparison of Single-Award and Multiple-Award Indefinite Delivery/Indefinite Quantity (IDIQ) Contracts

	Pre-award phase	Award phase	Post-award phase
Single-award IDIQ contracts	Agency conducts competitive procurement using defined evaluation factors and evaluates contractor proposals for best value	Agency awards the IDIQ contract to a single contractor	Agency develops and negotiates task orders with single selected contractor in a noncompetitive environment
Multiple-award IDIQ contracts	Agency conducts competitive procurement using defined evaluation factors and evaluates contractor proposals for best value	Agency awards IDIQ contracts to multiple contractors	Agency competes task orders among multiple contractors in a competitive environment

Source: The Federal Acquisition Regulation. | GAO-22-105417

The Federal Acquisition Regulation (FAR) states a preference for agencies that use IDIQ contracts to use multiple-award IDIQ contracts and cites the benefit of maintaining competition among contractors throughout the contract period.¹⁵ However, in certain circumstances, the FAR requires the use of single-award IDIQ contracts. For example, contracting officers are directed to not use the multiple-award approach if the projected orders are so integrally related that only a single contractor can reasonably perform the work, or if the expected cost of administration of multiple contracts outweighs the expected benefits of making multiple awards. EM made these two determinations with respect to its decision to

¹⁵48 C.F.R. § 16.504(c).

use single-award IDIQ contracts for the ESCM, according to EM documentation.

The ESCM's use of single-award IDIQ contracts represents a significant change in EM's contracting approach for environmental cleanup. Generally, EM's contracting approach for both ESCM and non-ESCM contracts comprises pre- and post-award contract phases. The pre-award phase begins when EM determines its requirements for a given cleanup contract and prepares and posts a contract solicitation. This solicitation provides instructions to prospective contractors on how to bid on the solicitation and identifies the criteria that EM will use to evaluate contractor proposals.

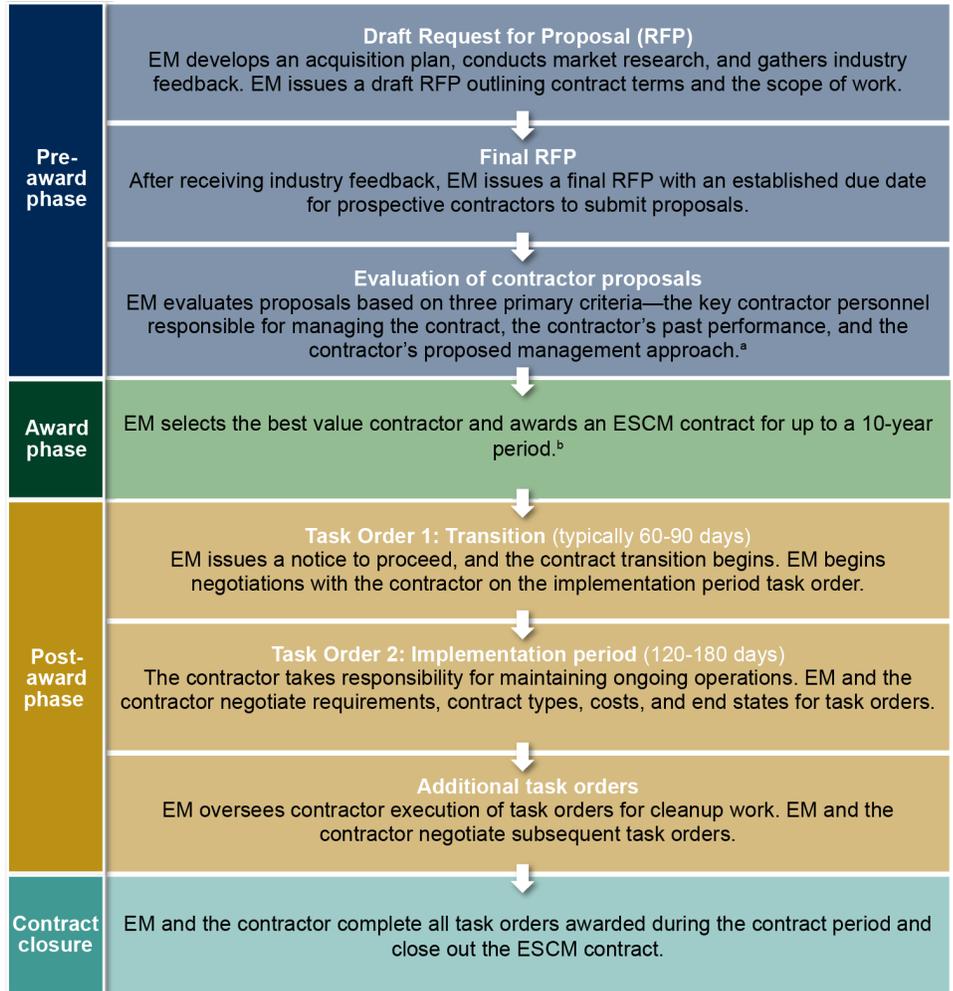
Key differences between EM's contracting approach for ESCM and non-ESCM contracts during the pre- and post-award contract phases include the following:

- **Timing of contract requirements definition.** EM officials told us that EM's non-ESCM contracting approach includes developing a contract solicitation that comprehensively defines the contract requirements for the full period of performance. In contrast, the ESCM largely shifts the process of defining such requirements to the post-award phase, during which EM site officials and the selected contractor develop and negotiate individual task orders for defined scopes of work over shorter periods of performance.
- **Amount of information required.** EM officials told us that solicitations for non-ESCM contracts require prospective contractors to develop lengthy, in-depth proposals that include their approach to completing the contract's scope of work and associated cost estimates for contract periods that often comprise up to 10 years of work. In contrast, ESCM solicitations do not require prospective contractors to include as much information on costs in their proposals. Rather, ESCM solicitations generally require contractors to submit cost estimates for the transition period task order—usually a contract's first 60-90 days—and provide some information on personnel labor rates, key personnel costs, and proposed fees.
- **Additional responsibilities during the post-award phase.** The post-award phase for non-ESCM contracts generally includes contract administration and performance monitoring at the field level. During this phase, EM site officials are responsible for administering any necessary contract changes and ensuring that the selected contractor is proceeding according to the agreed-upon terms of the awarded

contract. During the ESCM's post-award phase, EM site officials have additional responsibilities for developing and negotiating scopes of work, costs, and schedules for actual cleanup work through individual task orders, since such requirements are not fully defined during the ESCM's pre-award phase. This process continues for each task order throughout the contract's period of performance. Further, once a task order is awarded, EM officials are then responsible for administering and overseeing the task order in much the same way as they would a stand-alone contract.

Figure 2 outlines the complete process for administering a single-award IDIQ contract and associated task orders under the ESCM.

Figure 2: Overview of the Office of Environmental Management’s (EM) Process for Implementing End State Contracting Model (ESCM) Contracts



Source: GAO analysis of Office of Environmental Management documentation. | GAO-22-105417

Text of Figure 2: Overview of the Office of Environmental Management’s (EM) Process for Implementing End State Contracting Model (ESCM) Contracts

Pre-award phase

- **Draft Request for Proposal (RFP)**
 - EM develops an acquisition plan, conducts market research, and gathers industry feedback. EM issues a draft RFP outlining contract terms and the scope of work.
- **Final RFP**

- After receiving industry feedback, EM issues a final RFP with an established due date for prospective contractors to submit proposals.

- **Evaluation of contractor proposals**

- EM evaluates proposals based on three primary criteria—the key contractor personnel responsible for managing the contract, the contractor’s past performance, and the contractor’s proposed management approach. a

Award phase

- EM selects the best value contractor and awards an ESCM contract for up to a 10-year period. b

Pos-taward phase

- **Task Order 1: Transition (typically 60-90 days)**

- EM issues a notice to proceed, and the contract transition begins. EM begins negotiations with the contractor on the implementation period task order.

- **Task Order 2: Implementation period (120-180 days)**

- The contractor takes responsibility for maintaining ongoing operations. EM and the contractor negotiate requirements, contract types, costs, and end states for task orders.

- **Additional task orders**

- EM oversees contractor execution of task orders for cleanup work. EM and the contractor negotiate subsequent task orders.

Contract closure

- EM and the contractor complete all task orders awarded during the contract period and close out the ESCM contract.

Source: GAO analysis of Office of Environmental Management documentation. | GAO-22-105417

Note: The ESCM can use different contract types for individual task orders: firm-fixed price or cost-reimbursement task orders. Under a firm-fixed-price contract, the price is not subject to any adjustment on the basis of the contractor’s cost experience in performing the contract. 48 C.F.R. § 16.202-1. Under a cost-reimbursement contract, the government agrees to pay the contractor’s allowable incurred costs to the extent prescribed in the contract. 48 C.F.R. § 16.301-1.

^aThe *ESCM Program Plan* states that when combined, these three criteria are significantly more important than evaluated price.

^bESCM contracts have a 10-year ordering period. However, a task order may be issued on the last day of the ordering period for up to 5 years, effectively creating a 15-year period of performance.

EM Workforce and Contract Management Challenges

Issues related to EM's contract and project management have been on our High Risk List for decades. The inclusion of these areas in our recent High Risk reports highlight the long-standing nature of the challenges that EM faces in managing its contracts for environmental cleanup.

Workforce capacity. In our 2021 High Risk report, we reported that EM continued to face challenges with its acquisition workforce capacity.¹⁶ For example, we reported that EM faced significant staffing shortages at one of its cleanup sites that could impede its ability to manage contractors. Additionally, in our 2017 High Risk report, we identified capacity shortfalls in key contract management functions at DOE, including cost and schedule performance evaluation and oversight of major projects and programs.¹⁷ We also explained that DOE did not fully meet our High Risk List criterion for having the capacity to mitigate risks with contract management.¹⁸

Contract management. In our 2021 High Risk report, we reported that EM lacked continuity in initiatives designed to address long-standing contract management challenges.¹⁹ We also reported that the costs of current and future cleanup activities had increased in recent years at a level far greater than the annual funding available to address them, partly because of EM's persistent contract management challenges. Further, in our 2019 High Risk report, we reported that EM had not followed most

¹⁶[GAO-21-119SP](#).

¹⁷GAO, *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, [GAO-17-317](#) (Washington, D.C.: Feb. 15, 2017).

¹⁸GAO uses five criteria to form a road map for agency efforts to improve and address issues that GAO identified as high risk. These criteria include leadership commitment, capacity, action plan, monitoring, and demonstrated progress. Addressing some of the criteria leads to progress, while satisfying all of the criteria is central to removal from GAO's High Risk List.

¹⁹[GAO-21-119SP](#).

selected best practices in program or project management and had not identified the root causes of its problems in these areas.²⁰

EM Has Awarded Six ESCM Contracts Intended to Improve EM's Contracting Process, but Some Stakeholders Identified Concerns

As of June 30, 2022, EM had awarded six ESCM contracts, with a combined maximum value of about \$46.7 billion, and plans to award two additional ESCM contracts during fiscal year 2023. EM implemented the ESCM to improve its contracting for environmental cleanup, but stakeholders and EM site officials we interviewed identified concerns about ensuring fair and reasonable pricing for task orders during the ESCM's noncompetitive post-award phase.

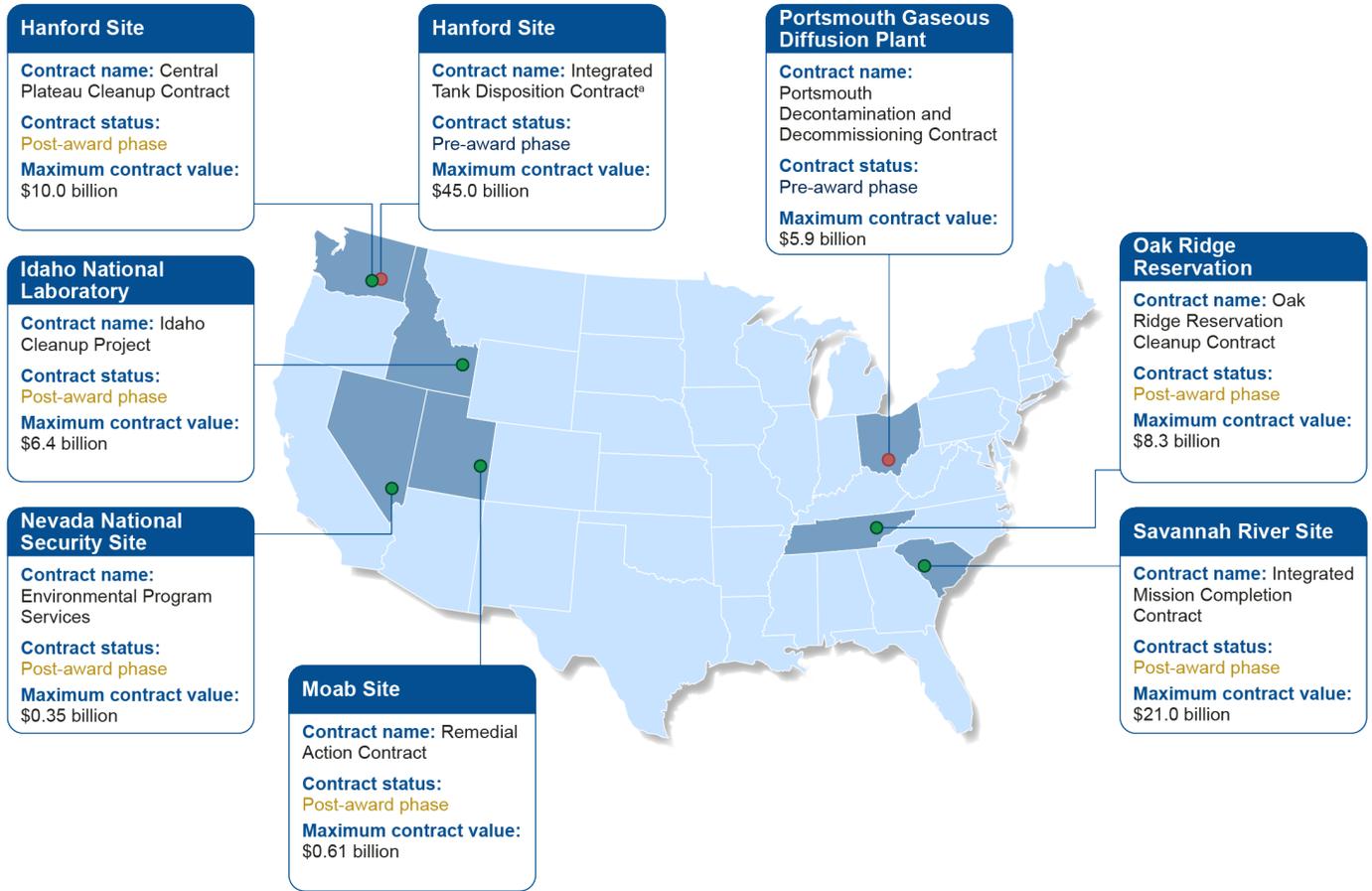
EM Awarded Six ESCM Contracts as of June 2022 and Plans to Award More

As of June 30, 2022, EM had awarded six ESCM contracts, with a combined maximum value of about \$46.7 billion.²¹ EM also plans to award two additional ESCM contracts during fiscal year 2023, with a combined maximum value of approximately \$50.9 billion (see fig. 3).

²⁰GAO, *High-Risk Series: Substantial Efforts Needed to Achieve Greater Progress in High-Risk Areas*, [GAO-19-157SP](#) (Washington, D.C.: Mar. 6, 2019).

²¹This total does not include the Tank Closure Contract at the Hanford Site, which EM awarded as an ESCM contract in May 2020, with a maximum value of \$13 billion. EM subsequently canceled this contract in December 2020. As of June 2022, the scope of work for this contract had been combined with the Integrated Tank Disposition Contract, which EM plans to award in fiscal year 2023.

Figure 3: Office of Environmental Management (EM) Active Cleanup Sites with End State Contracting Model Contracts, as of June 2022



Sources: GAO analysis of Office of Environmental Management documentation, Map Resources (map). | GAO-22-105417

Data table for Figure 3: Office of Environmental Management (EM) Active Cleanup Sites with End State Contracting Model Contracts, as of June 2022

Site name	Contract name	Contract status	Maximum contract value
Hanford Site	Central Plateau Cleanup Contract	Post-award phase	\$10.0 billion
Hanford Site	Integrated Tank Disposition Contract ^a	Pre-award phase	\$45.0 billion
Idaho National Laboratory	Idaho Cleanup Project	Post-award phase	\$6.4 billion
Nevada National Security Site	Environmental Program Services	Post-award phase	\$0.35 billion
Moab Site	Remedial Action Contract	Post-award phase	\$0.61 billion
Portsmouth Gaseous Diffusion Plan	Portsmouth Decontamination and Decommissioning Contract	Pre-award phase	\$5.9 billion

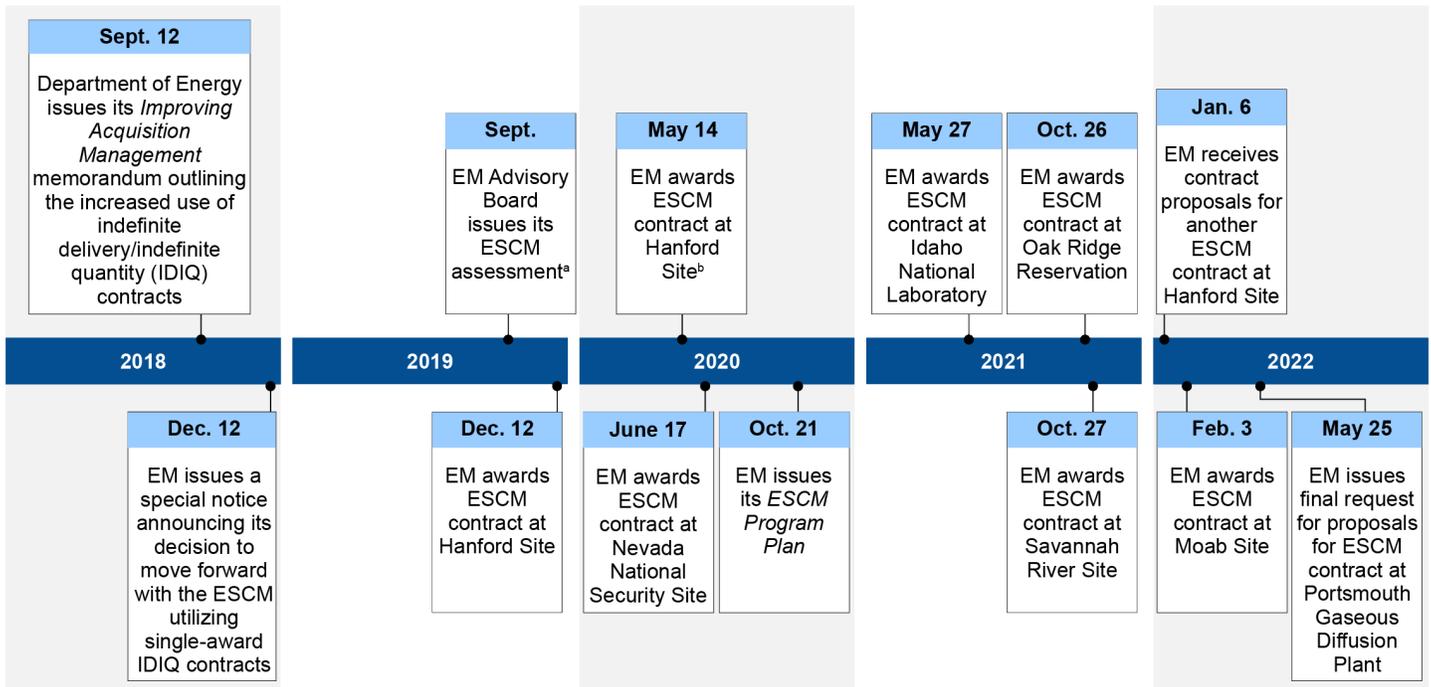
Site name	Contract name	Contract status	Maximum contract value
Oak Ridge Reservation	Oak Ridge Reservation Cleanup Contract	Post-award phase	\$8.3 billion
Savannah River Site	Integrated Mission Completion Contract	Post-award phase	\$21.0 billion

Source: GAO analysis of Environmental Management documentation. | GAO-22-105417

^aThe Integrated Tank Disposition Contract includes the scope of work for the Tank Closure Contract, which EM initially awarded in May 2020 and then subsequently canceled.

EM awarded the first ESCM contract—the Central Plateau Cleanup Contract—at its Hanford Site in December 2019. EM then awarded two additional ESCM contracts in 2020.²² After awarding these three contracts, in October 2020 EM issued its *ESCM Program Plan*, which asserted EM's preference for using the ESCM for future large-dollar environmental cleanup contracts. Figure 4 provides a timeline of selected events in ESCM implementation.

Figure 4: Timeline of Selected Events in the Office of Environmental Management's (EM) End State Contracting Model (ESCM) Implementation



Source: GAO analysis of EM documentation. | GAO-22-105417

²²The Tank Closure Contract at the Hanford Site was awarded in May 2020, and the Environmental Program Services contract at the Nevada National Security Site was awarded in June 2020. The Tank Closure Contract was subsequently canceled.

Text of Figure 4: Timeline of Selected Events in the Office of Environmental Management’s (EM) End State Contracting Model (ESCM) Implementation

Date	Event
Sept. 12, 2018	Department of Energy issues its <i>Improving Acquisition Management</i> memorandum outlining the increased use of indefinite delivery/indefinite quantity (IDIQ) contracts
December 12, 2018	EM issues a special notice announcing its decision to move forward with the ESCM utilizing single-award IDIQ contracts
September, 2019	EM Advisory Board issues its ESCM assessment ^a
December 12, 2019	EM awards ESCM contract at Hanford Site
May 14, 2020	EM awards ESCM contract at Hanford Site ^b
June 17, 2020	EM awards ESCM contract at Nevada National Security Site
October 21, 2020	EM issues its <i>ESCM Program Plan</i>
May 27, 2021	EM awards ESCM contract at Idaho National Laboratory
October 26, 2021	EM awards ESCM contract at Oak Ridge Reservation
October 27, 2021	EM awards ESCM contract at Savannah River Site
January 6, 2022	EM receives contract proposals for another ESCM contract at Hanford Site
February 3, 2022	EM awards ESCM contract at Moab Site
May 25, 2022	EM issues final request for proposals for ESCM contract at Portsmouth Gaseous Diffusion Plant

Source: GAO analysis of EM documentation. | GAO-22-105417

^aThe EM Advisory Board is internal to EM and provides independent and external advice, information, and recommendations to the Assistant Secretary for EM on issues related to environmental cleanup and risk reduction.

^bEM canceled this contract in December 2020. As of June 2022, the scope of work for this contract has been combined with the Integrated Tank Disposition Contract, which EM plans to award in fiscal year 2023.

EM’s Reasons for Using the ESCM Include Potential Cost Savings, but Stakeholders Raised Concerns about Fair Pricing

According to our analysis of EM documents, EM’s reasons for implementing the ESCM and its intended benefits include the following:

- **Incorporation of key elements from prior cleanup contracts.** In designing the ESCM, EM aimed to replicate specific contracting elements that it identified as successful in enabling the completion of cleanup work at other sites, such as the Rocky Flats and Fernald

Preserve sites, according to EM documentation.²³ These elements include productive working partnerships with selected contractors, more equitable risk sharing between the government and the contractor, and effective financial incentive structures. Additionally, EM documentation states that these sites had well-developed scopes of work and clear agreements on assumptions, regulatory milestones, and a targeted focus on achieving specific end states.

- **Streamlined and simplified pre-award contract phase.** According to EM documentation, the ESCM's simpler, less burdensome contract proposal process enables shorter procurement time frames during the pre-award phase. As described above, EM's non-ESCM contracts require prospective contractors to develop lengthy, in-depth proposals that include their approach to completing the contract's scope of work and associated cost estimates for the full contract period of performance, often of up to 10 years. The ESCM largely shifts these processes to the post-award phase, resulting in shorter, more streamlined contract proposals, which benefits both prospective contractors and EM, according to the *ESCM Program Plan*. Specifically, EM designed the ESCM's streamlined pre-award phase to reduce the administrative and financial burden associated with developing long, complex proposals. This approach also serves to lower the barriers to entry for new prospective contractors interested in submitting proposals for environmental cleanup work, potentially increasing industry competition for ESCM contracts, according to EM officials. In addition, the ESCM's simplified contract proposal process also benefits EM by reducing the administrative work and costs associated with evaluating and comparing lengthy contractor proposals to select the best value contractor, according to EM documentation.
- **More defined scopes of work using task orders with shorter time frames.** According to EM documentation, the ESCM shifts the process of fully defining requirements to the post-award phase, allowing EM to use task orders to organize its cleanup activities into more defined, manageable pieces spanning shorter contract periods. During the ESCM's post-award phase, EM site officials and contractor personnel are responsible for working together to negotiate and agree on specific scopes of work, costs, and schedules for each individual task order. Using task orders with more defined, shorter scopes of work allows EM to more accurately identify interim end states for each

²³The Rocky Flats site was used as a production facility for nuclear weapon components from 1952 to 1993. The Fernald Preserve site was a uranium processing facility from 1951 to 1989. DOE completed the environmental cleanup of both sites in 2006.

task order, even if the final end state for the contract itself is not yet known, according to EM officials. These officials also told us that better defined scopes of work provide EM with the flexibility to tailor each task order according to its unique circumstances, such as determining what contract type would be most effective for any given task order.

- **Reduced administrative costs and more reliable pricing for cleanup work.** According to EM documentation, the ESCM's use of single-award IDIQ contracts and task orders will result in a reduced need for contract changes and will allow for more realistic, reliable pricing for environmental cleanup work. The use of better-defined scopes of work through the use of task orders reduces the need for contract "true-ups" at the beginning of the contract period, as well as regular contract changes throughout the post-award phase. These true-ups and changes occurred regularly as part of EM contracts prior to the ESCM, according to EM.²⁴ This reduced need for contract true-ups and contract changes would result in cost savings for both the government and the contractor because the considerable administrative effort required to carry out these activities would no longer be required, EM officials told us. Additionally, EM officials cited reduced administrative costs and greater efficiencies in working with a single contractor to develop scopes of work. Specifically, EM officials told us that single-award IDIQ contracts allow EM and the contractor to collaborate closely to assess the needs at a given site. Officials also stated that such collaboration can result in cost savings by allowing EM to better define scopes of work and determine the appropriate sequence of task orders for cleanup work.

Certain factors associated with the environmental cleanup landscape also influenced EM's decision to implement the ESCM, according to EM documentation. These factors included EM's growing environmental liability, the increasing complexity of the cleanup work at its remaining sites, and the large number of EM contracts set to expire in the near future that would need to be renegotiated.

Although EM officials told us that a benefit of the ESCM is its ability to provide more reliable pricing for cleanup work, industry stakeholders and two EM site officials we interviewed identified concerns about the noncompetitive nature of the ESCM's post-award phase. Specifically, three industry stakeholders expressed concerns that the lack of

²⁴A contract "true-up" is the process of reconciling information included in the contractor's initial proposal with the actual state of the cleanup site when work begins.

competition could hamper the effort to ensure that the government receives a fair and reasonable price for cleanup work. For example, one industry stakeholder explained that because there is no competition on price for task orders, EM officials must do their best to evaluate each task order proposal without the advantages and built-in checks and balances that a competitive process would provide. Another industry stakeholder shared a similar view, explaining that, under the ESCM, contractors lack the incentive to complete scopes of work efficiently and effectively because they know they will not need to compete for task orders. This aspect of the ESCM's design could result in high costs to the government, according to this stakeholder.

EM officials we interviewed from two sites, and recent reports from the National Academies, identified similar concerns about negotiating task orders with a single contractor during the post-award phase. For example, one EM official told us that negotiating task orders in a noncompetitive environment puts EM at a disadvantage since the contractor knows it is the only company available to undertake the work. Further, in its reports on the ESCM, the National Academies noted that contractors could heavily influence task order scopes of work and price negotiations during the noncompetitive post-award phase.

We have previously reported that competition is the cornerstone of a sound acquisition process and a critical tool for achieving the best return on investment for taxpayers.²⁵ Additionally, as described above, the FAR states a preference for using competitive procedures and for multiple-award IDIQs. Nevertheless, agencies are directed to use single-award IDIQs in some circumstances, and EM has determined that ESCM contracts meet the FAR criteria for using single-award IDIQ contracts.²⁶ Furthermore, EM officials told us that they take steps to ensure that the prices of ESCM task orders are reasonable, such as using historical pricing information and conducting independent government cost estimates. Given that the ESCM is still in the early stages of implementation, it is too early to gauge the effectiveness of some aspects

²⁵GAO, *Federal Contracting: Noncompetitive Contracts Based on Urgency Need Additional Oversight*, [GAO-14-304](#) (Washington, D.C.: Mar. 26, 2014); and *Defense Contracting: DOD's Use of Competitive Procedures*, [GAO-15-484R](#) (Washington, D.C.: May 1, 2015).

²⁶Specifically, EM determined that the projected orders are so integrally related that only a single contractor can reasonably perform the work, and the expected cost of administration of multiple contracts outweighs the expected benefits of making multiple awards.

of the model, such as the price reasonableness of initial task orders awarded through ESCM contracts.

EM Took Steps to Support the ESCM but Faces Ongoing Implementation Challenges

EM took key steps to support its implementation of the ESCM, including developing the *ESCM Program Plan* and incorporating a lessons learned process. However, EM faces ongoing challenges with the ESCM's post-award phase, including ensuring that it has the necessary workforce capacity to administer ESCM task orders. Although EM took steps to assess its acquisition workforce capacity in managing the ESCM, it has not pursued its own prior recommendation to employ an independent entity to assess its workforce capacity.

EM Took Steps to Support ESCM Implementation

EM took a range of actions to support its implementation of the ESCM, including the following:

- **Developing the *ESCM Program Plan*.** In October 2020, EM issued its *ESCM Program Plan*, which provides a high-level overview of the ESCM and documents EM's preference for using the model for large-dollar cleanup contracts. The plan details key components of ESCM implementation, including the three primary factors for evaluating contractor proposals during the pre-award phase, in order of importance: (1) key contractor personnel, (2) the contractor's past performance, and (3) the contractor's approach for managing the work. The plan states that when combined, these three criteria are significantly more important than evaluated price. The plan also details the process steps for administering ESCM contracts and assigns roles and responsibilities during critical program milestones for applicable entities. Specifically, the plan outlines that EM's Consolidated Business Center is primarily responsible for managing the pre-award phase for all ESCM contracts, while EM sites are primarily responsible for managing the post-award phase, including developing, negotiating, and awarding individual task orders.
- **Creating an EM Acquisition Corps.** EM implemented an Acquisition Corps, consisting of 10 dedicated officials with the contracting expertise and technical skill to assist with both ESCM and non-ESCM contracts. According to EM officials, Acquisition Corps members

supplement EM's existing contracting workforce across the EM enterprise, specifically in supporting pre-award phase activities for EM cleanup contracts. The officials also stated that Acquisition Corps members have assisted in the pre-award phase for the three ESCM contracts that EM has undertaken since the group was established. In addition, EM officials told us that members would be used more broadly in the future, and potentially to augment field sites' workforce capacity in administering ESCM contracts during the post-award phase. This could include assisting EM site officials with concurrently managing multiple task orders.

- **Identifying site-specific positions to manage post-award phase activities.** Two EM sites—the Idaho National Laboratory and the Nevada National Security Site—have positions specifically designed to manage ESCM task order administration during the post-award phase, according to EM site officials. Specifically, these sites created positions, such as task order administrators, with responsibilities that include helping to plan the sequence of task orders, managing the development and negotiation of task order terms and conditions, and monitoring all awarded task orders throughout the contract period.
- **Providing tailored ESCM training.** According to EM officials, EM employed an external contractor to provide tailored training for EM site officials responsible for administering ESCM contracts. These trainings focus on key components of ESCM contract administration, including developing required contract paperwork and the use of single-award IDIQ contracts. According to EM officials, these trainings are important to ensure that EM site officials have the knowledge and capability to administer ESCM contracts and associated task orders, given the differences between EM site officials' roles and responsibilities for ESCM and non-ESCM contracts.
- **Requiring 10-Year Strategic Task Order Plans.** For each ESCM contract awarded, EM requires field sites to develop a 10-Year Strategic Task Order Plan. The plan is to serve as the framework for planning, managing, and identifying the necessary resources for administering post-award phase task orders over the 10-year contract period. In developing these plans, EM site officials are expected to collaborate with the selected contractor to define scopes of work, approximate costs, periods of performance, contract types, desired end states, and more. EM headquarters and site officials told us that these task order plans are a critical step in organizing the number, sequence, and requirements for each task order.
- **Incorporating a lessons learned process.** According to EM officials, EM established a process to identify and share lessons learned from

awarded ESCM contracts among EM site officials in real time during the post-award phase. Specifically, EM officials told us that EM created a working group of EM site officials, including contracting and technical staff, who meet regularly to discuss their experiences with the post-award phase—particularly in administering task orders—and to share ideas and advice. EM officials told us that one lesson learned identified from the Nevada Environmental Program Services contract was the need for an implementation period after contract transition, structured as another task order, to provide EM and the contractor sufficient time to develop, negotiate, and award subsequent task orders for cleanup work.²⁷ This contract was the first ESCM contract to reach the contract transition stage, and EM incorporated implementation periods into all subsequent ESCM contracts. In addition, EM site officials we interviewed told us that the ESCM working group and lessons learned process had been very useful in facilitating information sharing among sites. For instance, EM officials from one site told us that they learned from the ESCM working group that another site had incorporated a task order administrator position, as described above, and that they were considering taking a similar step for their site.

EM Faces Challenges Implementing the ESCM and Has Not Pursued an Independent Review of Its Acquisition Workforce Capacity

The ESCM's shift of critical contracting functions to the post-award phase has presented challenges to EM's ability to administer ESCM contracts. Specifically, EM site officials and contractor personnel responsible for implementing ESCM contracts cited three shared challenges associated with ESCM implementation: (1) transitioning to a new contracting approach; (2) developing, negotiating, and awarding task orders under the ESCM's time frames; and (3) ensuring necessary workforce capacity to effectively implement the ESCM. While EM has taken steps to assess its acquisition workforce capacity challenges, it has not pursued a

²⁷Although the Central Plateau Cleanup Contract was the first ESCM contract awarded—in December 2019—the start of this contract was delayed by COVID-19 and other factors, according to EM officials. As a result, although the Nevada Environmental Program Services contract was awarded after this contract—in June 2020—its transition period began on October 1, 2020, slightly before that of the Central Plateau Cleanup Contract.

recommended independent analysis of its workforce capacity for administering contracts.

Transitioning to a New Contracting Approach

EM officials from seven of the eight field sites we interviewed cited transitioning to a new contracting approach and the cultural shift it required as a challenge.²⁸ For example, EM officials from four sites told us that the shift to using single-award IDIQ contracts under the ESCM was a significant change for EM officials. An EM official from one site noted that the shift presented a steep learning curve for both EM officials and contractor personnel, while another official added that preparing and reorienting the workforce to adapt to this change had been difficult. In addition, an EM official from one site told us that despite the significant change that the ESCM represented, EM widely implemented it across sites without first taking steps to determine whether it was likely to succeed, such as through implementing a pilot program or trial period.

Contractor personnel from four of the six sites we interviewed also cited this challenge. For example, contractor personnel from three sites explained that when compared with non-ESCM contracts, ESCM contracts required a significant increase in the amount of time, depth of detail, and lead time required to manage task orders. Further, contractor personnel from one site told us that addressing this shift in EM's contracting approach required identifying key personnel with the right talent and skills to effectively manage ESCM contracts, which could result in delays in implementing contracts.

Developing, Negotiating, and Awarding Task Orders under the ESCM's Time Frames

EM officials from six of the eight sites we interviewed told us that meeting the ESCM's time frames for developing, negotiating, and awarding task orders was a challenge. For example, two EM site officials explained that meeting these time frames requires an all-hands-on-deck effort, which creates a state of constant work for EM site officials. Further, two EM site officials told us that completing the process of developing, negotiating, and awarding additional task orders during the ESCM's planned 120-

²⁸We interviewed EM site officials and contractor personnel responsible for administering the six ESCM contracts that EM had awarded as of June 2022. We also interviewed EM officials responsible for awarding the two additional ESCM contracts that EM plans to award in fiscal year 2023.

180-day implementation period was difficult. Another official stated that they did not consider the ESCM's post-award time frames to be realistic or achievable. In addition, EM officials from two sites told us that they were concerned that implementing too many task orders—and having to simultaneously manage them—would increase EM's administrative burden, requiring EM to shift resources or hire additional personnel to manage these task orders.

Contractor personnel from all six of the EM sites we interviewed also cited this as a challenge. For instance, contractor personnel from three sites told us that simultaneously managing multiple task orders requires more administrative work than managing a single contract. One of these personnel added that doing so would require a careful reassignment of resources across different task orders.

Ensuring Necessary Workforce Capacity to Effectively Implement the ESCM

EM officials from six of the eight sites we interviewed cited the challenge of ensuring that EM has the necessary acquisition workforce capacity and resources to successfully implement the ESCM. For example, EM officials from three sites told us that they were not confident that they had enough contracting officials to efficiently manage task orders or the technical and support staff required to assess key task order requirements, such as conducting cost estimates and evaluating the technical specifications associated with actual cleanup activities.²⁹ Further, one EM site official cited a high rate of retirements among EM's technical personnel, noting that it had been challenging to fill these critical positions. Another official told us that it had been difficult to find individuals who are adept and capable of writing complex technical language for contract paperwork in a clear, coherent way.

Further, EM officials from five sites told us that a lack of acquisition workforce capacity at the field level could exacerbate the challenge of meeting the ESCM's time frames for developing, negotiating, and awarding task orders. One EM site official stated that since their site was

²⁹For the purposes of this report, the term "contracting officials" refers to EM officials responsible for managing EM contracts, such as contracting officers and contracting officer representatives. The term "technical and support staff" refers to other EM officials who participate in EM's acquisition process, such as technical specialists (e.g., engineers and scientists) and attorneys.

short-staffed, EM was at a disadvantage in effectively administering the ESCM contract and associated task orders. This official added that if the site did not get additional resources, the contract could encounter delays or have to use undefinitized contract actions (UCA), which authorize contractors to begin work before reaching final agreement on contract terms, such as scope of work, cost, and schedule.³⁰

In addition, as EM awards more task orders under ESCM contracts, the workload for EM site officials responsible for administering them is expected to increase, according to EM estimates. For example, EM documentation estimated that the total number of ESCM task orders in place across five cleanup sites would increase from 24 task orders in fiscal year 2022 to 48 task orders by fiscal year 2025. Since each task order requires similar levels of effort to administer and oversee as a stand-alone contract, according to EM officials, this increasing workload will continue to challenge EM's acquisition workforce capacity, specifically at EM sites.

Contractor personnel from all six of the EM sites we interviewed also cited this challenge. For example, contractor personnel from one site stated that EM has regularly faced workforce capacity challenges in administering the ESCM contract at the site. Personnel from another site told us that the resources and time required to develop task orders and complete the process for reviewing them under the ESCM had been more significant than anticipated.

EM recently conducted two assessments of its acquisition workforce capacity for administering cleanup contracts, including under the ESCM.

- **Phase 2 Acquisition Review (2021).** For this review, EM assessed the agency's effectiveness and efficiency in managing its workforce during both pre- and post-award phase activities by analyzing relevant data and interviewing all EM site procurement directors.³¹ The report found that EM faced significant challenges related to its acquisition workforce, including uncertainty regarding the impact of ESCM task orders and an aging workforce. For example, the report stated that all

³⁰To meet urgent needs, EM can authorize contractors to begin work and incur costs before reaching a final agreement on contract terms. Such agreements are called UCAs. In a definitized contract action, all contract terms are agreed to by the parties to the contract at the time of contract award.

³¹Site procurement directors are EM officials responsible for procurement activities at each site.

EM procurement directors interviewed cited the ESCM as a specific concern because of the unknown number of task orders that would require time and effort to administer.

The analysis also found that virtually every EM site was at a tipping point and had barely enough staff—including contracting officials—to administer existing contracts. The report cited the demographics of EM's contracting workforce as a "ticking time bomb," with 21 percent of EM's contracting workforce currently eligible for retirement, an additional 17 percent eligible within the next 5 years, and 53 percent eligible within the next decade. The report recommended that EM consider using an independent entity to assess its acquisition workforce capacity, including its contracting officials and technical and support personnel, such as cost and price evaluators, and human resources and program management personnel.

- **Outyears Forecast (March 2022).** EM did not employ an external entity to perform an independent assessment of its workforce, as recommended in its 2021 review, but, instead, conducted a limited follow-on, internal analysis to assess EM's workforce capacity to support the post-award phase across all ESCM contracts.³² The *Outyears Forecast* stated that EM sites might need to request assistance from EM's Consolidated Business Center for post-award phase support, including additional contracting officials and technical personnel. The analysis also cited a higher-than-normal attrition rate among its contracting workforce, which could exacerbate EM's ongoing workforce capacity challenges. The analysis recommended that if EM needed a more cumulative workforce assessment of the ESCM's post-award phase, it should update its *Phase 2 Acquisition Review* and conduct a broader assessment of the technical and support personnel required to effectively manage ESCM task orders.

These two analyses represent positive steps EM has taken to assess its acquisition workforce capacity; however, workforce capacity continues to be a challenge. Our interviews with EM site officials responsible for administering ESCM contracts indicate that the significant concerns the two analyses identified continue to affect the rollout of ESCM contracts.

³²The *Outyears Pre-Award and Post-Award Procurement Resource Assessment (Outyears Forecast)* also included an analysis of its enterprise-wide workforce capacity for managing the pre-award phase across all EM solicitations. This analysis found that EM's pre-award phase workload can be accomplished with its existing workforce levels.

In addition, the limited nature of the *Outyears Forecast* analysis and EM's challenges in filling staff vacancies raise concerns about EM's ability to identify and attain the acquisition workforce it needs to effectively administer ESCM contracts. Specifically, the *Outyears Forecast* includes a caveat that the analysis that EM conducted represented a limited assessment of EM's workforce needs to effectively manage ESCM contracts' post-award phases. EM headquarters officials responsible for this analysis told us that they did not use a methodical process to identify assumptions and calculate available resources for use but based the analysis on their own contracting experience and expertise with EM.³³ Therefore, these officials told us that they did not solicit perspectives from EM site officials responsible for administering ESCM contracts.

Although the *Outyears Forecast* and the *Phase 2 Acquisition Review* concluded that EM should have sufficient workforce capacity if existing personnel vacancies were filled, our analysis indicates that personnel vacancies persist. For example, the *Outyears Forecast* noted that EM full-time equivalent (FTE) contracting positions were falling short of EM's established staffing ceiling.³⁴ Specifically, for contracting officials, the report identifies EM's fiscal year 2022 staffing ceiling as 141 FTEs, but EM had 119 FTE contracting personnel onboard during this period. EM officials at headquarters and at the sites told us that EM sites have faced challenges in filling key vacancies, such as for technical staff responsible for evaluating task orders' technical aspects.

EM documentation and other guidance encourage the use of workforce planning strategies to assess capacity and needs. For example, as discussed above, the *Phase 2 Acquisition Review* recommended that EM employ an independent entity to conduct an impartial review of EM's workforce capacity challenges. Furthermore, the Office of Personnel Management's workforce-planning guidance recommends that agencies assess their workforce needs, assess current competency skills, and compare workforce needs against available skills to identify any

³³Assumptions included in this analysis include the estimated number of future ESCM task orders that will be in place across the EM enterprise and the general number of contracting officials and technical and support personnel that will be required to manage them.

³⁴A full-time equivalent is a standard measure of labor that reflects the total number of regular straight-time hours (i.e., not including overtime or holiday hours) worked by employees divided by the number of compensable hours applicable to each fiscal year.

shortfalls.³⁵ Additionally, our prior work on strategic workforce planning calls for agencies to determine critical skills and competencies needed to achieve current and future programmatic results and develop workforce planning strategies designed to address gaps in critical skills and competencies that need attention.³⁶

We recommended in November 2021 that DOE conduct a thorough, department-wide analysis to identify gaps in skills and competencies for the agency's acquisition workforce and develop strategies to address identified gaps.³⁷ Within DOE, the ESCM is critically important in achieving EM's primary mission of moving environmental cleanup sites toward completion. Using an external entity to conduct a more targeted assessment of the capacity of EM's acquisition workforce for implementing the ESCM, in line with EM's own prior recommendation, would ensure that EM has the complete, impartial information it needs to better align its workforce to successfully implement these contracts.

EM's Administration of ESCM Contracts Highlights Weaknesses in Implementation

EM's administration of ESCM contracts has highlighted weaknesses in awarding task orders during the model's post-award phase, including the use of undefinitized contract actions (UCA). As described above, UCAs authorize contractors to begin work before reaching final agreement on contract terms, such as scope of work, cost, and schedule. We have previously reported that UCAs are not a desirable form of contracting because the government bears the majority of the cost and risk during the undefinitized period, and the contractor has little incentive to control costs.³⁸ Further, EM did not conduct a pilot program to test that its new ESCM contracting approach was working as intended before awarding ESCM contracts across its environmental cleanup portfolio. In addition,

³⁵Office of Personnel Management, *Migration Planning Guidance Information Documents: Workforce Planning Best Practices*.

³⁶[GAO-04-39](#).

³⁷[GAO-22-103854](#).

³⁸GAO, *Defense Contracting: Use of Undefinitized Contract Actions Understated and Definitization Time Frames Often Not Met*, [GAO-07-559](#) (Washington, D.C.: June 19, 2007).

EM has not developed performance goals or associated measures to assess the ESCM and ensure that it is achieving EM's desired results.

ESCM Contract Administration Highlights Weaknesses in the ESCM's Post-Award Phase

In our review of EM's first six ESCM contracts, we identified weaknesses in EM's ability to develop, negotiate, and award task orders during the ESCM's post-award phase. For example, for three of the six ESCM contracts that EM had awarded as of June 30, 2022, EM used UCAs because EM and the selected contractor were not able to meet established time frames for agreeing on the terms and conditions for task orders prior to awarding them.

- The **Nevada Environmental Program Services Contract** was the only ESCM contract that did not include an implementation period task order following the transition period task order. The contract's transition period lasted 61 days, and EM obligated about \$124,000 for this task order.³⁹ EM site officials were not able to finalize the terms and conditions for a second task order for environmental cleanup activities during this transition period. As a result, they awarded a second task order as a UCA in November 2020 to allow cleanup work at the site to commence. EM subsequently definitized this task order in May 2021, and EM had obligated about \$35.5 million for it as of June 2022. As previously described, EM incorporated an implementation period task order following the transition period for all subsequent ESCM contracts as a lesson learned from this contract to provide EM site officials with sufficient time to develop, negotiate, and award subsequent task orders.
- EM site officials told us that while the **Central Plateau Cleanup Contract** was awarded in December 2019, the COVID-19 pandemic and other factors delayed the start of the transition period task order until October 2020. According to these officials, this transition was extended from a planned 60 days to 111 days because of challenges posed by the pandemic. In total, EM obligated about \$5.4 million for this transition period.

In January 2021, EM awarded the implementation period task order—the first ESCM contract to use such a task order. During this

³⁹During the transition period, the contractor began assuming its role on the site and EM and the contractor began to negotiate the terms and conditions of subsequent task orders for environmental cleanup activities at the site.

implementation period, the contractor assumed responsibility for ongoing operations at the site, and EM worked to develop and negotiate three subsequent task orders for cleanup work. While EM initially planned for a 120-day implementation period, it extended the period to 249 days to allow additional time for task order development, according to EM site officials. In total, EM obligated about \$372.0 million for this implementation period task order. Despite extending the duration of the implementation period, EM and the contractor were not able to finalize the terms and conditions for these three task orders during this period, and EM awarded them as UCAs in October 2021. As of June 2022, EM had obligated approximately \$532.9 million for these three task orders, and negotiations to definitize them were ongoing, according to EM documentation.⁴⁰

EM site officials told us that while UCAs are not a preferred contracting method, they were necessary to ensure that cleanup work continued at the site and to provide more time to negotiate the terms and conditions for each successive task order. The officials also told us that managing these UCAs increased EM site officials' workloads when compared with managing definitized task orders. Specifically, they said that UCAs require a greater time commitment to manage, are subject to additional approval processes and documentation, and generate increased scrutiny within EM. The officials also told us that these UCAs put the contractor at a disadvantage because they must continue to control costs while losing the benefit of earning financial incentives that would be included in the final terms of a definitized task order.

- Unlike other ESCM contracts that typically used 60- to 90-day transition period task orders, the **Moab Remedial Action Contract** included a 30-day transition period, for which EM obligated \$100,000. EM officials told us that EM and the contractor negotiated this abbreviated transition period because the contractor was already operating as the incumbent at the Moab Site and a 30-day transition aligned with the end of the prior contract. However, contractor personnel told us that in retrospect, this period did not provide enough time to develop, negotiate, and award the implementation period task

⁴⁰As of June 2022, EM had combined two of the three undefinitized task orders, and negotiations with the contractor to definitize these task orders and finalize their terms and conditions was ongoing, according to EM documentation. This documentation also states that while there were delays with this contract—EM's first ESCM contract—enhanced partnering with the contractor and implementation of ESCM lessons learned are expected to assist with the timely award of future task orders.

order. As a result, EM officials and contractor personnel concluded that the best option was to award the implementation period task order as a UCA in April 2022 to ensure continued operations until the terms and conditions could be finalized, according to contractor personnel. This task order was subsequently definitized in June 2022, and EM had obligated about \$13.9 million for this task order at that time.

EM took steps to avoid using UCAs on two of the six ESCM contracts by using a third task order following the implementation period for the purpose of providing EM and the contractor with additional time to develop and negotiate future task orders.

- The **Idaho Cleanup Contract's** transition period task order was awarded in October 2021 for a period of 90 days. EM obligated about \$3.6 million for this task order. Following transition, the contract had a 120-day implementation period, for which EM obligated about \$164.5 million. However, EM site officials told us that it was difficult to develop additional task orders for cleanup work during this implementation period. These officials stated that they provided feedback to EM headquarters that a 180-day implementation period would have provided a more appropriate time frame for task order development. In response, EM updated its guidance to permit 180-day implementation periods. However, the task order that EM awarded during the contract's implementation period included the development and negotiation of future task orders—a process the implementation period was designed to accomplish. EM site officials acknowledged that this third task order partly served as a continuation of the implementation period but also explained that it included additional scopes of work, such as activities associated with shipping nuclear waste off site.

As of June 2022, EM had obligated \$141.6 million for this task order. According to EM documentation, this third task order was deemed the best option to avoid using a UCA and to provide EM site officials and contractor personnel enough time to develop and negotiate the terms and conditions for subsequent task orders. EM site officials told us that the task order provided a creative path forward, given that the site did not have the resources—including the necessary workforce—to develop, negotiate, and award multiple additional task orders in the 120 to 180 days allotted by the implementation period.

- The **Oak Ridge Reservation Cleanup Contract** was awarded in October 2021. In March 2022, EM awarded the transition period task

order, which lasted for 83 days. EM obligated about \$2.5 million for this transition period. In May 2022, EM awarded a 180-day implementation period task order and, as of June 2022, EM had obligated \$77.9 million for this period. Following award, EM initially considered extending this task order's duration to 1 year to provide sufficient time to negotiate subsequent task orders and to avoid overwhelming the EM site officials and contractor personnel responsible for developing and negotiating them, according to EM officials. Contractor personnel at the site told us that avoiding the use of UCAs was the main driver for EM's plans to extend the implementation period.

However, instead of extending the implementation period, EM site officials subsequently decided to take an approach similar to that taken for the Idaho Cleanup Contract described above. Specifically, EM site officials told us that they plan to award a third task order with a scope of work purposefully designed for the development and negotiation of seven future task orders for environmental cleanup work. These officials explained that this task order was necessary to provide EM and the contractor with sufficient time to develop and negotiate these future task orders—a process that the implementation period was designed to accomplish, as stated above. They added that the task order will have a duration of 10 months and will use a different contract type that is more favorable to the government than the contract type used for the implementation period task order.⁴¹ In addition, EM site officials told us that they plan to award this third task order as a UCA in October 2022 and will likely finalize the terms and conditions for definitization in early 2023. Contractor personnel at the site told us that UCAs are not beneficial for EM or the contractor because, during the undefinitized period, EM is responsible for any cost overruns and could miss out on potential cost savings.

⁴¹The Oak Ridge Reservation Cleanup Contract's implementation period task order is a cost-plus-fixed fee task order. These are cost reimbursement contracts that provide for payment to the contractor of a negotiated fee that is fixed at the inception of the contract. 48 C.F.R. § 16.306. The contract's third task order is planned to be a cost-plus-award fee task order. These are cost-reimbursement contracts that provide for a fee determined at the inception of the contract and an award amount on the basis of a judgmental evaluation by the government, sufficient to provide motivation for excellence in contract performance. 48 C.F.R. § 16.305.

Furthermore, the contractor is not able to take advantage of any financial incentives that would be included in a definitized task order.⁴²

When we asked EM officials about the use of UCAs for ESCM task orders, they stated that ESCM contracts intentionally include an option to use UCAs to ensure that cleanup work at sites is able to move forward regardless of the status of task order negotiations. They reiterated that while UCAs are not a part of EM's preferred contracting process, they help ensure that operations continue uninterrupted at the sites, which is EM's top priority. Further, EM officials at two sites told us that the use of UCAs did not necessarily place EM or the government at a disadvantage when negotiating task order terms and conditions. However, EM officials from one site acknowledged that UCAs inhibit contractors' ability to earn financial incentives and to receive full reimbursement for ongoing work.

Although EM officials described the potential benefits of using UCAs for ESCM task orders, we have previously reported on the risks associated with such actions.⁴³ For example, as described above, we reported in June 2007 that UCAs are not a desirable form of contracting because the government bears the majority of the cost and risk during the undefinitized period, and the contractor has little incentive to control costs. In addition, multiple individuals we interviewed for our review, including a former senior EM official and officials from the U.S. Army Corps of Engineers, told us that UCAs should be avoided. For example, a former senior EM official told us that UCAs pose risks associated with increased contracting costs and puts the government in the unfavorable position of being reactive to the contractor.

⁴²Of the six total ESCM contracts awarded as of June 30, 2022, EM had not used UCAs, or taken steps for the purpose of avoiding UCAs, for one contract—the Savannah River Site Integrated Mission Completion Contract. In November 2021, EM awarded the transition period task order for a duration of 90 days. EM obligated about \$5.5 million for this task order. The contract's implementation period was awarded in February 2022 for a duration of 120 days. EM obligated about \$272.4 million for this implementation period. Following the implementation period, EM awarded three definitized task orders in June 2022. EM had obligated about \$65.0 million for these three task orders, as of June 2022.

⁴³[GAO-07-559](#); and *Defense Contracting: Observations on Air Force Use of Undefinitized Contract Actions*, [GAO-15-496R](#) (Washington, D.C.: May 18, 2015).

EM Has Not Developed a Formal, Structured Process to Assess Its Implementation of the ESCM

Although the ESCM represents a new and different approach to contracting for environmental cleanup, EM did not conduct a pilot program to test whether the model was working as intended and to help identify any potential problems and issues before awarding ESCM contracts across its cleanup portfolio. PMI and prior GAO work have found that pilot programs can be an effective tool to inform decisions on how to implement new approaches.⁴⁴ Specifically, pilot programs can be used to test practices and procedures in various settings and to assess lessons learned prior to scaling them up for wider use. PMI's *Implementing Organizational Project Management* calls on organizations to develop a pilot for new initiatives before widespread implementation to minimize risk and ensure a successful implementation.⁴⁵ According to PMI, the goal is to ease the organization through the process of change without introducing unnecessary risk.

Furthermore, according to our review of PMI's reporting, a pilot program allows for earlier discovery of potential risks and problems with particular approaches so that contingencies can be developed.⁴⁶ Such pilots can be particularly advantageous when dealing with large, mission-critical, or particularly risky environments—such as the environmental cleanup of decades of nuclear weapons development and research. In our prior work, we have identified best practices that form a framework for effective pilot design.⁴⁷ These include identifying criteria or standards for assessing results about the pilot to inform decisions about scalability and whether, how, and when to integrate pilot activities into overall efforts.

While developing, implementing, and testing a pilot program before widespread implementation would have been best, EM officials told us that they determined it was not necessary because the ESCM was a low-

⁴⁴For more information, see Project Management Institute, Inc., *Implementing Organizational Project Management: A Practice Guide* (2014); and S. Zbrodoff, "Pilot Projects—Making Innovations and New Concepts Fly" (paper presented at the Project Management Institute's 2012 Global Congress). Also, see [GAO-20-488](#) and [GAO-16-438](#).

⁴⁵Project Management Institute, Inc., *Implementing Organizational Project Management: A Practice Guide* (2014).

⁴⁶S. Zbrodoff, "Pilot Projects."

⁴⁷[GAO-16-438](#).

risk contracting approach that would provide numerous benefits to EM. At this point in time, EM has widely implemented the ESCM across its cleanup portfolio, so we recognize that conducting a pilot program may no longer be feasible. However, applying key principles of pilot program design to EM's awarded ESCM contracts and task orders would help EM ensure that its preferred contracting approach is working as intended. Additionally, we found that developing and implementing a formal, structured process to assess the implementation of the ESCM before awarding additional ESCM contracts could help EM in several ways:

- By formalizing EM's existing efforts to identify and share real-time lessons learned among EM site officials responsible for ESCM contracts, EM would have better assurance that such lessons are systematically identified, formally documented, and more widely communicated across the EM enterprise.
- By helping EM ensure that the ESCM is achieving its intended benefits, including by incorporating specific performance measures into a formal, structured ESCM assessment, EM could evaluate ESCM contracts' initial performance in a range of areas. Such measures could include whether ESCM implementation has generated cost savings compared with non-ESCM contracts and the extent to which EM site officials have sufficient capacity and time to award task orders during the post-award phase.⁴⁸
- By providing EM with a systematic approach for identifying, analyzing, and addressing challenges that it faces in administering ESCM contracts, EM would be able to identify opportunities to improve ESCM implementation across its portfolio, including for ongoing and future task orders under existing ESCM contracts and for potential follow-on ESCM contracts in the future.
- By generating a wide range of critical information, a formal, structured process will inform EM decision making regarding all aspects of ESCM implementation, including, most importantly, whether EM should continue to use the ESCM for its environmental cleanup activities into the future.

Given the ESCM's extensive scope and scale, it is critical that EM take steps to ensure that the ESCM is accomplishing its primary goal of improving EM's contracting for environmental cleanup. However, the implementation challenges and weaknesses that we identified in our

⁴⁸We discuss these and other potential measures that EM could use to assess the ESCM's performance in achieving desired results later in this report.

analysis of EM's rollout of ESCM contracts, particularly in the post-award phase, raise concerns about whether the ESCM is working as intended and being effectively implemented. For example, EM's use of UCAs in its initial ESCM contracts—and the steps it took to avoid them—underscore the ongoing challenges that EM officials face in managing the ESCM's post-award phase, including ensuring the necessary workforce capacity to effectively implement the ESCM and meeting the ESCM's time frames for awarding task orders.

These challenges will most likely intensify as EM implements the ESCM more widely and awards additional ESCM contracts and associated task orders, according to EM officials. By building on its existing lessons learned process and incorporating key principles of pilot program design, EM could identify weaknesses and potential risks in its implementation of the ESCM, particularly during the post-award phase, and systematically assess whether it needs to make any changes to the ESCM process to ensure that future contracts are effectively implemented. With a formal, structured process to systematically assess its implementation of the ESCM and make any necessary changes, EM would have better assurance that the ESCM is working as intended before it proceeds with awarding billions of dollars through additional ESCM contracts.

EM Has Not Developed Performance Goals or Associated Measures to Assess the ESCM

EM has not developed performance goals or associated measures for assessing the ESCM's overall performance in achieving its intended benefits and enabling EM to more effectively move environmental cleanup sites toward completion.⁴⁹ Although EM documentation identifies the potential benefits of implementing the ESCM, such as increasing industry competition during the acquisition process and generating cost savings, it has not developed performance goals specifically. When we asked EM officials about the agency's plans to develop performance goals and associated measures that would enable EM to assess the ESCM's performance, they said that because the ESCM is still in its early

⁴⁹Performance goals are the specific results an agency expects its program to achieve. Performance measures are concrete, objective, observable conditions that permit the assessment of progress made toward the performance goals.

stages, EM needs more time before it can assess whether the model is achieving desired results.

PMI and our prior work have shown the value of using performance goals and associated measures. Specifically, PMI's *The Standard for Program Management*, Fourth Edition calls for agencies to use key planning elements to help ensure successful program management.⁵⁰ These elements include identifying goals and developing a set of documented success criteria for key program milestones. Furthermore, we have previously reported on the importance of using performance goals and associated measures to assess an agency's progress in achieving its desired results.⁵¹ We have also reported that in order for such performance measurements to be effective, agencies need to use performance information to identify problems and look for solutions, develop approaches that improve results, and make other important management decisions.⁵² For example, agencies can use performance information when developing strategies, allocating resources, identifying problems, and taking corrective action.

Performance goals and associated measures that comprehensively cover all ESCM activities would provide EM with critical information on whether the ESCM is achieving the results for which it was designed. For example, EM could develop specific performance goals and associated measures for assessing the performance of the ESCM during both the pre- and post-award phases. Furthermore, EM could incorporate certain shorter-term performance measures as part of a formal, structured process for systematically assessing its implementation of ESCM contracts, as described above. By doing so, EM would be able to test whether current ESCM contracts are working as intended before it awards additional contracts. In addition, longer-term performance measures could help EM measure the performance of individual ESCM contracts and associated task orders and the broader ESCM approach over time. Such performance goals and measures could include the following:

⁵⁰Project Management Institute, Inc., *The Standard for Program Management*, Fourth Edition (2017).

⁵¹[GAO-16-393](#) and [GAO-11-646SP](#).

⁵²[GAO-05-927](#).

- A goal identifying EM's target for increasing industry participation during the acquisition process—an intended benefit of implementing the ESCM, according to the *ESCM Program Plan*.
- A goal specifying the appropriate time frames for developing, negotiating, and awarding task orders—an area our analysis identified as particularly challenging. A related performance measure could help identify whether EM is relying too heavily on UCAs in cases where EM site officials are unable to finalize the terms and conditions for a given task order by the stated deadline.
- A goal for the percentage of ESCM task orders awarded that use firm-fixed price and cost-plus-incentive fee contract types. The associated measure would allow EM to assess whether EM is employing more of these contract types under the ESCM compared with its prior contracting approach, as was intended, according to EM officials.
- A measure assessing whether the ESCM has generated cost savings in both the pre- and post-award phases compared with EM's non-ESCM contracts—another intended benefit of the ESCM, according to EM documentation. Such a measure could also help EM address concerns about its ability to ensure fair and reasonable pricing for task orders during the ESCM's noncompetitive post-award phase—a concern we described earlier that was raised by industry stakeholders and others we interviewed.
- A measure assessing EM's progress over time in completing the cleanup work outlined in each ESCM task order's scope of work. For example, a former senior EM official told us EM could use a performance measure to assess its success rate in meeting its cost and schedule deadlines.

Such performance goals and measures would help EM properly assess, on an ongoing basis, whether the ESCM is achieving its desired results and enabling EM to more effectively move environmental cleanup sites toward completion. EM officials told us that they had taken steps to analyze two key aspects of the ESCM's pre-award phase—the rate of bid protests and their outcomes for ESCM contracts and the extent to which the ESCM has increased industry participation during the acquisition process. Officials also said that developing and employing specific metrics to measure the ESCM's performance during the post-award phase would be very useful to EM. For example, a senior EM official told us that a measure assessing whether the ESCM generated cost-savings compared with EM's contracting approach prior to ESCM implementation would be helpful in verifying the ESCM's success.

Developing performance goals and measuring EM's progress in achieving them would provide EM with important information on the overall performance of the ESCM. EM could then use this information to continue to refine and improve the ESCM, including by taking corrective action to address identified problems with implementation and developing strategies for future ESCM contracts. Without measurable performance goals and assessment of EM's progress toward these goals, EM risks continuing to award billions of dollars through a new contracting approach that it has not verified is achieving its desired results in improving EM's contracting for environmental cleanup.

Conclusions

EM implemented the ESCM in 2019 to improve its contracting approach and move activities at DOE's 15 active cleanup sites closer to completion. Although EM has taken key steps to support its implementation of the ESCM, it continues to face significant workforce capacity challenges that could hamper the effective administration of ESCM contracts and associated task orders. EM has not pursued its own recommendation to employ an external entity to impartially assess its workforce capacity specifically for administering the ESCM. As its preferred contracting approach, EM could potentially use the ESCM for decades into the future and at a cost of tens of billions of dollars. Given the ESCM's critical importance and EM's long-standing workforce capacity challenges, using an external entity to conduct a more targeted assessment of the capacity of EM's acquisition workforce for implementing the ESCM would ensure that EM has the complete, impartial information it needs to better align its workforce to successfully implement ESCM contracts.

Furthermore, EM did not conduct a pilot program to assess its new contracting approach before awarding ESCM contracts across its cleanup portfolio. While the opportunity to conduct such a pilot program may have passed, applying key principles of pilot program design may still help EM determine if its preferred contracting approach is working as intended. Given the scope and scale of the ESCM, the implementation challenges we identified, and EM's persistent workforce and management challenges, it is critical that EM take the opportunity to systematically assess its approach. Specifically, by building on its existing lessons learned process and incorporating key principles of pilot program design, EM would have better assurance that it can identify and address challenges and potential risks in ESCM implementation, particularly during the post-award phase. EM could also assess whether it needs to

make any changes to the ESCM process to ensure that future contracts are effectively implemented.

Lastly, EM has not developed performance goals or measures to help determine if the potential benefits of the ESCM outweigh the challenges. Developing such performance goals and associated measures for all aspects of the ESCM—including the pre- and post-award phases—would provide EM with critical information on the ESCM's performance over the short and longer terms and enable EM to identify any problems with implementation and take corrective actions. Without such performance goals, EM risks continuing to award billions of dollars through a new contracting approach that it has not verified is achieving its desired results in improving EM's contracting for environmental cleanup.

Recommendations for Executive Action

We are making the following three recommendations to DOE:

The Assistant Secretary of DOE's Office of Environmental Management should employ an external entity to perform an independent analysis of its acquisition workforce and support functions to assess its workforce capacity to administer ESCM contracts. (Recommendation 1)

The Assistant Secretary of DOE's Office of Environmental Management should develop and implement a structured process to systematically assess the ESCM, including processes for formally documenting and sharing lessons learned and identifying, analyzing, and addressing challenges to ensure that future ESCM contracts are effectively implemented. (Recommendation 2)

The Assistant Secretary of DOE's Office of Environmental Management should develop and document specific performance goals for the ESCM and measures to track progress toward achieving them. EM should use this performance information to improve the ESCM and better ensure that it is achieving desired results. (Recommendation 3)

Agency Comments

We provided a draft of this report to DOE for comment. In its written comments, reproduced in appendix II, DOE agreed with all three of our recommendations. In its response, DOE described ongoing and planned

actions to address our recommendations by September 30, 2023. DOE also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Energy, 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 andersonn@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 that made key contributions to this report are listed in appendix III.

A handwritten signature in black ink that reads "Nathan Anderson". The signature is written in a cursive, flowing style.

Nathan Anderson
Director, Natural Resources and Environment

List of Committees

The Honorable Jack Reed
Chairman
The Honorable James M. Inhofe
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Dianne Feinstein
Chairman
The Honorable John Kennedy
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
United States Senate

The Honorable Adam Smith
Chairman
The Honorable Mike Rogers
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Marcy Kaptur
Chairwoman
The Honorable Michael K. Simpson
Ranking Member
Subcommittee on Energy and Water Development,
and Related Agencies
Committee on Appropriations
House of Representatives

Appendix I: Objectives, Scope, and Methodology

This report (1) describes the current status of the End State Contracting Model (ESCM) and the Department of Energy's (DOE) Office of Environmental Management's (EM) reasons for implementing it, (2) examines EM's strategy for ESCM implementation, and (3) examines how EM has administered initial ESCM contracts.

To describe the ESCM's current status and EM's reasons for implementing it, we reviewed relevant DOE and EM policies and guidance documents to identify the reasons EM implemented the ESCM and the model's potential benefits. These included documentation on EM's contracting process more broadly, such as the *EM Program Management Protocol*, and the ESCM specifically, such as the *ESCM Program Plan*. We also reviewed selected pre- and post-award phase documentation for the six ESCM contracts that EM had awarded as of June 2022, and documentation for two ESCM contracts that EM planned to award in fiscal year 2023. These included documentation for individual task orders awarded for environmental cleanup work under these six contracts.

In addition, we interviewed officials at EM headquarters, EM's Consolidated Business Center, and the EM sites with awarded ESCM contracts to solicit their perspectives on the benefits of using the ESCM and to collect information on the status of each ESCM contract. We also interviewed contractor personnel associated with each of the six awarded ESCM contracts as of June 30, 2022, and a nongeneralizable sample of eight industry stakeholders to gather their perspectives on ESCM implementation, including potential risks.¹ Views from our selected

¹We selected industry stakeholders based on their knowledge of contracting for environmental cleanup projects more generally and the ESCM specifically. To identify these stakeholders, we took a snowball sampling approach by asking DOE and EM officials, contractor personnel, and other stakeholders to provide the names of persons, organizations, or entities with knowledge of the ESCM. Next, we interviewed these stakeholders and, in turn, asked them to provide additional names for potential interviews. We interviewed eight total stakeholders that provided a range of views on the ESCM from an industry perspective.

sample of stakeholders cannot be generalized to those we did not select and interview.

To examine EM's strategy for implementing the ESCM, we reviewed contract documentation, including 10-Year Strategic Task Order Plans for selected ESCM contracts and two recent analyses that EM conducted to assess the capacity of its acquisition workforce. We also interviewed EM headquarters and site officials to identify steps taken to support the ESCM and planned next steps. To identify challenges with EM's implementation of the ESCM, we reviewed EM documentation on ESCM lessons learned and reviewed three recent ESCM assessments—one conducted by the EM Advisory Board and two by the National Academies of Sciences, Engineering, and Medicine—to assess their findings and recommendations. We also interviewed EM Advisory Board members to solicit their perspectives on the ESCM. In addition, we interviewed officials from the U.S. Army Corps of Engineers to collect information on how the Corps uses single-award indefinite delivery/indefinite quantity (IDIQ) contracts for environmental cleanup work.²

We also conducted semistructured interviews of EM site officials and contractor personnel associated with ESCM contracts to gather perspectives and identify shared challenges that affect EM's ability to effectively administer ESCM contracts. Specifically, we interviewed EM site officials and contractor personnel responsible for administering the six ESCM contracts that EM had awarded as of June 2022. We also interviewed EM officials responsible for awarding the two additional ESCM contracts that EM plans to award in fiscal year 2023.³ We then conducted semistructured interviews using the same questions across interviewees. An analyst assessed the information obtained in these semistructured interviews and conducted a content analysis to identify common themes, developed a defined list of commonly cited challenges

²We interviewed U.S. Army Corps of Engineers' officials at the suggestion of EM officials and industry stakeholders that we interviewed because of their knowledge and experience in using single-award IDIQ contracts for environmental cleanup work.

³Since these contracts had not been awarded as of June 30, 2022, there was not a selected contractor to interview.

that interviewees cited, and categorized them into buckets.⁴ The same analyst reviewed and coded the information in each interview into one of the defined buckets, and a second team analyst independently verified these codes and the testimonial evidence used to support them. The two analysts then reconciled any differences. We compared these and other information with the Office of Personnel Management's best practices in workforce planning and prior GAO work that calls on agencies to determine critical skills and competencies needed to achieve current and future programmatic results and to develop workforce planning strategies designed to address gaps in critical skills and competencies.⁵

To examine how EM has administered initial ESCM contracts, we analyzed selected documentation on the first six ESCM contracts, including EM negotiation memorandums and other post-award phase documentation for individual task orders, as well as information on EM's obligations for these task orders as of June 2022. We also interviewed EM headquarters and site officials to obtain information on the rollout of EM's first six ESCM contracts. We assessed this information against our prior work and Project Management Institute (PMI) principles on using pilot programs to inform decisions on implementing new approaches.⁶ Further, we assessed EM's efforts to administer ESCM contracts and the

⁴We did not independently verify statements made by EM officials and contractor personnel we interviewed. The results of these interviews are not generalizable and may not be indicative of all perspectives. However, they provided us with informative perspectives on challenges facing EM site officials and contractor personnel responsible for administering ESCM contracts. Further, EM site officials and contractor personnel provided information on challenges that they faced in administering ESCM contracts in response to our open-ended interview questions. As a result, while they may not have specifically cited a selected challenge during our interviews, this does not necessarily mean they did not experience that challenge in administering ESCM contracts.

⁵Office of Personnel Management, *Migration Planning Guidance Information Documents: Workforce Planning Best Practices* (Washington, D.C.: Oct. 7, 2011); and GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003).

⁶For more information, see GAO, *Climate Change: A Climate Migration Pilot Program Could Enhance the Nation's Resilience and Reduce Federal Fiscal Exposure*, [GAO-20-488](#) (Washington, D.C.: July 6, 2020); and *Data Act: Section 5 Pilot Design Issues Need to Be Addressed to Meet Goal of Reducing Recipient Reporting Burden*, [GAO-16-438](#) (Washington, D.C.: Apr. 19, 2016). Also see Project Management Institute, Inc., *Implementing Organizational Project Management: A Practice Guide* (2014). This guide provides a framework to align project, program, and portfolio management practices with organizational strategy and objectives. The Project Management Institute, Inc., is a not-for-profit association that provides standards for managing various aspects of projects, programs, and portfolios.

ESCM more broadly against standard program management principles for including key planning elements in agency programs identified by PMI.⁷ In addition, we assessed EM's efforts against our prior work on establishing performance measures to assess progress toward achieving goals and using performance information to inform agency decision-making and to improve performance, as necessary.⁸

We conducted this performance audit from September 2021 to September 2022, 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.

⁷Project Management Institute, Inc., *The Standard for Program Management*, Fourth Edition (2017). This guide describes how goals and objectives for a program can be elaborated and how expected program outcomes and benefits can be defined.

⁸GAO, *Veterans Justice Outreach Program: VA Could Improve Management by Establishing Performance Measures and Fully Assessing Risks*, [GAO-16-393](#) (Washington, D.C.: Apr. 28, 2016); *Performance Measurement and Evaluation: Definitions and Relationships*, [GAO-11-646SP](#) (Washington, D.C.: May 2011); and *Managing for Results: Enhancing Agency Use of Performance Information for Management Decision Making*, [GAO-05-927](#) (Washington, D.C.: Sept. 9, 2005).

Appendix II: Comments from the Department of Energy



Department of Energy

Washington, DC 20585
September 14, 2022

Mr. Nathan Anderson
Director
Natural Resources and Environment
U.S. Government Accountability Office
Washington, DC 20548

Dear Mr. Anderson:

This letter provides the Department of Energy's (DOE) Office of Environmental Management (EM) response to the U.S. Government Accountability Office (GAO) draft report, GAO-22-105417, *DOE's End State Contracting Model (ESCM)*.

Approximately 95 percent of EM's budget is utilized through contracting. The contract is one of our most important enabling tools to execute the EM mission as it defines the requirements and expectations of performance between the government and contractors. EM will continue to refine acquisition processes and contracts to address mission needs, and will develop and improve tools, processes, and resources to increase consistency and efficiency in competing and awarding contracts.

In the next two-to-three years EM will undertake new procurements for cleanup contracts at nearly every site, or continued implementation of the ESCM through task orders. With the ESCM, EM negotiates scope, cost, and schedule on specific work through task orders in an indefinite delivery/indefinite quantity contract, instead of using cost-based contracts that span decades and have more general work scopes. The ESCM enables EM to group work under contracts into specific task orders that allows enhanced clarity and shorter time horizons, more accurate costs and schedules, and an accountability structure that motivates improved cost and schedule performance.

Among the continuous improvement actions already completed for ESCM contracts, EM developed a 10-Year Resource Assessment following completion of an internal analysis of implementation resource needs. Furthermore, EM is formalizing the oversight model to expand the tools available to EM Headquarters to track and evaluate contract performance. EM is also developing plans to employ an external entity to perform an independent analysis of its acquisition workforce and support functions.

Given that these and other actions addressing the recommendations in the report are underway, DOE concurs with the GAO's recommendations on ESCM. EM will continue to strengthen acquisition processes and use the ESCM to underpin the Department's focus on accelerating cleanup and reducing the government's financial risk and environmental liability. At the same time, EM will continue to be a demanding client,

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expecting that contractors perform in a safe, efficient, and cost-effective manner and with the highest ethical standards.

If you have any questions, please contact me or Mr. Dae Y. Chung, Associate Principal Deputy Assistant Secretary for Corporate Services, at (202) 586-9636.

Sincerely,



William I. White
Senior Advisor for Environmental Management

Enclosures

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ENCLOSURE 1

Management Response to Recommendations
GAO-22-105417
GAO Draft Report, DOE's End State Contracting Model (ESCM)

Recommendation 1: The Assistant Secretary of DOE's Office of Environmental Management should employ an external entity to perform an independent analysis of its acquisition workforce and support functions to assess its workforce capacity to administer ESCM contracts.

Management Response: Concur.

The Office of Environmental Management (EM) concurs with the Government Accountability Office's (GAO) recommendation and has undertaken steps to address this recommendation. EM conducted an extensive internal analysis of the resources needed to implement the End State Contracting Model (ESCM) and develop a 10-Year Resource Assessment. Further, EM will move forward consistent with GAO's recommendation to employ an external entity to perform an independent analysis of EM's acquisition workforce and support functions to assess its capacity to administer ESCM contracts.

Estimated Completion Date: September 30, 2023

Recommendation 2: The Assistant Secretary of DOE's Office of Environmental Management should develop and implement a formal, structured process to systematically assess the implementation of the ESCM, including a process for identifying, analyzing, and addressing challenges EM faces prior to awarding additional ESCM contracts.

Management Response: Concur.

EM concurs with GAO's recommendation and has undertaken steps that address this recommendation. EM is in the process of formalizing our lessons-learned process. As part of EM's formalized and structured lessons learned process for its contracts, EM conducted a lessons-learned retrospective with the procurement community for ESCM contracts. Based on lessons learned from the initial ESCM contracts, it was identified that additional time is needed: for EM and the contractor to collaboratively review the statement of work and the risk-based technical approach, while considering the regulatory framework; for EM and the contractor to agree on risk acceptance between both parties; and for the contractor to price the work following the agreement. To support this process, EM updated the ESCM request for proposal (RFP) template to include an Implementation Period task order, following the Transition task order, that addresses these activities and is for a sufficient length of time (i.e., 180 days). It was also identified that EM should develop a ten-year task order strategy, based on current life-cycle cost estimates and baselines.

This lessons-learned process has already resulted in improvements to subsequent ESCM contracts. As an example, Hanford has initiated development of the 10-Year Task Order

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Strategic Plan for the Hanford Integrated Tank Disposition Contract (ITDC). This advance planning, coupled with the Implementation Period, should support Hanford in awarding the ITDC initial task order(s) in a timely manner.

Estimated Completion Date: September 30, 2023

Recommendation 3: The Assistant Secretary of DOE's Office of Environmental Management should develop and document specific performance goals for the ESCM and measures to track progress towards achieving them. EM should use this performance information to improve the ESCM and better ensure that it is achieving desired results.

Management Response: Concur.

EM concurs with GAO's recommendation and has undertaken steps to address this recommendation. EM recently modified its guidance to the field sites regarding the 10-Year Task Order Strategic Plan by requiring each site to identify metrics that track and evaluate contract performance, as well as to identify how risk and financial liability will be reduced. EM is in the process of formalizing an oversight model, including performance measures, for the End State Contracts, which will include an easy-to-use virtual "dashboard" for EM Headquarters to use to regularly track and evaluate progress toward evaluating the success of the ESCM process.

Estimated Completion Date: September 30, 2023

Text of Appendix II: Comments from the Department of Energy

Mr. Nathan Anderson Director

Natural Resources and Environment

U.S. Government Accountability Office Washington, DC 20548

Dear Mr. Anderson:

This letter provides the Department of Energy's (DOE) Office of Environmental Management (EM) response to the U.S. Government Accountability Office (GAO) draft report, GAO-22-105417, DOE's End State Contracting Model (ESCM).

Approximately 95 percent of EM's budget is utilized through contracting. The contract is one of our most important enabling tools to execute the EM mission as it defines the requirements and expectations of performance between the government and contractors. EM will continue to refine acquisition processes and contracts to address mission needs, and will develop and improve tools, processes, and resources to increase consistency and efficiency in competing and awarding contracts.

In the next two-to-three years EM will undertake new procurements for cleanup contracts at nearly every site, or continued implementation of the ESCM through task orders. With the ESCM, EM negotiates scope, cost, and schedule on specific work through task orders in an indefinite delivery/indefinite quantity contract, instead of using cost-based contracts that span decades and have more general work scopes. The ESCM enables EM to group work under contracts into specific task orders that allows enhanced clarity and shorter time horizons, more accurate costs and schedules, and an accountability structure that motivates improved cost and schedule performance.

Among the continuous improvement actions already completed for ESCM contracts, EM developed a 10-Year Resource Assessment following completion of an internal analysis of implementation resource needs. Furthermore, EM is formalizing the oversight model to expand the tools available to EM Headquarters to track and evaluate contract performance. EM is also developing plans to employ an external entity to perform an independent analysis of its acquisition workforce and support functions.

Given that these and other actions addressing the recommendations in the report are underway, DOE concurs with the GAO's recommendations on ESCM. EM will continue to strengthen acquisition processes and use the ESCM to underpin the Department's focus on accelerating cleanup and reducing the government's financial risk and environmental liability. At the same time, EM will continue to be a demanding client, expecting that contractors perform in a safe, efficient, and cost-effective manner and with the highest ethical standards.

If you have any questions, please contact me or Mr. Dae Y. Chung, Associate Principal Deputy Assistant Secretary for Corporate Services, at (202) 586-9636.

Sincerely,

William I. White

Senior Advisor for Environmental Management

Enclosures

Management Response to Recommendations GAO-22-105417,
GAO Draft Report, DOE's End State Contracting Model (ESCM)

Recommendation 1: The Assistant Secretary of DOE's Office of Environmental Management should employ an external entity to perform an independent analysis of its acquisition workforce and support functions to assess its workforce capacity to administer ESCM contracts.

Management Response: Concur.

The Office of Environmental Management (EM) concurs with the Government Accountability Office's (GAO) recommendation and has undertaken steps to address this recommendation. EM conducted an extensive internal analysis of the resources needed to implement the End State Contracting Model (ESCM) and develop a 10-Year Resource Assessment. Further, EM will move forward consistent with GAO's recommendation to employ an external entity to perform an independent analysis of EM's acquisition workforce and support functions to assess its capacity to administer ESCM contracts.

Estimated Completion Date: September 30, 2023

Recommendation 2: The Assistant Secretary of DOE's Office of Environmental Management should develop and implement a formal,

structured process to systematically assess the implementation of the ESCM, including a process for identifying, analyzing, and addressing challenges EM faces prior to awarding additional ESCM contracts.

Management Response: Concur.

EM concurs with GAO's recommendation and has undertaken steps that address this recommendation. EM is in the process of formalizing our lessons-learned process. As part of EM's formalized and structured lessons learned process for its contracts, EM conducted a lessons-learned retrospective with the procurement community for ESCM contracts. Based on lessons learned from the initial ESCM contracts, it was identified that additional time is needed: for EM and the contractor to collaboratively review the statement of work and the risk-based technical approach, while considering the regulatory framework; for EM and the contractor to agree on risk acceptance between both parties; and for the contractor to price the work following the agreement. To support this process, EM updated the ESCM request for proposal (RFP) template to include an Implementation Period task order, following the Transition task order, that addresses these activities and is for a sufficient length of time (i.e., 180 days). It was also identified that EM should develop a ten-year task order strategy, based on current life-cycle cost estimates and baselines.

This lessons-learned process has already resulted in improvements to subsequent ESCM contracts. As an example, Hanford has initiated development of the 10-Year Task Order Strategic Plan for the Hanford Integrated Tank Disposition Contract (ITDC). This advance planning, coupled with the Implementation Period, should support Hanford in awarding the ITDC initial task order(s) in a timely manner.

Estimated Completion Date: September 30, 2023

Recommendation 3: The Assistant Secretary of DOE's Office of Environmental Management should develop and document specific performance goals for the ESCM and measures to track progress towards achieving them. EM should use this performance information to improve the ESCM and better ensure that it is achieving desired results.

Management Response: Concur.

EM concurs with GAO's recommendation and has undertaken steps to address this recommendation. EM recently modified its guidance to the field sites regarding the 10- Year Task Order Strategic Plan by requiring each site to identify metrics that track and evaluate contract performance, as well as to identify how risk and financial liability will be reduced. EM is in the process of formalizing an oversight model,

including performance measures, for the End State Contracts, which will include an easy-to-use virtual “dashboard” for EM Headquarters to use to regularly track and evaluate progress toward evaluating the success of the ESCM process.

Estimated Completion Date: September 30, 2023

Appendix III: GAO Contacts and Staff Acknowledgments

GAO Contact

Nathan Anderson at 202-512-3841 or andersonn@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Wyatt R. Hundrup (Assistant Director), Bryan Bourgault (Analyst in Charge), Laura Abendroth, Joshua Bolanos-Cruz, Lidiana Cunningham, and Sulayman Njie made key contributions to this report. Antoinette Capaccio, Tara Congdon, Suellen Foth, Cindy Gilbert, Sara Sullivan, and Tatiana Winger also contributed to this report.

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