Department of Energy
Washington, DC 20585

November 6, 2020

MEMORANDUM FOR DISTRIBUTION

FROM: WILLIAM I. WHITE
SENIOR ADVISOR FOR ENVIRONMENTAL MANAGEMENT
TO THE UNDER SECRETARY FOR SCIENCE

SUBJECT: Issuance of the Environmental Management Program Management Protocol

To better define our Program Management processes, the attached Environmental Management (EM) Program Management Protocol was developed. A draft of this document was reviewed by the Field in early October. The revised document was then discussed at the EM Corporate Board meeting on October 29, 2020. As indicated during that meeting, the Protocol will be supplemented by additional guidance documents in the coming months. The guidance will aid sites in such areas as development of the Federal Site Lifecycle Estimates as we strive to fully implement the Protocol requirements by the end of next calendar year. Sites can begin the process now to align resources to support the implementation effort. Please plan on presenting your implementation plan as part of your upcoming Annual Site Review.

If you have any questions, please contact Mr. Rodney Lehman, Director, EM Office of Project Management, at (301) 903-6104.

Attachment

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ENVIRONMENTAL MANAGEMENT
PROGRAM MANAGEMENT PROTOCOL
(October 30, 2020)

I. PURPOSE

The purpose of this protocol is to establish requirements and explain expectations for planning, budgeting, execution, and evaluation of all work within the U.S. Department of Energy (DOE) Office of Environmental Management's (EM) Program. This document supersedes the Requirements for Management of the Office of Environmental Management's Cleanup Program, dated July 2017.

II. BACKGROUND

Since its inception, EM's mission to address the nation's Cold War environmental legacy resulting from five decades of nuclear weapons production and government-sponsored nuclear energy research has been focused on eliminating or mitigating the most urgent risks, achieving site completions, and reducing the overall EM Program footprint. The nature of the remaining cleanup work creates complex challenges, for which strengthened and improved program management is needed to complete the EM cleanup mission in a safe, efficient, and cost-effective manner.

> "*As EM proceeds toward completion of the remaining 10 percent [footprint], 2020 will come to be seen as an inflection point for sites across the complex. . . progress will be based on a foundation of strategic initiatives EM is pursuing to ensure we are best positioned for the years to come, including strengthening project management, continued use of new contracting mechanisms to reduce taxpayer risks and encourage innovation, utilizing a science- driven and risk-informed approach to cleanup and ensuring a strong pipeline of talent throughout the program for the future.* "
>
> **EM Vision 2020-2030: A Time of Transition and Transformation**

This protocol incorporates consideration of: 1) use of the End-State Contracting Model, which is designed to reinvigorate the nuclear waste cleanup completion mindset and allow EM to partner with industry and stakeholders as it openly negotiates risk-informed interim and final end states to reach completion at EM sites; 2) issuance of the Office of Environmental Management Cleanup Project Management Protocol and Implementation Standard for Demolition Projects, dated July 13, 2020, which defines how project management requirements in DOE Order 413. 3B, Program and Project Management for the Acquisition of Capital Assets, are tailored to demolition projects; and 3) establishment of management requirements for operations activities.

III. OBJECTIVES

Requirements established by this protocol are designed to achieve these objectives:

- EM Program plans will be driven by consistent prioritization principles, be informed by validated life-cycle cost and schedule estimates and risk assessments, incorporate the

U.S. Government Accountability Office's (GAO) best practices for program and project management, and be updated to reflect analyses of strategic alternatives.

- EM Budget requests will reflect both principal mission priorities and other EM Program and site program activity priorities such as risk reduction, cost-effectiveness, regulatory requirements, etc.
- Execution activities will establish a contract management framework that results in cost-effective cleanup achieving significant, measurable progress.
- Results from regular performance evaluation will inform EM's planning, budgeting, and execution activities, as well as provide needed lessons learned in improving contract incentives and management processes.

IV. APPLICABILITY

This protocol is targeted for EM managers at Headquarters (HQ) and field sites to provide requirements and guidance as they plan, budget, and execute the EM mission with a focus on ensuring performance and mission completion. This protocol does not directly apply to contractors, as contractor requirements are specified in the contracts. Any requirements contained herein may be passed on to contractors via their contractual documents. This protocol applies to all work performed by EM, whether at EM-managed sites or at sites managed by other DOE organizational entities, such as the National Nuclear Security Administration and the Office of Science. This protocol is to be applied in coordination with the related regulations,

Table 1. Description of Related Regulations and DOE Orders and Policies

Capital Asset Projects

DOE Order (O) 413. 3B, *Program and Project Management for the Acquisition of Capital Assets.* Provides program and project management direction for the acquisition of capital assets with the goal of delivering projects within the original performance baseline, cost and schedule, and fully capable of meeting mission performance, safeguards and security, and environmental, safety, and health requirements unless impacted by a directed change.

Office of Environmental Management Policy for Management of Capital Asset Projects with Total Project Costs (TPC) equal to or less than $50 Million (M). Provides program and project management direction for capital asset projects with a TPC less than $50M.

EM Cleanup Project Management Protocol and Implementation Standard for Demolition Projects **(EM Project Management Protocol).** Provides project management direction for demolition projects.

Information Technology Projects

DOE O 415. 1, *Information Technology (IT) Project Management.* The Order provides program and project management direction for the acquisition and management of IT projects, investments, and initiatives.

Acquisition Activities

Federal Acquisition Regulations (FAR). Sets forth the regulatory requirements for the acquisition process.

DOE Acquisition Regulation (DEAR). Establishes uniform acquisition policies that implement and supplement the FAR.

DOE orders, and policies (see Table 1) which take precedence if there is a conflict between them and this protocol. Furthermore, operations activities (which are defined in Section VI), are to follow applicable EM Standard Operating Policy and Procedures or guides.

Work that is accomplished through financial assistance (i.e., grants and cooperative agreements) and funding for federal salaries and travel (i.e., Program Direction) is exempt from the requirements in this document.

V. ROLES AND RESPONSIBILITIES

The EM senior leadership team is comprised of the Assistant Secretary (EM-1), the Principal Deputy Assistant Secretary (EM-2), three Associate Principal Deputy Assistant Secretaries (APDAS) at HQ, and the Site Managers. The EM senior leadership team all hold critical roles in conducting planning, budgeting, execution, and evaluation (PBEE) of the EM Program and site program. These include:

- Site Managers have line responsibility for all activities at their sites, including managing baselines and approving associated changes as described herein.
- The HQ organization responsible for field operations has line responsibility to provide direction to field sites, to support implementation, and to approve site requests for changes/updates to baselines and life-cycle estimates as described herein.
- The HQ organization responsible for regulatory and environmental compliance provides technical and policy support in the planning and field-execution of EM waste and materials disposition, soil and groundwater remediation, deactivation and decommissioning of EM facilities, and regulatory affairs and compliance agreements.
- The HQ organization responsible for corporate services leads and oversees EM's strategic planning, budgeting, and essential business services, including resource management; acquisition, program and project management; and communications. The office with program and project management oversight responsibility also advises and guides EM leadership on the successful integration of supporting policies and strategies and provides independent assessment of projects and operations activities.

Coordination will proceed with the appropriate organizational elements as defined in the current EM organizational chart; Mission and Functions statement; and Functions, Responsibilities, and Authorities documents.

Cleanup activities are conducted under the direction of the EM Site Manager and are managed by qualified program managers and project managers. Qualifications may include, but are not limited to, certifications received through the DOE Project Management Certification and Development Program, the Project Management Institute, Department of Defense or Federal Acquisition Institute certification programs, or past employment experience. (EM will also follow DOE qualification requirements for Program Management once those are finalized.)

While EM HQ and field office federal employees provide oversight of all EM projects and cleanup activities, the day-to-day execution of the EM scope of work is the responsibility of contractors at each site. EM manages its contractors through contracts. Therefore, effective

contract management is the primary and critical responsibility of field managers and their staffs. Key responsibilities of EM-HQ, field sites, and prime contractors are summarized in Table 2.

Table 2. Summary of Roles and Responsibilities

	EM HQ	Field	Contractor
Planning	• Develop EM Vision, Priorities EM Program Plan, EM Program Life-Cycle Estimate • Issue guidance on baselines, change control, and acquisition planning • Approve Federal Site Baselines and Life-Cycle Estimates, except as delegated • Lead reviews of projects/baselines • Approve acquisition plans • Lead risk-informed strategic planning and EM Program development • Review and approve liability estimate inputs to the DOE Financial Statement	• Develop Federal Site Life-Cycle Estimates • Approve Federal Site Baselines and Life-Cycle Estimates, as delegated • Submit baseline and life-cycle planning updates to HQ • Lead reviews of projects/baselines as delegated • Develop Site Program Plans (SPPs) • Develop and execute acquisition plans • Assist in strategic planning • Complete risk assessments • Provide annual updates to the environmental liability estimate	• Develop Contractor Baselines
Budgeting	• Issue guidance on annual budget input • Lead decision-making process for EM • Lead DOE/OMB reviews • Finalize submission	• Provide budget inputs/priorities to HQ • Write budget narratives	• Provide inputs to the Field Office as requested
Execution	• HCA Approves Contract/ Changes [a] • Provide Guidance on Performance Evaluation Management Plans (PEMPs)/ Performance-Based Incentives (PBIs) • Concur on PEMPs/PBIs prior to approval by Field	• Oversee safe and compliant contractor execution of work and monitor site program, projects, and operations • Develop RFPs • Prepare and approve PEMPs/PBIs • Review proposals and negotiate task order awards • Manage contract funds	• Propose changes to Contract Baseline • Execute site program and projects • Develop task order proposals
Evaluation	• Hold quarterly and annual reviews of Site performance • Consolidate performance input from Field, evaluate EM Program • Conduct Site Program Peer Reviews	• Evaluate contractor performance and determine award fee • Review and evaluate EVMS and other reports • Conduct internal reviews of projects/ operations	• EVMS reporting • Report progress and performance through the Performance Assessment Reporting System II and Integrated Planning Accounting, and Budget System

[a] Baseline and contract changes have some levels of delegated authority for Field Office approval, though many must be approved by the HCA for contracts or the EM Corporate Change Control Board.

EM has established a Corporate Board, including site managers and senior managers from HQ (APDAS level), that advises the Assistant Secretary on major issues, covering planning, execution, and performance evaluation of the EM Program. The board provides corporate perspectives on major changes and alternatives under consideration in EM.

VI. DEFINITION OF EM WORK ACTIVITIES

The EM site programs are managed based on the following types of work activities:

- **Project activities** include construction and demolition projects and must adhere to the requirements of DOE Order 413. 3B and the EM Project Management Protocol, as applicable.
    - **Construction projects** within EM are activities, funded by congressional budget line items and managed as capital asset projects, typically to construct waste processing, treatment, storage, and/or disposal facilities, but may include other activities as defined in FAR Part 2, §2. 01.
    - **Demolition projects** are structure removal activities that are managed as discrete, defined capital projects. [1]
- **Operations activities** include mission and mission support activities and are the primary focus of the requirements within this protocol.
    - **Mission activities** directly support the completion of the EM mission and include deactivation, decontamination, decommissioning, legacy waste processing campaigns; environmental remediation of soil and groundwater; technology development, demonstration, and deployment needed to perform cleanup; and waste shipping and disposal. Although some of these activities have definable start and end dates, as well as measurable accomplishments, these activities differ from traditional capital asset construction projects in that they do not necessarily result in a tangible asset, but rather, a reduction of future liabilities. Additionally, established regulatory processes and agreements frequently govern the initiation and definition phases of the projects.
    - **Mission support activities** are routine or recurring activities to support and enable mission activities. These are actions undertaken as part of the management and maintenance of site services and of the land, including site base operations (e. g. , safety, emergency management, security, and land management); site infrastructure operations, maintenance, repair and alterations (except when categorized as a specific project); regulatory compliance and monitoring; preservation of cultural resources; fleet management; community-support grants; public outreach and regulatory oversight grants; pension management; quality assurance/quality control; legal support; post-construction

[1] EM recently engaged in a deliberative process that resulted in a decision for demolition scope to be managed not as operations activities, but as capital projects, and in a manner similar to construction activities.

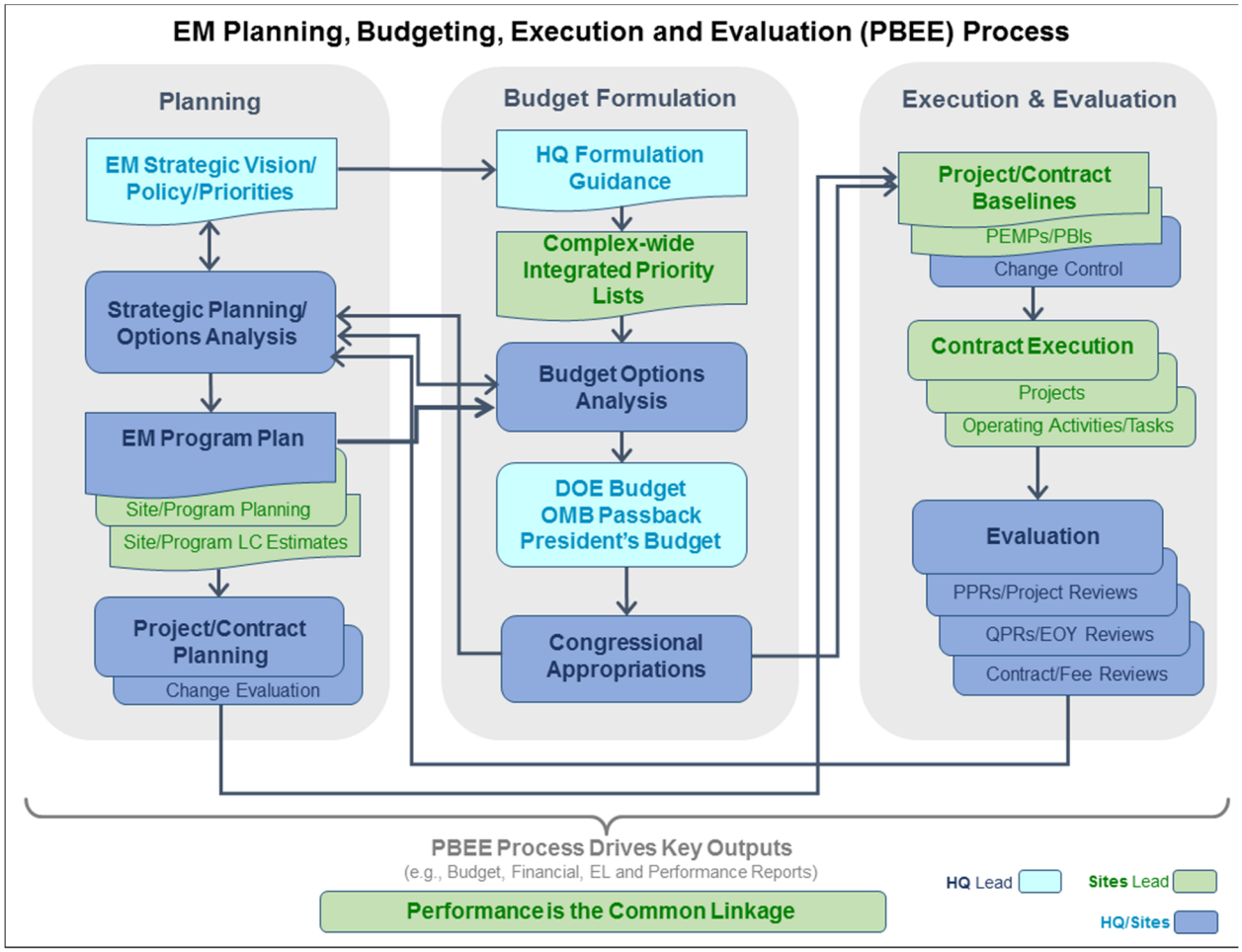
and post-closure care of remediated land burial sites; and long-term environmental stewardship, including environmental monitoring and institutional controls surveillance and maintenance.

The site programs when aggregated are referred to collectively as the ***EM Program***. This protocol also provides requirements and guidance on how EM integrates project and operations activities to accomplish the overall EM Program and site program missions. Since EM accomplishes these missions through its ***contracts***, this protocol addresses requirements and guidance for planning, monitoring, and executing contracts as it relates to mission planning, budgeting, execution, and evaluation.

VII. EM PLANNING, BUDGETING, EXECUTION, AND EVALUATION

This section presents the requirements and clarifies the expectations for planning, budgeting, execution, and evaluation of all work within the EM Program. Although the topics are discussed individually below, they are inextricably interwoven and require integration throughout implementation of these requirements (see Figure 1).

Figure 1 The EM Planning, Budgeting, Execution and Evaluation Process.



A. EM Program Planning

Planning includes three primary activities: the development and maintenance of EM strategic plans; the development and maintenance of life-cycle estimates; and the identification and analysis of strategic alternatives.

A.1. Development and Maintenance of EM Strategic Plans

To provide a guiding vision for the EM Program and to identify the strategies to achieve that vision, the following EM strategic plans are to be developed and maintained biennially:

- The EM Strategic Vision, which will present the overall goals for the EM Program for the next ten years, providing the anticipated progress across the breadth of the EM Program. The initial EM Strategic Vision, *EM Vision 2020-2030: A Time of Transition and Transformation*, was published in March 2020. The next one is to be developed in 2022.
- The EM Program Plan (EMPP), which will present the strategy for achieving the vision established by the EM Strategic Vision. It will include a description of the planned work at each of the sites and serve as a roadmap, providing key planned accomplishments and dependencies among major milestones, communicating the linkages between business strategy and planned, prioritized work. The EM Program Plan is to be developed as a "roll up" of individual Site Program Plans (SPPs). The first EM Program Plan is anticipated to be developed in 2021.
- Site Program Plans, which will be developed for each of the sites, will document the plan for work accomplishments in the next ten years to support the EM Strategic Vision.

Each of these documents are to be informed by EM's prioritization schema designed to incorporate balancing of risks into the planning and decision-making process (see Table 3), life-cycle estimates and strategic alternatives analyses (discussed in the next sections), anticipated impacts from funding levels (see Section VII. B), and actual performance (see Section VII. C), as well as lessons learned from planning, execution, and contractor performance evaluations (see Section VII. D). The cyclical planning process will result in a 10-year rolling vision for work prioritization and accomplishment within EM.

The EM Prioritization Schema was developed by EM HQ managers in collaboration with Field Managers and small site managers during the fiscal year (FY)22 budget planning workshop. At that meeting, EM's managers added the screening criteria to the long-used prioritization of mission areas. The screening criteria help address other parameters that are used to inform decision-making during planning and budgeting regarding the scheduling of activities within the EM Program. In particular, these criteria infuse practical considerations and allow prioritization of lower risk activities where they lead to goals of cost savings (lower life-cycle costs) or key accomplishments/accelerations of area closures. For example, use of these criteria allows for development of alternative approaches that may be employed to sustain a safe, compliant work environment at a lower cost point. In effect, this is a "risk-informed" priority system.

Table 3. EM's Prioritization Schema

All EM strategic plans, life-cycle estimates, budget requests, and alternative analyses are to consider the risk-informed EM prioritization schema.

EM's overall prioritization schema, which is informed by risk, has generally remained consistent since 1989: first and foremost, EM seeks to address any issues posing an immediate risk to human health or the environment. EM then addresses issues based on achieving the highest risk reduction benefit per radioactive content (activities are focused on wastes that contain the highest concentrations of radionuclides and sites with the highest radionuclide contamination) within the framework of our regulatory compliance commitments and best business practices. Priorities also take into account the level of radioactive contamination; risks posed by the potential for that contamination to reach surrounding communities; and other matters, including practical matters of scheduling, ease of remediation (availability of an easily deployed, effective known technology), and allowing sites or areas of sites to be fully cleaned up.

A summary of EM's prioritization, when applied to EM's remaining scope, includes the following:

1. Activities to maintain a safe, secure, and compliant posture (also known as a "minimum safe" posture).
2. Radioactive tank waste stabilization, treatment, and disposal.
3. Spent (used) nuclear fuel storage, receipt, and disposition.
4. Nuclear material consolidation, stabilization, and disposition.
5. Transuranic and mixed low-level waste disposition.
6. Soil and groundwater remediation.
7. Excess facilities deactivation and decommissioning.

The ability to accomplish this work often depends on completing enabling lower-priority activities first. These lower-priority activities are site-specific and require application of the following screening criteria when prioritizing:

- Maintaining minimum safe conditions and base operations.
- Risk reduction, including risks to the public and workers, environmental risks, and programmatic and technical risks).
- Cost effectiveness, including lowering life-cycle costs, affordability (within annual funding targets), efficient grouping of activities (to reduce mobilization/demobilization and take advantage of scaled efficiency) and leveraging lessons learned.
- Regulatory requirements and significant political interest.
- Ability to schedule or execute activity due to schedule uncertainty or availability of resources, inter-site dependency of wastes, and risk presented by needed regulatory approvals.
- Site or area closure or other significant cleanup completion opportunity.

A.2. Development and Maintenance of EM Life-Cycle Estimates

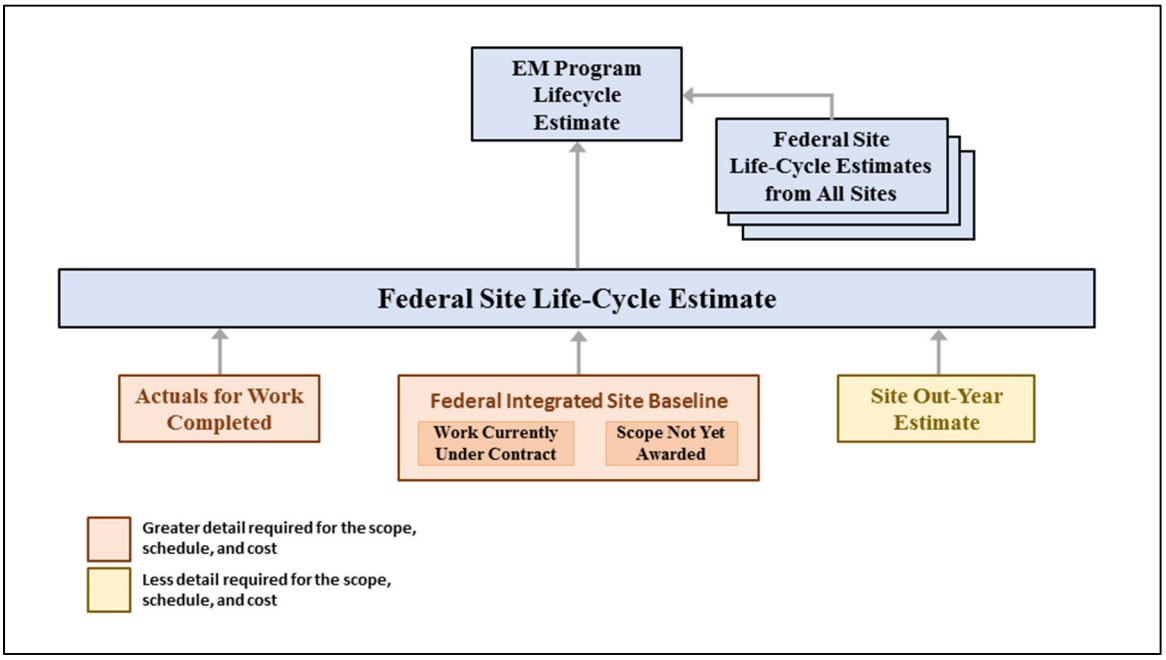
The basis of planning within the EM Program is derived from the life-cycle estimates developed at each site. The estimates include the work required to accomplish the mission of cleanup and subsequently closure of an EM site. Alternatively, when another DOE program office is the landlord, the estimates describe the work required for the exit of EM. These estimates are foundational to strategic planning and budgeting for the EM Program. This section describes the

development and maintenance of the EM Program Life-Cycle Estimate, the EM environmental liability estimate, and the compliance case estimate.

EM Program Life-Cycle Estimate

EM will develop and maintain the **EM Program Life-Cycle Estimate**, an integrated cost and schedule estimate for the full scope of activities required to complete the EM mission. This estimate will be used to conduct periodic analyses of strategic alternatives (see the next section), support the development of budget requests (see Section VII. B), support the execution of the work (see Section VII. C), and support evaluations of EM Program progress (see Section VII. D). The EM Program Life-Cycle Estimate integrates the individual Federal Site Life-Cycle Estimates to be developed by each of the EM sites (see Figure 2) and includes major interfaces and dependencies between the sites.

Figure 2 The EM Program Life-Cycle Estimate.



The **Federal Site Life-Cycle Estimate** (FSLE) developed by each of the sites is the scope, cost, and schedule profiles for the work activities required to complete the EM mission at a site (including sunk costs). The FSLE also includes a Risk Management Plan (RMP) and risk register, which includes both risks and opportunities. The FSLE includes the following primary components:

- **Prior Years Actuals:** Prior year actual values are the cumulative actual costs spent and scope completed prior to the current year of execution.
- **Federal Integrated Site Baseline:** The next 5 to 10-year period reflects the first increment of the "to-go" portion of the FSLE. This portion of the FSLE will be developed by each site at the greatest level of detail. Sites will work with HQ to select an appropriate timeframe between 5 and 10 years based on acquisition planning, timing of pulling Indefinite Delivery/Indefinite Quantity (ID/IQ) tasks into contracts, and other

factors, as appropriate. Scope descriptions for all work planned within this time period shall be fully defined and supported with detailed and reliable cost estimates and a detailed, integrated resource-loaded schedule. The cost estimate and schedule for this period will also include cost and schedule contingencies for risks owned by the Federal government and fees. This portion of the FSLE is a Federal product maintained independent from the Contractor's Performance Baseline (CPB) and is comprised of both the work currently awarded under the contract and scope yet to be awarded. The Federal staff will regularly monitor the Contractor's performance against the CPB and against the Federal Integrated Site Baseline. An assessment of that performance shall be used to determine if threats or opportunities are being presented relative to the successful completion of the FSLE and to initiate proactive response planning, such as the Strategic Alternatives Analysis process.

- It is important to note that under the End-State Contracting Model, active task orders and the corresponding contract baselines may not cover the work scope for the full contract performance period. Therefore, Federal managers will work with the contractors, as appropriate, to plan for the scope outside of the current, active task orders. As tasks are awarded under the contract, the contractor shall integrate all awarded tasks into a master schedule CPB, showing any interconnected elements and demonstrating that the full scope of all awarded work will be conducted on schedule within the available annual funding.
- This portion of the FSLE is to include performance measures and key milestones. EM Corporate Performance Metrics, along with performance measures required by the contractor(s) to implement the contractor's management system, should be incorporated into baseline documentation. In addition, these measures and metrics need to be reflected in the PEMPs and used in development of PBIs. PEMPs and PBIs identified by sites, along with consideration of scope yet to be accomplished by EM, will inform any changes needed to continually improve tracking of mission accomplishments and performance.
- **Site Out-Year Estimate:** The Site Out-Year Estimate is the portion of the FSLE that is comprised by an estimate for all known EM scope (including metrics and key milestones) that is planned to be completed beyond the Federal Integrated Site Baseline through to EM mission completion at the site. As some activities are decades away from completion, and significant regulatory decisions and other uncertainties may remain, the out-year estimate will be defined by an understanding of the scope that is as detailed is possible and expressed by cost and schedule ranges. The estimates will be represented as "low and high" cost and schedule ranges based on 50% and 80% confidence levels, respectively. All major assumptions must be documented and considered when developing the cost and schedule range, as well as performance measures and key milestones.

The principles for developing the FSLE are identified in Table 4.

Table 4. Principles for Developing the Federal Site Life-Cycle Estimates

In accordance with DOE Guide (G) 413. 2-21A, *Cost Estimating Guide*, and the DOE EM Head of Contracting Authority (HCA) Directive, *Independent Government Cost Estimates* (HCA 2. 0), cost estimates are to be consistent, credible, well-documented, accurate, and comprehensive. Also, EM cost estimates are to be developed in accordance with the *Cost Estimate Development Handbook* (EMCBC-OOCE G 002, August 2019). For all EM Priced Contract Actions exceeding the threshold identified in HCA Directive 2. 0, an Independent Government Cost Estimate (IGCE) is to be prepared using the cost estimating process identified in the U. S. Government Accountability Office (GAO) *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs* (GAO-20-195G, March 2020).

Additional principles for developing the Federal Site Life-Cycle Estimates include the following:

- Work is to be prioritized according to the EM prioritization schema.
- Work is to be planned such that the annual costs are within the funding target assumptions provided by EM HQ.
- The baselines and estimates are to capture the following:
  - Scope, including major assumptions, performance parameters and metrics.
  - Annual cost profiles aligned with the Analytical Building Blocks (ABBs).
  - Schedules, including key mission completion and enforceable agreement milestones.
- All activities are to be integrated and included, regardless of funding type (including financial assistance awards).
- Contractor fee is to be included.
- Federal contingencies are to be included.
- Increasing levels of detail in both schedule and cost estimates will be documented as the time for award of scope approaches

In implementation of the protocol, EM will use a common set of ABBs[a] that correspond to the traditional EM Program Baseline Summaries (PBSs) to capture scope information in instances when PBSs have been collapsed (e. g. Savannah River Site where PBS-30 covers both soil and groundwater, and facility D&D) in order to contrast scopes across sites. These common ABBs should be reflected in each site's FSLE and contractor master schedules to capture costs uniformly. This approach will increase visibility and accountability of changes; maintain historical costs more accurately; simplify budget and planning activities; and support comparative analyses using multiple attributes.

[a] An ABB is a discrete, site-specific scope of work that can be logically scheduled, budgeted, and prioritized. It is sufficiently detailed to support budget formulation decisions and serves as the key link between information maintained and analyzed corporately, and underlying details managed at the site.

Federal Site Life-Cycle Estimates are to be updated annually in the January timeframe, which is after completion of prior fiscal year work and prior to the financial statement audit, and typically after receipt of budget appropriations. Sites also are to assess and update their Federal Site Life-Cycle Estimate when there are potentially significant changes. These include, but are not limited to, the following types of events:

- Key contract changes occur, such as task order completion or contractor performance baseline changes affecting total cost or scheduled completion.

- Changes to scope assumptions are identified, such as regulatory remedy selections and/or technology deployment changes.
- Additional contaminated media is identified.
- Funding targets are updated.
- Work scope is accelerated.
- Unanticipated events outside DOE control occur which impact cost and/or schedule (such as COVID 19).

Updates to the Federal Site Life-Cycle Estimates will be reviewed and validated jointly by the Field and HQ and then recorded via change requests in the IPABS. More information about configuration control of the Federal Site Life-Cycle Estimates is provided in Section VII. C. Reviews against the Federal Site Life-Cycle Estimates will also be conducted as part of the annual planning and evaluation processes (see Section VII. D).

Independent Review of Federal Site Life-Cycle Estimates

As FSLEs are prepared or modified, major changes to those estimates shall undergo independent reviews. Site managers shall convene an independent team comprised of SMEs from Headquarters, other sites' personnel, EM Consolidated Business Center (EMCBC), and consultants to review the FSLE as a way of validating planned activities for mission accomplishment. FSLEs and the site baselines which are near term subsets of that estimate, shall be reviewed for adherence to HQ guidance on funding assumptions; completeness in addressing all mission scope and support activities to accomplish that mission; reasonableness of all technical and scope assumptions regarding technologies deployed, storage and disposal pathways, and resulting cost estimates and schedules derived from those assumptions; proper integration with DOE corporate assets for Transuranic (TRU) waste characterization and disposal (WIPP), low level waste (Nevada), and any commercial facilities assumed for disposal of waste (e. g. WCS); and adherence to industry best practices for development of cost estimates and resource loaded schedules.

These independent reviews shall be convened upon initial development of the FSLE and any other time major changes to the estimate are made that require approval by EM-2 or higher authority consistent with the change control thresholds noted in Table 6. The review shall be targeted to the changes being made, but also ensure that the changes are being comprehensively reflected throughout the life-cycle of the site mission. The results of the FSLE independent review shall be presented with any change control requests necessitated by the change.

If no event triggers an independent review before 4 years has passed since the last independent review of the FSLE, the site manager should convene an independent review team to conduct a review to ensure the estimate remains accurate and current.

Programmatic Risk Management

Risk management is performed throughout the life-cycle of the EM mission to ensure that all unknowns are captured and assessed to successfully achieve the EM Program and site program work scope. EM has developed and implemented a disciplined, continuous, and iterative risk management process to meet the overall monitoring and reporting requirements. This process allows EM to continue to monitor technical uncertainties and the many events and conditions

associated with the life-cycle of remaining work in the EM cleanup mission. The risk management process is based on industry, GAO and other federal agency best practices, and provides EM with a consistent and defensible methodology that can be applied across the EM complex for evaluating risk and incorporating risk management into decision making, life-cycle planning, and cost and schedule estimates.

Each site has a programmatic risk manager for management of risks associated with completion of the Federal Site Baseline. Projects conducted under DOE O 413. 3B perform risk management in accordance with DOE G 413. 3-7, *Risk Management Guide*. The remaining work in the Federal Site Baselines is evaluated in a similar fashion. Project risks and opportunities are identified (regardless of ownership), defined in risk register description sheets, prioritized, and analyzed. Risks are classified as either high, medium, or low and quantified based on their probability of occurrence and consequence). Mitigation strategies are developed and documented on the risk description sheets, along with any residual risk impacts. Identified avoidance and mitigation efforts are then incorporated in the baseline, if material. For projects conducted under DOE O 413. 3, EM fully funds contingency in accordance with the Order. However, for Operations Activities, EM does not request funding for cost contingency due to competing budget priorities. Instead, it typically manages these risks through Federal scope and schedule contingency, making changes as needed through change control. Work scopes will be periodically evaluated for emerging risks and opportunities that should be added to risk registers.

In the near future, EM will develop a more comprehensive risk management policy to address the various risks facing the EM Program and site programs, and requirements and guidance for its projects and mission activities.

EM Environmental Liability Estimate

EM is required by the 1994 *Government Management Reform Act* to annually update its environmental liability in accordance with accounting standards set forth by the Federal Accounting Standards Advisory Board (FASAB), to be recorded in DOE consolidated financial statement. The process for developing and preparing the EM environmental liability estimate is described in the EM Standard Operating Policies and Procedures (SOPP) 35, "Annual Environmental Liability Estimate" Site liability submittals, which will incorporate the FSLEs, are reviewed by EM HQ to ensure adherence with regulatory requirements and accounting standards and to provide early detection and resolution of site issues. Root cause analyses will be jointly conducted by the Field and HQ to evaluate drivers of the growth in the EM environmental liability estimates, as appropriate, if a comparable modification has not already been done on the FSLE for the change under evaluation.

Compliance Case Estimate to Meet Regulatory Commitments

Executive Order 12088, Federal Compliance with Pollution Control Standards, requires DOE to ensure that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency. To support implementation of Executive Order 12088, EM annually submits a budget request to the Office of Management and Budget (OMB), which is based on the cost and schedule estimate required to meet all regulatory commitments. This cost and schedule estimate

for a particular site may differ from the FSLE, particularly if the funding levels required for full compliance are greater than the funding target assumptions provided by EM HQ.

A.3. Identification and Analysis of Strategic Alternatives

Strategic alternatives for the EM Program will be identified and analyzed to support the plans identified in Section VII. A. 1 and the budget formulation activities (see Section VII. B). They may also be identified and analyzed to support interactions with Congress and other external entities, including analyses to evaluate the potential impact of proposed legislation.

The EM HQ Office of Program Planning, in coordination and collaboration with the field, will identify and conduct the analyses periodically (annually, at a minimum), and as needed. This office will also support the independent FSLE reviews described earlier in this document. These analyses may include, but not be limited to, identification and evaluation of the following types of alternatives:

- Strategic alternatives to accomplish cleanup with alternative technologies and/or methods, while still supporting the EM prioritization schema.
- Opportunities to lower overall life-cycle costs, such as accelerating project schedules to close sites and eliminate base operations costs, particularly if additional and/or accelerated funding were to be available.
- Planning alternatives to address potential funding shortfalls to meet regulatory cleanup commitments.
- Rapid turnaround "what if" analyses to quickly assess potential impacts of proposed policies and other alternatives, including "what if" analyses that may arise in discussions with OMB and/or Congress.
- Potential alternatives as a result of regulatory changes.
- Bounding alternatives to strengthen underlying assumptions and cost and risk data.

Conducting such analyses will help to support budget justifications and Congressional interactions, potential reduction of the EM environmental liability, communication with stakeholders, and improve the quality and durability of EM HQ Program life-cycle data.

Furthermore, sites are to conduct their own analyses of strategic alternatives, as needed, to support the development of their Site Program Plan and to continue to identify ways to complete the EM mission in a more cost-effective manner.

B. Budgeting

Budgeting includes two primary activities: building the budget request and evaluating impacts of appropriations.

B.1. Building the Budget Request

Within guidance provided by the DOE Office of the Chief Financial Officer (CFO), the budget request is built on the funding levels needed to support execution of the EM HQ Program Plan and Site Program Plans while recognizing the funding levels required to meet EM's regulatory

commitments and incorporating strategic alternative analyses (see Section VII. A). Initially, each field office provides a submission that complies with HQ guidance on budget targets and is based on the scope of work planned for the FY, as described in the site baseline. . Sites will reflect any emerging performance issues or regulatory considerations which may diverge from their baseline plans in the budget submittal. Their submissions also identify any impacts to their plans and resources needed to remedy those impacts. Additionally, draft budget requests shall consider the cost and schedule estimate required to meet all regulatory commitments, as described earlier. As part of the budget formulation process, site integrated priority lists, using the ABB structure, are developed to rank the major scope elements for each field site, based on the EM prioritization schema.

EM convenes the EM Corporate Board to which each site manager presents their site submission and describes their rationale for prioritization, resource requirements and impacts at the funding target. Managers seek to make the case for their site submission. Subsequent to this process, EM senior leadership at Headquarters has the responsibility to then make site program or HQ Program level decisions which integrate the submissions of the various field offices.

Once EM HQ Program level decisions are made, the Assistant Secretary and EM senior leadership team then ready submissions to DOE senior leadership (including the DOE CFO, Undersecretaries and/or Deputy Secretary) who then make enterprise level recommendations to the Secretary. Multiple scenarios may drive modifications to the draft budget requests that are ultimately submitted to the Secretary of Energy and to the OMB, such as opportunities to accelerate scope or modify work approaches identified by the strategic alternatives analysis process and Secretarial priorities.

OMB promulgates the final determinations made by the Administration on the budget requests made to Congress. And EM readies its budget requests based on those decisions.

B.2. Evaluating Impacts of Appropriations

Once Congressional appropriations are determined, EM HQ and the Field evaluate potential impacts to the EM Program Life-Cycle Estimate, Federal Site Life-Cycle Estimates, and Contractor Baselines. Changes to these estimates and baselines are managed through appropriate contract modifications and/or change control processes.

C. Program Execution and Monitoring

EM accomplishes its work through execution of its contracts. Therefore, successful program execution is essentially defined by successful management of contracts. Execution and monitoring include the following activities: contract acquisition, contract management, defining contract performance measures, and change control.

C.1. Contract Acquisition

The EM's contract framework must support cost-effective cleanup that makes significant, measurable progress. Contracts, and any associated task orders, must be aligned to the EM mission, contain clear scope requirements, contain completion requirements and measures, be

supported by reliable cost estimates in accordance with cost estimating best practices and guidance, and incorporate EVMS requirements, as appropriate.

Acquisition needs are identified, in part, using the EM strategic planning documents and life-cycle estimates. The authority for approving contract actions is delegated by the Secretary of Energy to the Senior Procurement Executive (SPE) to the Head of Contracting Authority (HCA) for EM to the Site Contracting Officers (COs). Field Managers and their contract professionals work with the EMCBC on contract acquisition activities when supplemental contract professionals are needed by a site. Field managers and their contract professionals also coordinate with EMCBC to ensure consistency in approach in instances when the site has a full contract staff available.

There are a variety of contract vehicle types that EM may select to use. As described earlier, the EM End State Contracting Model, which is an ID/IQ contract, is being used at many of the sites to support a mission completion mindset (see Table 5). Analyses of strategic alternatives, as described in Section VII. A, are to be used to identify opportunities to accelerate work, including work that may lie beyond the next 10 years. If such work is identified, task orders may be issued for these opportunities when the scope aligns with the contract, and baselines and life-cycle estimates will be modified accordingly.

Table 5. End State Contracting Model

In the End State Contracting Model, EM will negotiate scope, cost, and schedule on specific elements of work through task orders in an ID/IQ contract, instead of using cost-based contracts that span ten (and sometimes more) years and typically have more general scopes of work. The End State Contracting Model provides EM the ability to group work under the contract into specific task orders to allow better clarity and shorter time horizons, as well as to provide more accurate cost and schedule targets. This also will provide for an accountability structure designed to motivate contractors toward improved cost and schedule performance. Such contracts generally include the following steps to implement:

- Work activities planned for the next ten (or longer) years are evaluated and bundled, if appropriate, under a single request for proposal. Contract award is then based on a representative task.
- Initial task orders for completion are identified and developed by EM staff.
- Costs for proposed task orders are to be supported by a credible, well-documented, accurate, and comprehensive independent cost estimate.
- EM partners with the contractor to identify additional tasks within the Federal Site Life-Cycle Estimate that may be ready for completion, or that, if undertaken in the near-term, could result in significant acceleration of cleanup.

As each successive task order proposal is evaluated under an End State Contract Model contract, the contractor shall integrate all previously awarded and newly proposed tasks into a master schedule as part of their proposal, showing any interconnected elements and demonstrating that the full scope of all awarded and proposed work may be conducted on schedule within the available annual funding. It should be noted that since Government reliance is placed in the contractor's cost and pricing information, the Truth in Negotiations Act will apply to all such task order negotiation procedures.

C.2. Contract Management

EM manages its contracted work through regular management activities: measurement of scope completion against cost and schedule baselines usually through the use of an EVMS (including quality information on cost performance); evaluation of contractor performance in accordance with the PEMP, the Contractor Performance Assessment Reporting System, the Price Anderson Amendment Act, and other appropriate means; and verification of work scope completion in accordance with established criteria (e. g. , contract, milestone description sheets, etc.). 2

Contracts and task orders are maintained under configuration control. Changes are made only through approved change control procedures. Also, contract changes (other than administrative changes) are to be supported by schedules and cost estimates that have been developed using the principles identified in Section VII. A and that have been reviewed and approved. A conformed copy of the contract shall be maintained at all times.

Within six months of award of a non-end state contract or end state task order award totaling $20 Million or greater that is also either cost plus award fee (CPAF) or cost plus incentive fee in nature, the Site Manager and contractor typically conduct an integrated baseline review of the contract scope, schedule, and cost to validate the contractor performance measurement baseline.

Change control of contract baselines will be conducted in accordance with SOPP 74, *EM-HQ Life-Cycle Change Control Process,* and established site procedures.

The appropriate control system needs to be selected based on the type of work to be performed and the contract type. Earned Value Management Systems (EVMS) are the most common control systems employed by EM. When EM requires use of an EVMS, it must comply with the most current version of the EVMS guidelines in the Electronic Industries Alliance Standard 748 (EIA 748), Earned Value Management, at the time of the contract award; and management procedures that provide for generation of timely, reliable, and verifiable information for DOE Integrated Program Management Report (IPMR) data items specified in the DOE Office of Project Management Oversight and Assessment (PM) Earned Value Management Systems Compliance Review Standard Operating Procedure and references stated therein) and/or the contract. For contracts where EVMS is a requirement, EM employs contractor certification reviews by independent sources. PM certifies the contractor's EVMS for certain capital asset projects, and EM conducts periodic surveillances of the contractor's EVMS to ensure continuous compliance and validity of data and costs.

Work activity that cannot be characterized as discrete effort is called Level-of-Effort (LOE). LOE will be minimized to the greatest extent possible and includes non-measurable elements of mission support activities (defined above), facility maintenance to maintain safe conditions, and storage activities. If possible, LOE work should be requalified as apportioned work that can be planned and measured as a proportionate factor to the related discrete work. Alternative performance measurement methods, including a tailored EVM approach, shall be developed to

[2] Projects within contracts will comply with DOE's project management policies and procedures referenced earlier.

manage and monitor activities that cannot be measured easily by EVM (e. g. surveillance and maintenance).

The EM site program activities are monitored by Site Managers, as well as the Program Management Executive as defined in DOE O 413. 3 and the *Cleanup Project Management Protocol and Implementation Standard for Demolition Projects*, and EM HQ Offices. The EM PME is responsible for ensuring that work is executed within the FY EM Budget. Each Site Manager is responsible for ensuring that cleanup scope specified in contracts is executed as planned.

Program execution and monitoring is accomplished using structured and disciplined processes including, but not limited to, change control, risk management, performance reviews and assessments, lessons learned reports, metrics, and monthly reports, in addition to EVM. For example, data regarding regulatory milestones will be collected and reported, including changes to Enforceable milestones, in accordance with the *EM Policy on Regulatory Milestone Tracking*, July 2020 (Draft).

Contract execution and monitoring commences upon contract award. DOE must review and approve a contractor's work control system to accurately record and report performance against contract requirements. Following this approval, the designated leads and Contracting Officers (COs) monitor the contractors' performance and authorize the conduct of independent baseline and performance reviews. Such reviews will be conducted by a team assigned by EM HQ that will be comprised of qualified project and program management professionals (likely participants include EMCBC cadre personnel, other site program management experts, HQ specialists and contractors, as appropriate) which are independent of the site activities or projects being reviewed

As work is awarded for execution, responsibility for risks associated with execution of that particular scope (management reserve, or MR) will be transferred to the contractor, as appropriate. Contractors will continue to maintain an RMP, and associated risk register, and control the use of MR for all awarded work. The EM staff will continue to manage the EM-owned risks and any associated federal cost and schedule contingency.

As work is completed, site staff will track performance against the contractor's baseline. Site staff will also track performance against the FSLE, assessing progress for potential impacts (cost, scope, or schedule) to the FSLE. This assessment is also conducted upon completion of each task order. The site is to incorporate the impacts into the FSLE using the appropriate change control processes.

C.3. Defining Contract Performance Measures

The Site Program Managers and Federal Project Directors, with the assistance of the contractors, define the major performance metrics required for management and control of projects and operations activities. Generally speaking, CPAF contracts and task orders will have PEMPs with PBIs, while other contract and task order types will have performance incentives. Performance measures and metrics are to be reflected in the contractor PEMPs, when applicable, and used in development of the PBIs or other contract performance incentives. Performance incentives and

PBIs are to be established under each contract to drive contractor performance that furthers the EM mission as a whole, with the following considerations:

- They are to reflect the vision and goals established by the EM strategic plans.
- They are to logically tie to the EM corporate metrics and priorities, along with the contract scope of work.
- They are to incorporate measures and metrics tailored to the specific scope of work being addressed and the programmatic goals being incentivized. For mission operations activities, maximizing the amount of meaningful progress should be incentivized, such as facility availability at full functional capacity for operations of facility processing waste or material. For mission activities that are more project-like, milestones may be more appropriate for tracking progress, along with cost and schedule. For mission support activities, measures and metrics are to be identified to incentivize reduction of costs over time while still meeting performance requirements. Where multiple contractors must be integrated, measures and metrics should be developed to ensure the contractors are working together to meet sitewide objectives.
- An effective incentive arrangement requires assessing performance risk and negotiating reasonably challenging, but achievable, target goals (e. g. cost, safety, etc.) Higher profit levels should be tied to better performance and lower levels to poorer performance.

It is important that the performance incentives and PBIs for contracts reflect the goals for the EM Program and the Field sites, and flow through the contracts to the project and activity levels. EM HQ will provide guidance for a more unified approach to developing performance incentives, as well as PEMPs and the PBIs reflected in them.

C.4. Federal Integrated Site Baseline and Life-Cycle Estimate Change Control

The Federal Integrated Site Baselines and Life-Cycle Estimates (including all scope, cost, schedule, and risk/contingency elements) will be maintained under corporate configuration control in IPABS using established system change control processes. Proposed changes to these data, including regular annual updates and changes triggered by other events, will be developed in a timely manner by cognizant site management in close coordination with HQ and internally assessed per a corporately approved process, including review for consistency with current corporate EM plans, priorities, and strategic alternatives analyses. Impacts and changes to FSLEs resulting from contemplated contract changes must be evaluated by the appropriate change control authority prior to approval of the associated contract changes. Upon completion of internal reviews, change requests will be formally submitted by sites to the EM Corporate Change Control Board for approval; selected requests will undergo an independent review conducted by EM-5. Effective change control management processes include controlling contract and baseline changes as integral, synchronized activities over the EM Program and site program life-cycles. The elements under corporate change control for Federal Site Life-Cycle Estimates, at the Sub-PBS level, are the following:

- Scope – Any change to key performance parameters/metrics or key assumptions.
- Cost – Total contract period baseline cost and total life-cycle cost.
- Schedule – End/completion date.

- Measures and Metrics – Including corporate metrics and other EM common metrics and activity specific measures or metrics reflected in PBIs and PEMPs.
- Key Regulatory Milestones.

Changes will be managed and approved via the EM Corporate Change Control Board process per the thresholds shown in Table 6. Change control thresholds may also be triggered as a result of key scope assumptions being significantly altered by decisions or regulatory agreements, such as remedy selections (technology deployed), contaminated media to be addressed, or throughput achieved in operation of a waste processing facility.

Table 6. Change Control Thresholds and Approval Authority

Life-Cycle Element	Scope (Metrics/KPPs, Milestones)	Cost	Schedule	Approval Authority
Prior Year (Actuals)	Annually (January)	Annually (January)	Annually (January)	Site
Federal Site Baseline for Work Under Contract*		Increase less than $25M (absolute value)		Site CO and Site Manager, consistent with delegated procurement authorities
		Increase greater than $25M and less than $50M (absolute value)		HCA, consistent with delegated procurement authorities; Notification to EM-1
		Increase greater than $50M (absolute value)		Senior Procurement Executive; Notification to EM-1
	Any change in Key Assumptions, scope, metrics, KPPs			EM-1
FSLE		**For Site Programs with FSLE under $1 billion (B):** Increase of less than 10% (cumulative) of original FSLE. **For Site Programs with FSLE over $1B:** Increase of less than $100M (cumulative) of original FSLE	Increase of less than 6 months (cumulative) of original end date.	Site Manager

Table 6. Change Control Thresholds and Approval Authority

Life-Cycle Element	Scope (Metrics/KPPs, Milestones)	Cost	Schedule	Approval Authority
	Any change in Key Assumptions	**FSLE Less than $1B:** Increase between 10% and 25% (cumulative) of original FSLE **FSLE Greater than $1B:** Increase between $100M and $250M (cumulative) of original FSLE	Increase of between 6 months and one year (cumulative) of original end date	EM-2
	Any change in LC scope, LC metrics, or key performance measures	**FSLE Less than $1B:** Increase greater than 25% (cumulative) of original FSLE **FSLE Greater than $1B:** Increase greater than $250M (cumulative) of original FSLE	Increase of one year or greater (cumulative) of original end date	EM-1; Notification to S-4

* Impacts and changes to FSLE must also be evaluated when reviewing potential contract changes.

D. Program Evaluation

Continual evaluation of the EM Program and site program performance is a critical component of achieving the EM cleanup mission in a safe, efficient, and cost-effective manner. EM HQ and the Field perform the following program evaluations and incorporate the results and lessons learned into EM's planning, budgeting, and execution activities:

- Quarterly progress reviews of all sites will be conducted by EM HQ, including involvement of senior management.
- Annual program reviews of all sites will be conducted by EM HQ in the first quarter of each fiscal year, including involvement of senior management and covering progress and accomplishments of the prior year relative to planned accomplishments, cost, and schedule performance of the prior year, plans for the upcoming/current year of execution, and any issues/barriers to success. Results of these reviews will be factored into the annual updates to the Federal Site Life-Cycle Estimates and the EM Program Life-Cycle Estimate, as well as EM's strategic plan.
- EM Program performance information will be tracked, assessed and reported throughout the year, with year-end results reported in the Department's Annual Performance Report and in other EM Program and/or site program evaluations, such as the Contractor Performance Assessment Reporting System (CPARS). The performance measurement data reviewed will include performance measures in the DOE budget, performance-based contracts, and performance data related to EM financial operations, human resources, and facilities. Analysis of performance data will include whether goals were achieved,

verification and validation of performance levels, and external factors that may have influenced performance.

- Site Program/Project Peer Reviews will be conducted by non-advocates (Federal and M&O or other contractor experts), providing an independent oversight of the contractor and Federal management of the projects and increasing credibility in EM's management. The review teams are established with the Department's most talented program/project, contract, and technical staff from across the complex.
- Site's progress in meeting regulatory milestones will be tracked and evaluated in accordance with the EM Policy on Regulatory Milestone Tracking, July 2020 (Draft).
- EM assessments of contractor performance occur throughout the site program life-cycle, including the following:
    - Monthly progress reports to enable effective analyses of performance.
    - Monthly EVMS reporting
    - Monthly funds tracking reporting.
    - Quarterly progress reviews with senior EM management
    - Annual performance measures and metrics evaluation, based on the PBIs.

Should these evaluations identify performance concerns, a root cause analysis may be conducted.

EM will continually improve EM's planning, budgeting, and execution activities. Based on the performance evaluations, as well as real-time work execution, EM will identify lessons learned and document them throughout the site program life-cycle, capturing them in DOE and EM databases. EM also publishes a monthly Lessons Learned Bulletin on various program and project management topics, which incorporates not only DOE and EM lessons learned, but also includes best practices from other government agencies and the private sector. Relevant lessons learned are incorporated by Site Managers and Field Program and Project Managers into Site plans, program and project management plans, project execution plans, and other documents.

Root Cause Analysis. A root cause analysis (RCA) is a structured facilitated process used by EM to identify root causes of an event(s) that resulted in an undesired cost and schedule performance. The RCA process provides EM with a way to identify and address the underlying causes of cost overruns, schedule delays, missed or postponed milestones, and performance shortcomings and it describes how to prevent future events from occurring. EM uses RCAs to find out what happened, why it happened, and determine what changes need to be made. An RCA is supported by a corrective action plan (CAP) and is an early step in a performance improvement plan to help identify what needs to be changed to improve EM cleanup performance. EM contracts and projects are required to conduct and document an RCA/CAP if there are cost overruns, schedule delays, missed or postponed milestones, or performance shortcomings. Any baseline or life-cycle change requiring EM-2 or higher approval authority will be accompanied by an RCA. Site managers shall establish the requirements governing conduct of RCAs for all other reasons; however, EM senior management reserves the right to request an RCA at their discretion.