

**Project Management Approach to Transition of the Miamisburg Closure Project
From Environmental Cleanup to Post-Closure Operations**

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ABSTRACT

The U.S. Department of Energy (DOE) used a project management approach to transition the Miamisburg Closure Project from cleanup by the Office of Environmental Management (EM) to post-closure operations by the Office of Legacy Management (LM). Two primary DOE orders were used to guide the site transition: DOE Order 430.1B, *Real Property Asset Management*, for assessment and disposition of real property assets and DOE Order 413.3, *Program and Project Management for Acquisition of Capital Assets*, for project closeout of environmental cleanup activities and project transition of post-closure activities. To effectively manage these multiple policy requirements, DOE chose to manage the Miamisburg Closure Project as a project under a cross-member transitional team using representatives from four principal organizations: DOE-LM, the LM contractor S.M. Stoller Corporation, DOE-EM, and the EM contractor CH2M Hill Mound Inc. The mission of LM is to manage the Department's post-transition responsibilities and long-term care of legacy liabilities and to ensure the future protection of human health and the environment for cleanup sites after the EM has completed its cleanup activities.

INTRODUCTION

The Miamisburg Closure Project, formerly known as the Miamisburg Environmental Management Project, Mound Laboratory, Mound Plant, or the Mound Site is located in Miamisburg, Ohio, 10 miles south of Dayton, Ohio. The plant was built in 1946 to support research and development, testing, and production activities for the U.S. Department of Energy's (DOE's) defense nuclear weapons complex and energy research

programs. This mission continued until 1994, when these activities were transferred to other DOE facilities. The Mound Plant mission involved production of components that contained plutonium-238, polonium-210, hydrogen-3, and large quantities of high explosives. As a result of these past operations, some buildings, soils and groundwater are contaminated with radioactive and hazardous chemicals.[1] The U.S. Environmental Protection Agency (EPA) placed the site on the National Priority List (NPL) in 1989 because of chemical contamination present in the site groundwater and because of the site's proximity to a sole-source aquifer. On September 30, 1994, the DOE Defense Programs (DP) mission ceased, and the DOE Office of Environmental Management (EM) became the "owner" of the Mound site on October 1, 1994. Transferring the DP mission to other sites and removing the DP inventories was the major emphasis for both DP and EM for the next 3 years. Remediation of the Miamisburg Closure Project was organized by potential release sites (PRS). DOE and its regulators then evaluated each PRS or building separately and used DOE's removal action authority under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) [2] to remediate the PRS sites and buildings, as needed.

Accelerating Closure

Since 1989, EM has addressed the legacy of waste through contract removal, stabilization, and disposal of radioactive and chemical waste while performing environmental restoration of the Mound site. Clean up and environmental restoration of the Mound site since 1995 has been under the direction of the EM Ohio Field Office (OFO) with a goal of completing the environmental restoration based on the potential site land use within a decade. Part of OFO's vision of responsible stewardship was and is to serve community needs by proactively seeking stakeholder involvement in the planning and decision making processes.

Most significantly, DOE and its regulators developed an approach in 1995 concerning decisions about the environmental restoration of the Mound site and its facilities. The approach was called the Mound 2000 process. This process addressed the environmental issues associated with the restoration of the site, DOE's exit from the site, and deletion of the site from the National Priorities List (NPL). In January 1998, a future site plan was developed with stakeholder involvement that included transfer of the site to the Miamisburg Mound Community Improvement Corporation (MMCIC) for reuse as a commercial/industrial complex. A sales contract and Memorandum of Understanding (MOU) were signed between DOE and the MMCIC that provided stakeholder expectations involved in the transfer of property. Fig. 1. shows the site in 2002 prior to the CH2M Hill Mound, Inc. contract cleanup, and Fig. 2. shows the significant progress in 2005 made in acceleration of site remediation.

INITIATION PHASE

In fiscal year 2004, DOE proposed establishment of the DOE Office of Legacy Management (LM) in the President's Budget Request to Congress. DOE-LM was created as a separate DOE office and designated with responsibilities related to the downsizing or

transition of DOE sites. The LM mission was to actively support the transition of responsibilities from EM to LM during the final years of project closure. From the beginning of the project, DOE leadership required the transition process to be managed as a project.

EM, LM, and their contractors conducted a series of kickoff or checkpoint meetings during the initiation phase of the Mound site transition project to exchange ideas on the ground rules, project team participants, and the scope of the effort. At the time the initial meetings were conducted, DOE had issued multiple planning guidance documents that provided the definition of the project scope. These documents, the *Site Transition Framework (STF)* and *Terms and Conditions for Site Transition (T&Cs)*, describe EM's and LM's expectations regarding the transition process and the requirements up to and including the point of programmatic transfer.[3] These planning guides cited DOE Order 413.3 *Program and Project Management for the Acquisition of Capital Assets* that



Fig. 1. Mound site 2002



Fig. 2. Mound site 2005

established the framework for implementing principles of line management accountability, effective up-front planning, management of risk, accurate performance measurements, and communication with stakeholders. For Environmental Restoration (ER) and Facility Disposition Projects driven by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) the following Critical Decisions (CD) are included:

- CD-0, Approve Mission Need,
- CD-1, Approve Preliminary Baseline/Proposed Work Plan,
- CD-2/3 combined, Approve Performance Baseline, and
- CD-4, Project Closeout and site is transferred into long-term stewardship (LTS).

Planning during this timeframe included the Transition/Closeout Phase when the project would approach completion and had progressed to formal transition in which a project may seek approval to transition to LTS (CD-4).

Another guidance document was DOE Order 430.1B, *Real Property Asset Management*, [4] which took a corporate and performance-based approach to real property life-cycle asset management that linked real property asset planning, programming, budgeting, and evaluation to the program mission and performance outcomes. The guidance provided the

requirements for the disposition and LTS of the project, as well as outlined the surveillance and maintenance activities conducted through the facility life cycle, addressed the protection of workers, the public and the environment. Several brainstorming sessions were held to identify specifically how the guidance affected the characteristics of the project and the planned transition from EM to LM. The challenge was to capture necessary actions from ongoing projects and develop yet another project to facilitate the transition.

The site transition project planning began with the development of the Mound Site Transition Team (MSTT) that included members from DOE-EM, DOE-LM, CH2M Hill Mound Inc., and S. M. Stoller Corporation. Interfaces among this multi-organizational team would provide the basic plan for communication through the use of key points of contact and weekly meetings that clearly defined objectives for transition. Communication and team involvement would be the keys to monitoring progress toward transition. Through the use of traditional project management principles, MSTT worked on alignment of interrelated functions and coordination of activities where interactions often required tradeoffs on overlapping project requirements. Once project roles were defined, the specifics for transition were outlined on the basis of complexity, risk, and time frame; access to resources; historical information; and the schedule for physical and regulatory completion dates. The goal of MSTT was to develop a life-cycle project plan that would provide the tools necessary to plan, execute, monitor, and control progress, with the end result of closure and entry into the long-term surveillance and maintenance (LTS&M) phase of the site.

Considerations were more complex than just a contractor transition effort. Factors included the transfer from one agency to another, close out of the CH2M Hill Mound Inc. cleanup contract, and LTS&M activities of the LM contractor, S.M. Stoller Corporation. Resources were shared and coordinated across all projects utilizing a developed project management methodology that provided centralized configuration management for all the functional areas, as well coordinated overall project quality standards between the functional areas. Interdependent tasks benefited from being evaluated based on common ideas and information by the multi organizational team. The LM Site Transition Coordinator managed the scope, schedule, cost, and quality of the transition documentation through the LM contractor and posting of critical transition documents to the LM Portal (LM intranet).

As a result of those early sessions, the *Mound Site Transition Plan* (STP) was generated. This document base lined high-level scope, schedule, budget, assumptions, and risks associated with the Mound transition effort. The STP presented the overarching plan for transition of the site and was developed through a collaborative effort by EM and LM staff, as guided by the terms and conditions and the STF. The goal of the STP was to provide a high-level tool to ensure successful closeout and transition of EM's responsibilities to LM and to facilitate the transfer of the site to LM for post-closure management in a manner that will be protective of human health and the environment. The STP was created through the use of two key elements, clear milestones and an established means of communication, to control the project.

The STP contained four key elements:

- Scope and schedule of transition activities focused around the 10 STF requirements that include End State Conditions, Key Assumptions for Site Transition, Key Milestones, and Major Action Items and Responsibilities.
- Transition project costs.
- The methodologies to execute and manage the transition project, including configuration control of the milestone schedule and a plan to address risks to contract (i.e., physical completion and risks to successful transition).
- Detailed information regarding the process for closing out the transition project.

Development of the draft STP, first submitted in December 2004, included reviews by EM's Deputy Assistant Secretary for Environmental Cleanup and Acceleration and LM's Director of Policy and Site Transition. The signatures of the Office of Environmental Management Assistant Secretary (EM-1) and the Office of Legacy Management Director (LM-1) were final approving officials of the STP that was signed in March 2005.

With the overarching documents in hand and after multiple checkpoint meetings, a Mound Transition Organization Chart was developed that identified the members of the MSTT and the support role each member. The functional grouping of the team was based on the work breakdown structure (WBS) established by the STP. The teams were:

- | | |
|---------------------------|--|
| 1. Program Management | 6. Stakeholder and Regulator Relations |
| 2. Environmental | 7. Worker Pension and Benefits |
| 3. Records Management | 8. Procurement |
| 4. Information Management | 9. Project Closeout |
| 5. Property Management | |

One of the challenges of the transition team was to “think the big picture.” The big picture is both the successful and timely completion of the cleanup project under EM direction and the seamless transition of the current functions to post-closure functions managed by LM. Clearly, the big picture constituted two very different organizational goals that highlighted the different activities and problems inherent in a closure-to-implementation project across multiple organizations.

The team considered the identification of the correct team members vital. For example, in addition to having subject expertise (project knowledge) in a particular technical area, the team members also had to possess a certain level of understanding of how Miamisburg Closure Project activities had affected the relationships with the local community (stakeholders) during the years of production and cleanup, commitments that were made to those stakeholders by the previous agency, and the processes currently in place. Responsibility and interdependence of each team were emphasized through the varying

viewpoints and ongoing work that would continue long term. This team building of individuals with current site knowledge in conjunction with individuals continuing with the ongoing LM mission provided an opportunity for quality review by individuals who knew the site and the ongoing surveillance activities.

As the transition project evolved, a number of working sessions, e-mails, and phone calls led to the development of each functional team's roles and responsibilities. To further orient transition team members, the "roles and responsibilities chart" (Figure 3) crosswalk taken from the STF document was often referred to when discussions arose regarding which team had the primary responsibility and which team had a support role. This matrix proved to be very helpful, as the intent of the DOE-issued guidance had to be reviewed and interpreted for site-specific application. The roles and responsibilities chart assisted in pulling together individuals who brought disparate site knowledge and clearly defined the targets of what and by when to the team, as well as enhanced the parallel activities associated with the goal of a seamless transition. The development of the multi-organizational functional teams provided

- Participative leadership that enabled as well as empowered team members to think outside the box;
- Aligned transition goals based on a clearly established shared vision for transition and ensured that tasks were focused on accountability and ownership of the process between EM and LM; and
- Contributed to a shared responsibility for development of transition documents.

PLANNING PHASE

For the Mound Closure Project, implementation of DOE Order 430.1B was achieved with the development of a validated baseline (scope, schedule, and cost/budget) for activities required to achieve physical completion; therefore, disposition planning as required by DOE Order 430.1B was already complete for this portion of the activities. However, the incorporation of the transition project-specific activities was not clear. To an extent, the EM contractor's existing deliverables under the closure contract can be used to satisfy STF requirements as appropriate. Specifically, the contract closeout plan, post-closure scoping checklist, and associated program termination plans, and Critical Decision (CD-4) documentation could be cross-walked to address portions of the STF and the CD-4 verification process.

The difficult phases were the activities required from the point of physical completion^a up to the point of programmatic transfer to LM that had not been developed into a comprehensive project baseline. The STP was intended to meet the DOE requirement for a Disposition Plan. The STP integrated the high-level requirements for scope, schedule, and cost/budget associated with physical completion, transition, and site transfer to LM. But the detailed planning, the resources, and formal acceptance criteria of the site transition from EM to LM still were unclear.

The first step the MSST's embraced was to further develop the WBS for the transition baseline and schedule detailed planning. During the discussions developing the WBS, the "turnover package" concept emerged. It was clear that there were activities that EM would be responsible for and activities that LM would be responsible for. The challenge was to develop a project plan with pertinent information for all the team members that was clearly documented, contained the necessary contractual implications, and documented the turnover of functions from EM to LM. Thus, the turnover package concept was coined.

^a

Physical completion happens when all EM clean up work and administrative functions (i.e. records) have been completed and all necessary post closure functions have been transferred to LM.

	Work Breakdown Structure (WBS) Elements								
	1	2	3	4	5	6	7	8	9
	Program Management	Environmental	Records Management	Information Management	Property Management	Stakeholder and Regulator Relations	Worker Pension and Benefits	Procurement	Project Close-Out
Site Transition Framework Requirements (September 2004)									
I Authorities and Accountabilities									
A - Roles and responsibilities documents approved and signed.	•	•	•	•	•	•	•		
B - Entities responsible for long-term surveillance and maintenance (LTS&M) identified; funding sources identified.	•	•				•			
C - Requirements and procedures incorporate into LTS&M Plan and agreements.	•	•				•			
D - Legal authority for LTS&M identified.		•				•			
II Site Condition:									
A - The site at closure (remedies and hazards) has been described.		•			•	•			
B - Conceptual site model for LTS&M has been completed.		•				•			
C - All remedial action and documentation has been completed.		•				•			
D - Natural Resource Damage Assessment (NRDA) claims and documents have been identified.		•							
Engineered Controls, Operations and Maintenance Requirements, and Emergency/Contingency Planning									
A - Engineered controls have been identified and documented.		•				•			
B - Life-cycle estimate prepared.	•	•	•	•	•	•	•	•	•
C - Master schedule of ongoing activities prepared.	•	•	•	•	•	•	•	•	•
D - Risk-based end state identified.		•				•			
E - Operation and maintenance (O&M) activities identified, funded, and performing party selected.	•	•				•		•	
F - Emergency/contingency planning and authority identified.		•				•			
Institutional Controls, Real and Personal Property, and Enforcement									
IV Authorities									
A - Land use/institutional controls identified, approved and implemented.		•			•	•		•	
B - Property records are complete.		•	•	•	•	•			
C - Personal property transfers are completed.		•	•	•	•	•			
V Regulatory Requirements and Authorities									
A - Regulatory decision documents are identified and complete.		•				•			
B - Implemented remedy and LTS&M activities are in compliance.		•				•			
C - CERCLA 5-year review or other review results are available.		•				•			
D - NPL status, RCRA permit status, or state requirements are known.		•				•			
E - NRC license status is established.	Not Applicable								
F - Document location has been identified and documents are accessible.		•	•	•		•			
VI Long-Term Surveillance and Maintenance Budget, Funding, and Personnel									
A - Technical baseline for LTS&M has been developed.	•	•	•	•	•	•	•	•	•
B - Available funding is consistent with baseline and estimates.	•	•							•
C - Personnel requirements are identified.	•	•	•	•	•	•	•	•	•
D - A business closeout process has been developed.	•	•	•	•	•	•	•	•	•
VII Information and Records Management									
A - Transfer of information and records.		•	•	•	•				
B - Information and records planning is acceptable to stakeholders.		•	•	•	•	•	•		
VIII Public Education, Outreach, Information, and Notice									
A - List of stakeholders has been developed and is being updated.						•			
B - Updated administrative record is available to interested parties.		•	•			•			
C - Public involvement costs are estimated and funded.	•	•				•		•	
IX Natural, Cultural, and Historical Resource Management Requirements									
A - System is in place to protect information that is sensitive.			•			•			
B - Biological resources, T&E species, archeological resources identified.		•				•			
C - Location and characterization of resources needing LTS&M identified.		•				•			
Business Closure Functions, Pension & Benefits, Contract Closeout or Transfer, and Other Administrative Requirements									
X									
A - Responsibilities for administration and funding of claims and benefits identified and planned.							•		•
B - Current contractor pensions and benefits are identified and planned.							•		
C - Status of pending litigation and liabilities identified.							•		
D - Contract termination action identified (usually completed by site owner).	•	•				•	•	•	•
E - Requirements of DOE orders satisfied.					•		•		•

• Represents primary responsibility for CD-4 Documentation
 • Represents supporting responsibility for CD-4 Documentation

Fig. 3. Appendix B from the Mound *Site Transition Plan* entitled “Crosswalk of the 10 Site Transition Framework (STF) Requirements to the 9 Mound Site Transition Plan Implementation Work Breakdown Structure (WBS) Elements.”

The turnover packages were structured to contain the scope, cost and risk of now 11 different areas of turnover functions. Each turnover package was developed using a standardized project plan criteria to include:

- Summary of present activities.
- Description of the current status.
- Summary of planned future activities (scope definition).
- Resource estimates/analysis.
- Identification of milestones, commitments, and critical issues.
- Applicable documents and procedures.
- DOE and regulatory organizations.
- Identification of project personnel and individuals who would be the primary points of contact with LM through transition completion.
- Overview of the functional areas.

The project boundaries for each area were carefully defined, and all known areas required for successful execution were carefully and sometimes painfully described in the turnover packages.

The process of developing the turnover packages exposed a few inconsistencies between the WBS provided by the DOE guidance and what really was pertinent for the transition of the Mound site. For example, the effort for the ongoing employee pension and benefit programs was directed to be performed at the Headquarters level and not at the site level. The other WBS elements identified as Project Closeout, Project Management, and Procurement, after exploring and discussion, were not pertinent work scopes that could be managed by MSTT but were major DOE responsibilities because there was no handoff of ongoing activities from EM to LM.

During the process of developing the turnover packages, it was discovered that there were major scopes of work that warranted their own turnover package at the same WBS level. Specifically, the Environmental area contained two distinct areas of work: the Compliance area and the Operational and Maintenance of the LTS&M program. The Records Management area contained what was determined to be three areas of transition work. The final records turnover packages were Energy Employees Occupational Illness Compensation Act (EEOICPA), Active Records (including Freedom of Information Act and Privacy Act), and the CERCLA Administrative Record effort.

With the content and the number of turnover efforts identified, documenting the activities, ownership, scope, schedule, cost, and CD-4 requirements formally began with the MSTT establishing the initial drafts of the packages. This required a comprehensive examination of current site activities that would transition into post closure processes.

The findings were broken into measurable pieces that included the optimum transition/turnover date. The criteria for the best date for turnover was the date that would result in the least risk for both completion of the cleanup contract and provided the most likelihood of success for a seamless transition from EM to LM. Once the date was established, then the steps required to meet the identified dates were detailed, ownership was established, and any issues associated with the transition process were captured in the turnover package. The resources and cost required for LM to conduct the transitioned activities post-closure were also estimated and documented.

The final major ingredient of the turnover package was the CD-4 Evidence of Completion requirements for project closeout and approval for start of operations (LTS&M). The use of the CD-4, requirement for the controlled handoff of the EM closure sites to LM had to again be reviewed and interpreted for the appropriate graded approach at the Mound site that would complete transition to operations. The review would include DOE approval of Environmental, Safety and Health documentation, an operational readiness review, and an acceptance report. The MSTT members develop the formal evidence of completion criteria for acceptance of the Mound site. The end product developed into a large matrix that condensed the milestones of the STP, the STF criteria, the transition terms and conditions guidance, and established the "evidence of completion" requirements for site transition of the EM mission. The evidence of completion requirements were indexed by WBS and placed into the corresponding turnover package CD-4 requirements section.

Throughout the development of the planning documents, special focus was placed on the content being correct and supportive of all members of the MSTT through careful use of a defined approach and balancing competing demands. Standardization of the documents and a global look at all of the planning documentation ensured that dates were consistent, logic ties were maintained to ensure consistency, and accurate information was being provided across the board. Configuration control was accomplished by utilizing single points of contact for document control and posting documents to the LM Portal for team member access. The initial drafts were discussed and reviewed jointly by EM, CH2M Hill, Mound, Inc., and MSTT members in an effort to ensure the varying agency and contractor requirements were satisfied. This approach resulted in many revisions and rewrites that demonstrated the configuration control that had been put in place was effective in providing the most recent rewrite to all members. Even with the reviews by all, agreements on the final path forward defined within the turnover packages were still difficult to obtain. The differing goals of the team members, existing contractual requirements, and the changing vision of a post-closure Mound site were not easy to reconcile in a final written format.

The dedication of the team to provide a comprehensive package resulted in approval of the Mound Closure Project Site Transition Turnover Packages on August 12, 2005. The signatories were the DOE/ Miamisburg Closure Project Transition Project Manager and the DOE/LM Site Transition Coordinator. The approval documented the commitment to the scope, schedule and costs associated with the implementation of the turnover package activities leading up to programmatic transfer of the site. This was a very significant

milestone for the MSTT. The approval of the site-specific planning agreements now created an environment by which the contractual and fiscal alignments and project management implementation phase could begin.

The final planning document, the master site transition baseline schedule, was then created after several planning sessions and group discussions within each functional area. Consolidation of the individual turnover package schedules was accomplished using Microsoft Project and a careful review of the individual submissions and overlaying the logic ties between the task items. The master schedule included the lower tier schedules developed within each turnover package and was the compilation of those schedules into a consolidated master schedule.

EXECUTION PHASE

The Mound site transition project is now (December 2005) in the execution phase. A quarterly status of the Master Transition Schedule has been performed. Minor delays in the execution of the turnover package efforts have occurred as the result of FY 2006 Budget Continuing Resolution, contractual discussions, and negotiated task order contracts that reflect the scope described in the turnover packages. To the extent possible, the various turnover tasks regarding procedures and process transition, co-location of resources, and the drafts of the memorandums of agreement have occurred.

CH2M Hill Mound, Inc., S.M. Stoller Corporation, and DOE transition personnel are sharing the same office building on the Mound site. This move has been invaluable as job shadowing, quality control reviews, and the transfer of site knowledge into the LM mission are becoming realities. The development of teamwork and progress toward the seamless transition is being achieved incrementally each day. With the close working environment, daily and weekly meetings are routinely conducted to gauge the progress against the master baseline transition schedule and to quickly highlight any obstacles that may develop. Of particular concern are any changes to risk, assumptions, or other turnover milestones that will affect the current progress.

As issues are resolved, quarterly readiness reviews are planned. These reviews will center on the delivery of the CD-4 Evidence of Completion documents and completion of the master site transition schedule tasks. Several preliminary meetings have been conducted to develop the readiness review process and the DOE CD-4 checklists. The results of the quarterly reviews will ultimately serve as performance reports to EM-1 and LM-1 as a status report on the Mound Transition Project.

CLOSEOUT

Figure 4 presents the project management life cycle for transition of the Mound site. The flowchart illustrates the inputs and the outputs that are necessary for successful process planning, execution, and completion. Definitions and descriptions set forth in the transition process interactions of the functional teams are an attempt to solidify a somewhat fluid process and enforce the benefits of using project management standards to achieve the desired outcome.

It is envisioned that the CD-4 process will continue as planned per the guidance. CD-4 quarterly reviews will be conducted between EM and LM with attention to the completion of the EM mission at Mound. The CD-4 assessment will include readiness reviews for LM to accept the Mound site and will also establish completion for the contract, financial, and environmental elements of site transition.

The current date for programmatic transition of the Mound site from EM to LM is scheduled for October 1, 2007. By that time, all described turnover package work scope will have been transferred, processes will be in place, and a seamless transition is envisioned.

As part of the EM/LM terms and conditions criteria, a lessons learned document will be generated and issued regarding the successes and the failures of the cleanup contract, the transition contract, DOE policies, and implementation of the policies. Estimated completion of the Mound lessons learned document is early FY 2007.

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Project Management Life Cycle for Transition of the Mound Site

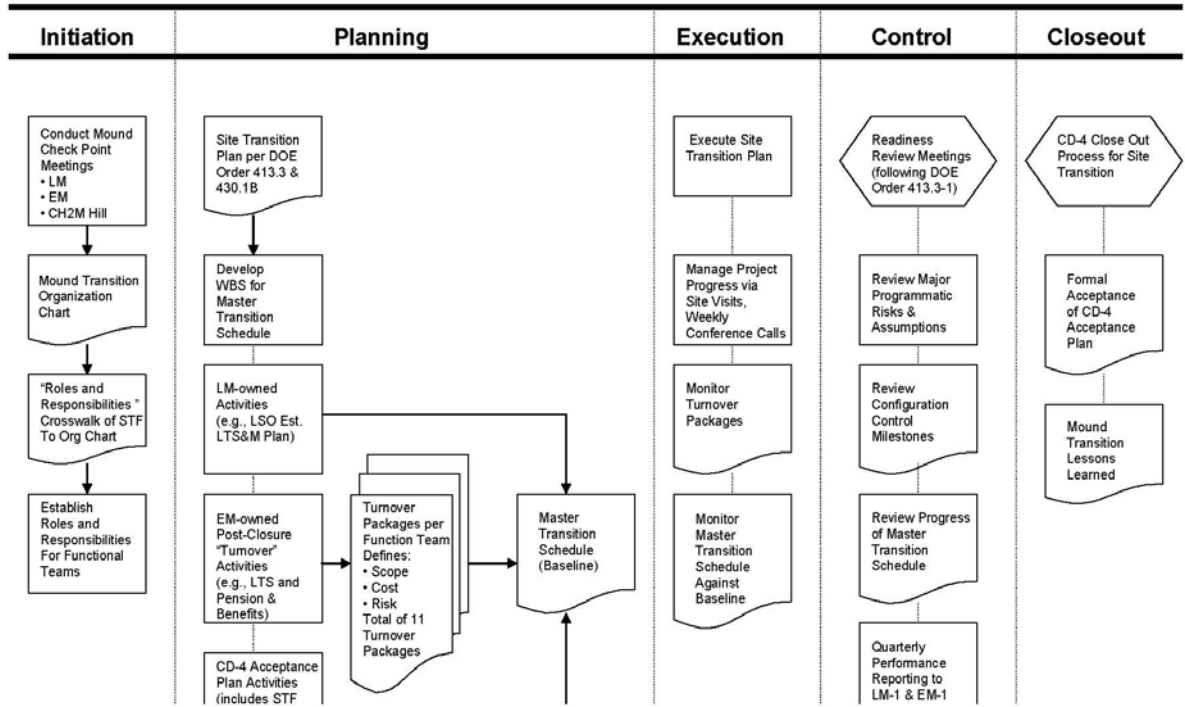


Fig. 4. Project management life cycle for transition of the Mound site