

2.4 Completion Schedule for the EM Program

Each Operations/Field Office estimated a completion date for major EM activities at each site and for each of its projects. The definition of “complete,” as outlined in Chapter 1, does not assume that the EM program or DOE will leave a site when cleanup activities at that site are considered complete. Instead, sites describe planning assumptions and cost estimates for long-term care in light of the anticipated end state of the site. The EM program will prepare a separate Stewardship Report that will discuss post-EM closure activities in more detail. Exhibit 2-7 presents the cumulative annual completion schedule for the EM sites. As shown in Exhibit 2-7, EM completed cleanup at 50 sites before 1997.

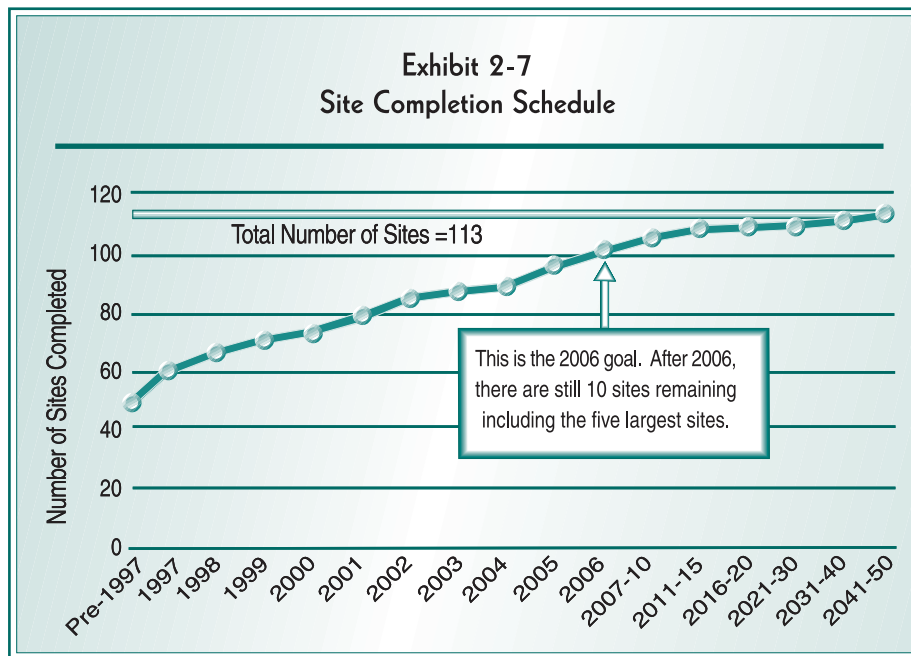


Exhibit 2-8 shows the planned baseline completion date for each site which had cleanup activities underway at the beginning of FY 1997. The exhibit is organized by state. Including sites completed prior to 1997, the EM program is estimating completion of 103 of 113, or over 90 percent, of the sites by 2006 for which the Environmental Management program had or has cleanup responsibility. This goal assumes that EM completes the Rocky Flats Environmental Technology Site and the Fernald Environmental Management Project by 2006 and 2005, respectively. If these goals are realized, only 10 sites will not complete their EM missions by 2006. Appendix C presents a complete list of all geographic sites.

Exhibit 2-8
Baseline Life-cycle Costs and Completion Dates By State

State	Operations/ Field Office	Site	Life-cycle Cost (in millions of constant 1998 dollars) ^a	Completion Date
Alaska	Nevada	Amchitka Island	7	2001
California	Albuquerque	Sandia National Laboratories - California	Included in SNL - NM	1999
California	Oakland	Energy Technology Engineering Center (ETEC)	229	2006
California	Oakland	General Atomics Site	11	2000
California	Oakland	General Electric Vallecitos Nuclear Center	21	2005
California	Oakland	Geothermal Test Facility	1	1997
California	Oakland	Laboratory for Energy-Related Health Research	22	2002
California	Oakland	Lawrence Berkeley National Laboratory	79	2003
California	Oakland	Lawrence Livermore National Laboratory Main Site	283	2006
California	Oakland	Lawrence Livermore National Laboratory Site 300	119	2006
California	Oakland	Stanford Linear Accelerator Center	5	2000
Colorado	Albuquerque	Grand Junction Office Site	15	2002
Colorado	Albuquerque	Maybell UMTRA Site	35	1998
Colorado	Albuquerque	Naturita UMTRA Site	60	1998
Colorado	Albuquerque	New Rifle UMTRA Site	9	1997
Colorado	Albuquerque	Old Rifle UMTRA Site	9	1997
Colorado	Albuquerque	Slick Rock Old North Continent UMTRA Site	4	1997
Colorado	Albuquerque	Slick Rock Union Carbide UMTRA Site	4	1997
Colorado	Nevada	Rio Blanco	12	2005
Colorado	Nevada	Rulison	4	1998
Colorado	Rocky Flats	Rocky Flats Environmental Technology Site	6,308	2010/ 2006 ^b
Florida	Albuquerque	Pinellas Plant	263	1997
Idaho	Chicago	Argonne National Laboratory - West	14	2000
Idaho	Idaho	Idaho National Engineering and Environmental Laboratory	16,345	2050
Illinois	Chicago	Argonne National Laboratory - East	84	2002
Illinois	Chicago	Fermi National Accelerator Laboratory	2	1997
Illinois	Chicago	Site A	<1	1997
Iowa	Chicago	Ames Laboratory	1	1999
Kentucky	Albuquerque	Maxey Flats Disposal Site	13	2002
Kentucky	Oak Ridge	Paducah Gaseous Diffusion Plant	902	2010
Massachusetts	Oak Ridge	Ventron (FUSRAP Site)	NA	1997
Mississippi	Nevada	Salmon Site	9	1999
Missouri	Albuquerque	Kansas City Plant	83	1999
Missouri	Oak Ridge	Weldon Spring Site	365	2002
Nevada	Nevada	Central Nevada Test Site	19	2006
Nevada	Nevada	Nevada Test Site	2,149	2014
Nevada	Nevada	Shoal Site	18	2004

Exhibit 2-8 (Continued)
Baseline Life-cycle Costs and Completion Dates By State

State	Operations/ Field Office	Site	Life-cycle Cost (in millions of constant 1998 dollars) ^a	Completion Date
Nevada	Nevada	Tonopah Test Range Area	Included in Nevada Test Site	2007
New Jersey	Chicago	Princeton Plasma Physics Laboratory	11	1999
New Jersey	Oak Ridge	New Brunswick Site (FUSRAP Site)	NA	1997
New Mexico	Albuquerque	Los Alamos National Laboratory	1,578	2017
New Mexico	Albuquerque	Lovelace Respiratory Research Institute (formerly ITRI)	17	2000
New Mexico	Albuquerque	Sandia National Laboratories - NM	141	2001
New Mexico	Carlsbad	Waste Isolation Pilot Plant	7,722	2038
New Mexico	Nevada	Gasbuggy	10	2005
New Mexico	Nevada	Gnome-Coach	11	2004
New York	Chicago	Brookhaven National Laboratory	210	2006
New York	Oakland	Separations Process Research Unit (SPRU)	183	2014
New York	Ohio	West Valley Demonstration Project	1,114	2005
North Dakota	Albuquerque	Belfield UMTRA Site	0	1998
North Dakota	Albuquerque	Bowman UMTRA Site	0	1998
Ohio	Oak Ridge	Portsmouth Gaseous Diffusion Plant	835	2005
Ohio	Ohio	Ashtabula Environmental Management Project	93	2003
Ohio	Ohio	Columbus Environmental Management Project - King Avenue	22	1998
Ohio	Ohio	Columbus Environmental Management Project - West Jefferson	117	2005
Ohio	Ohio	Fernald Environmental Management Project	2,689	2008/ 2005 ^c
Ohio	Ohio	Miamisburg Environmental Management Project	799	2005 ^d
South Carolina	Savannah River	Savannah River Site	29,695	2038
Tennessee	Oak Ridge	Oak Ridge Reservation (including Y-12, ORNL, ETTP)	10,976	2013
Texas	Albuquerque	Pantex Plant	112	2002
Utah	Albuquerque	Monticello Millsite and Vicinity Properties	129	2001
Washington	Richland	Hanford Site	50,376	2046
Multiple States	NA	Long Term S&M Operations Office Costs Allocated to Multiple States	2,260	NA
Multiple States	NA	Program Direction Costs (Federal Salaries, Federal Travel, and Other Costs)	7,608	NA
Multiple States	NA	Technology Development Programs	2,885	NA
Multiple States	NA	All Other (Includes HQ and Other National Programs Costs)	143	NA

^aIndividual costs may not sum to \$147.3 billion due to rounding.

^bThe Rocky Flats Environmental Technology Site is committed to accelerate activities to complete the site in 2006.

^cThe Ohio Field Office and the Fernald Environmental Management Project are committed to accomplishing completion scheduled for 2008 by the end of 2005.

^dPending validation of the current baseline, it is the goal of the Miamisburg Environmental Management Project and the Ohio Field Office to clean up the site by the end of 2003.

2.5 Maintaining Schedules

The EM program developed schedule estimates, making certain assumptions about the availability of funding. While the availability of funding is a critical influence on schedule, funding alone is not sufficient to ensure the successful completion of the objectives outlined in this document, which is based on numerous assumptions about scope and the achievement of key interim milestones.

To elevate key issues and focus management attention, sites have identified those activities and events (key interim milestones) that must occur if the EM program is to remain on schedule and correspondingly within cost. For these activities and events, sites have assigned a programmatic “risk” score in each of three areas: technology (do we have the technology to do our work?), scope (do we know how much work there is to do?), and intersite dependency (do we know how and where we plan to store, treat, and dispose of material and waste?). One example of such an activity is the signing of a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of Decision (ROD), through a process that must conform to regulatory requirements. In addition, some activities, such as the vitrification of high-level waste at the Hanford Site, can be completed only as quickly as capacity allows. In total, approximately 500 critical events and activities were reported for all sites. Exhibit 2-9 shows the distribution of programmatic risk scores among the three areas. Appendix D presents a detailed discussion of programmatic risk.

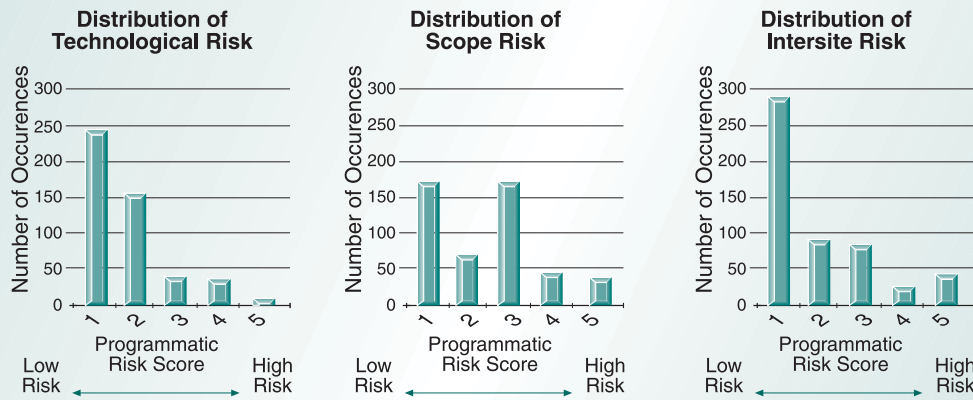
Programmatic Risk

Programmatic risk is defined as the risk to cost, schedule, and technical performance posed when an activity is not completed as scheduled. Sites document programmatic risk for activities on the critical closure path diagrams and on disposition maps.

There are three categories of programmatic risk:

- Technology (do we have the technology to do our work?)
- Scope (do we know how much work there is to do?)
- Intersite Dependency (do we know how and where we plan to store, treat, and dispose of material and waste?)

Exhibit 2-9
Distribution of Programmatic Risk Scores



Sites identified more than 100 activities and events that had high programmatic risk scores (four or five on a scale of one to five) in any one of the three programmatic risk areas. Many of the activities that have a high programmatic risk score are crucial to the mission of the EM program. A high programmatic risk score means that the EM program must work diligently to ensure that those activities and events do not cause disruptions in schedule and subsequent increases in cost. One way EM is working to reduce programmatic risk is by ensuring that planned investments in science and technology are focused on the

Sample Critical Events and Activities

FY 1998, FY 1999, and FY 2000

- The Waste Isolation Pilot Plant opens for acceptance of transuranic waste in FY 1998.
- Nuclear material at the Fernald Environmental Management Project is packaged and shipped off site by September 1999.
- Fuel removal starts at the K-Basin at Hanford by July 1999.
- Records of Decision are signed at Oak Ridge for the East Tennessee Technology Park, Bethel Valley, Melton Valley, and Upper East Fork Poplar Creek between now and February 2000.
- West Valley selects a high-level waste receiving site by September 1998.
- The Savannah River Site is available to receive fluoride residues from the Rocky Flats Environmental Technology Site by April 1999 for stabilization.

critical events and activities with the highest technological risk. The text box lists a few of the high programmatic risk activities that must take place over the next three years. Critical activities and events that have high programmatic risk are discussed in the Operations/Field Office summaries in Chapter 3 and Appendix E.

2.6 Reconciliation with DOE FY 1997 Financial Statement

There are differences between the total life-cycle costs reported in *Paths to Closure* and the amount of unfunded environmental liabilities in the Department's FY 1997 financial statement. This section discusses the development of DOE's annual financial statement including the role of *Paths to Closure* and provides a reconciliation of the cost differences between the two documents.

The Government Management Reform Act of 1994 requires the Department of Energy to prepare annual audited financial statements reflecting the overall financial position of the Department, including assets and liabilities. The Act required submittal of the first financial statement by March 1, 1997 for the preceding fiscal year (FY 1996) and, for each year afterwards, requires the submittal of a statement by March 1 for the preceding fiscal year. By a significant margin, the Department's largest liability is its environmental liability.

The *Discussion Draft* is the basis for most of the environmental liability estimate in the Department's FY 1997 financial statement. The *Discussion Draft*, issued in June 1997, evolved into this report. Future DOE financial statements will rely on subsequent versions of *Paths to Closure* to estimate EM's portions of the Department's environmental liability. As a result of government-wide accounting principles to which federal government financial statements must conform and other reasons, there are differences between the FY 1997 DOE financial statement estimate of environmental liability and *Paths to Closure*. This section provides a reconciliation of the differences between the FY 1997 DOE financial statement and *Paths to Closure*.

The Department's FY 1997 Consolidated Statements of Financial Position⁵ (financial statement) contains an unfunded environmental liability amount different from the EM cleanup life-cycle cost estimate in *Paths to Closure* for three reasons:

- (1) The financial statement used the *Discussion Draft* as a basis for the EM life-cycle estimate due to the timing of financial statement publication;
- (2) The financial statement makes adjustments to the EM estimate; and
- (3) DOE has unfunded environmental liabilities in addition to the Environmental Management cleanup program described in *Paths to Closure*.

⁵ As contained in *U.S. Department of Energy Fiscal Year 1997 Annual Report*, (DOE/CR-0057), Washington, DC, March 1998.

Exhibit 2-10 and the discussion that follows present a more detailed reconciliation between the *Paths to Closure* and the Department's FY 1997 financial statement estimates. As described in Chapter 1, there are several key differences between the *Discussion Draft* and *Paths to Closure*. The *Discussion Draft* contained a range of costs whereas *Paths to Closure* is a point estimate. The FY 1997 financial statement used the midpoint between the *Discussion Draft's* low and high planning scenarios (without enhanced performance).

Exhibit 2-10
Reconciliation Between *Paths to Closure* Life-cycle Cost Estimate and DOE FY 1997
Financial Statement Unfunded Environmental Liabilities

Line No.	Cost Element	Amount ^a	Comment
1	EM cleanup program (billions of 1998 dollars)	\$147.3	Amount is total <i>Paths to Closure</i> life-cycle cost estimate.
2	Adjustments to reach EM cleanup program amount in financial statement including amount funded by current appropriations	(7.1)	Accounts for differences between <i>Paths to Closure</i> and <i>Discussion Draft</i> (used as basis for financial statement), conversion to 1997 dollars, and FY 1997 costs already incurred.
3	Active facilities	20.7	DOE estimate for deactivation and decommissioning of non-EM active facilities.
4	Pipeline facilities	8.7	DOE estimate for deactivation and decommissioning of non-EM inactive facilities from 1996 <i>Baseline Environmental Management Report</i> (BEMR).
5	High-level waste and spent nuclear fuel disposal	6.8	Represents DOE proportional share of Yucca Mountain repository life-cycle costs.
6	Other unfunded environmental liabilities	3.1	Represents \$2.2 billion for excess plutonium dispositioning and about \$0.9 billion for decontamination and decommissioning of inactive naval reactor facilities.
7	Total DOE unfunded environmental liabilities	179.5	Equals amount in the FY 1997 financial statement.

^a All amounts are in billions of constant FY 1997 dollars to be consistent with the DOE FY 1997 financial statement, unless otherwise noted.

The DOE FY 1997 financial statement contains two adjustments to conform to government-wide accounting principles. First, because the financial statement is reported in constant 1997 dollars, it converts constant 1998 dollars. Second, the financial statement deducts funds spent during FY 1997.

The Department's FY 1997 financial statement contains four additional categories of unfunded DOE environmental liabilities beyond the Environmental Management cleanup program liabilities:

- **Deactivation and decommissioning of active facilities managed by DOE programs other than EM** (Line 3 of Exhibit 2-10). The Department estimates this category of environmental liability using EM deactivation and decommissioning models and information from the Department's corporate real property database, the Facilities Information Management System (FIMS).
- **Deactivation and decommissioning of surplus "pipeline" facilities not managed by EM but which are generally excess to the current mission of their programmatic owners** (Line 4 of Exhibit 2-10). Although not under EM management, these facilities were assumed to be candidates for transfer to the EM work scope. The 1996 *Baseline Environmental Management Report* (BEMR) chose to include these costs. Such costs will be included, in future *Paths to Closure* reports, after a decision is made to transfer the facilities to EM.
- **High-level waste and spent nuclear fuel disposal** (Line 5 of Exhibit 2-10). This estimate represents the Department's proportional share of the geologic repository life-cycle costs.
- **Other unfunded environmental liabilities** (Line 6 of Exhibit 2-10), including dispositioning of excess plutonium under the control of the Office of Defense Programs and decontamination and decommissioning of inactive naval reactor facilities.

Section 5.1.3 describes the relationship between ongoing changes to baselines, the future annual updates to *Paths to Closure*, and DOE's future financial statements.