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Report to the Subcommittee on
Investigations and Oversight, Committee
on Public Works and Transportation,
House of Representatives

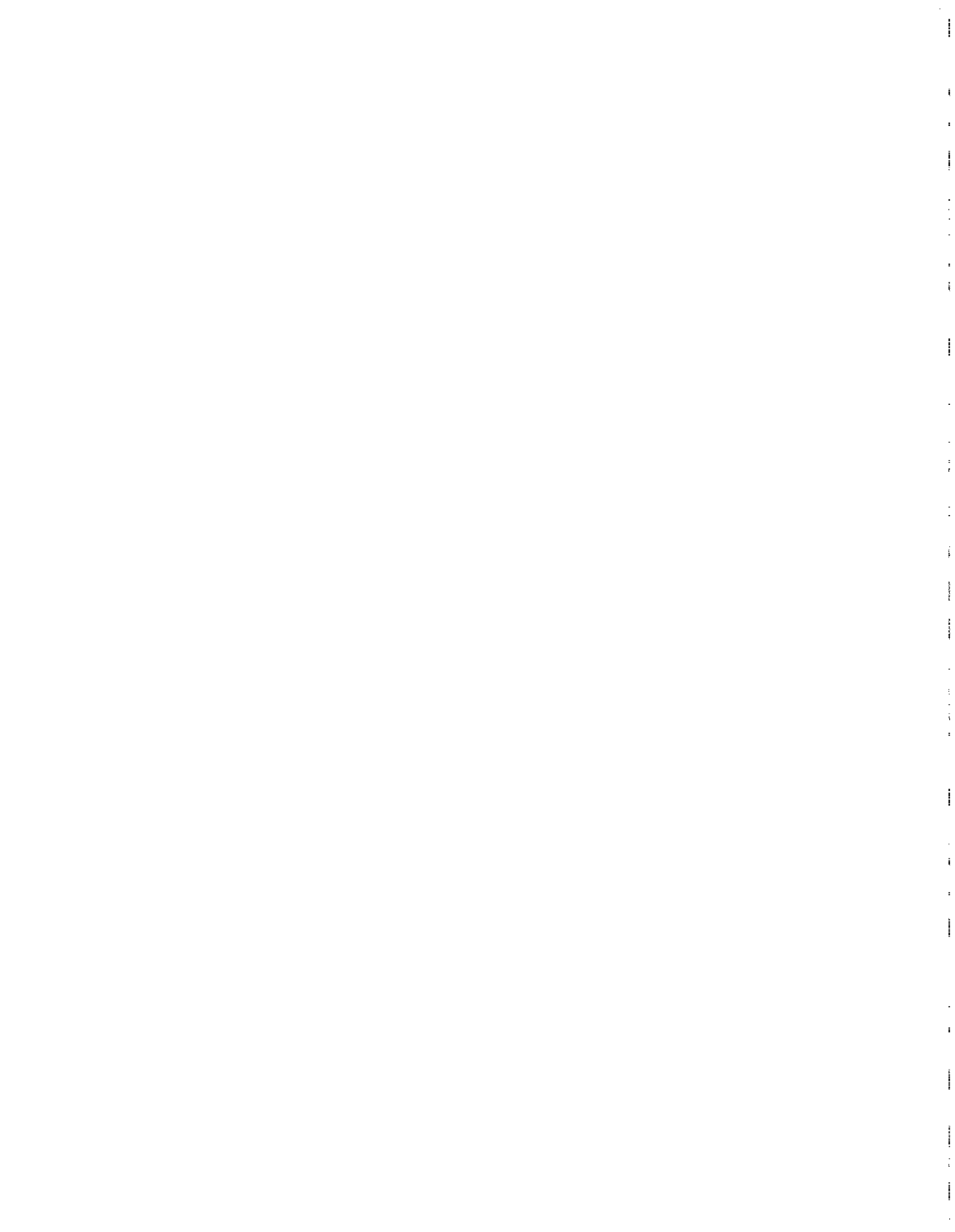
April 1994

FEDERAL FACILITIES

Agencies Slow to Define the Scope and Cost of Hazardous Waste Site Cleanups



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**Resources, Community, and
Economic Development Division**

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April 15, 1994

The Honorable Robert A. Borski
Chairman

The Honorable James M. Inhofe
Ranking Minority Member
Subcommittee on Investigations
and Oversight
Committee on Public Works
and Transportation
House of Representatives

Environmental laws require federal agencies to clean up hazardous and radioactive waste contamination at facilities that they own or use or previously owned or used. This cleanup effort is now recognized as one of the major environmental challenges facing the nation today. Collectively, federal agencies own about one-third of the nation's land area, on which, in some cases for decades, they have operated or issued permits for a wide range of facilities that involve hazardous substances.

Agencies' early cleanup experiences indicate that the overall federal cleanup effort will be enormously expensive and will require many decades to complete. Published estimates of the government's cleanup liability now range in the hundreds of billions of dollars and are still growing. Since a crucial step in planning for and effectively managing the cleanup effort is defining its scope and cost, you asked us to (1) determine the status of federal efforts to identify facilities potentially requiring cleanup and to estimate future cleanup costs and (2) discuss obstacles to agencies' progress in these areas.

Results in Brief

Although federal law has required agencies to identify and report hazardous waste facilities for more than a decade, the government still lacks a comprehensive inventory of such facilities. In the intervening years, federal agencies have made uneven progress toward identifying their universe of facilities that could require cleanup. Some agencies, including the Departments of Defense (DOD) and Energy (DOE), have made substantial progress, but others, particularly major land management agencies in the Departments of Agriculture (USDA) and the Interior, are still in the early stages of developing their inventories.

Moreover, although agencies have spent billions of dollars to investigate contamination and begin cleanups at their facilities, the government lacks an estimate of its likely total cleanup liability. Some agencies, including DOE, DOD, some units of the Department of Transportation (DOT), and Forest Service, have developed preliminary or partial long-term cost estimates. These estimates, however, were developed using different methods, may not include all sites, and have generally not been updated regularly. Agencies lacking estimates include the National Aeronautics and Space Administration (NASA) and land management agencies within Interior that are likely to face significant future cleanup costs.

A number of factors have contributed to the slow progress in developing inventories at some agencies and the scarcity of up-to-date long-term cost estimates. Chief among these are the absence of certain statutory requirements and oversight by the Environmental Protection Agency (EPA), whose responsibilities include assisting and overseeing federal cleanups. Federal laws prescribe continual agency reporting of government-owned potential hazardous waste sites but do not impose deadlines for completing the inventory. Similarly, with the exception of DOE, which is now required by law to report annually a total cleanup cost estimate, neither EPA nor other agencies are required to develop estimates of the long-term costs of federal cleanups. Publicly traded private companies, in contrast, are required by federal securities laws to estimate and report their material contingent environmental liabilities. Federal requirements for reporting cleanup costs focus primarily on the preparation of near-term budget estimates. EPA's federal facilities oversight program is geared toward enforcing cleanups at known sites, not monitoring federal site discovery efforts, encouraging agencies to search actively for additional sites, or assisting in agencies' cost-estimating activities.

Slow progress in developing inventories and the lack of long-term cleanup cost estimates can hurt the federal cleanup effort. Incomplete agency site inventories can delay cleanups and prevent agencies from estimating their ultimate cleanup liabilities. The absence of such estimates, in turn, hampers the ability of the Congress and the agencies themselves to make policy decisions regarding the appropriate pace, level, and relative priority of cleanups. For instance, the lack of information on the long-term costs of agencies' cleanup programs may make it difficult for the Congress to assess whether the programs are adequately funded.

Background

The principal laws governing hazardous waste cleanup at federal facilities are the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund.

RCRA, enacted in 1976 and amended in 1984, regulates the day-to-day management of hazardous wastes and the cleanup of contamination at facilities where such wastes are or were treated, stored, or disposed of. RCRA authorities are typically used to address contamination at active facilities. CERCLA, enacted in 1980 and amended in 1986, also requires cleanups of hazardous wastes at contaminated sites. However, CERCLA's authorities are used at inactive or abandoned facilities listed on the National Priorities List (NPL), EPA's register of the nation's most contaminated sites, and are used to deal with emergencies at any site. In addition, cleanups of contaminated sites not mandated by CERCLA or RCRA may be required by state law. RCRA and CERCLA also provide for agencies to report facilities that are potentially contaminated by hazardous substances or where hazardous substances were treated, stored, or disposed of.

For CERCLA cleanups, EPA negotiates and monitors the implementation of cleanup agreements with the responsible federal agency and the affected state. RCRA cleanups are overseen by EPA or a state authorized by EPA. CERCLA directs EPA to maintain a Federal Agency Hazardous Waste Compliance Docket listing all potentially contaminated facilities reported by agencies under RCRA or CERCLA or by other sources and to update this docket every 6 months. (See app. I for further discussion of EPA's docketing process.) The docket represents the universe of federal facilities to be considered by EPA for possible inclusion on the NPL. EPA is also required by the Office of Management and Budget (OMB) to review agencies' proposed environmental budgets in order to identify priority projects and appropriate funding levels. All federal cleanups are carried out by the responsible agencies and must be funded through their own or other appropriations.

Over the last 10 years, we have conducted other multiagency reviews of federal cleanup activities. These reviews concluded that agencies have moved slowly to address hazardous waste contamination problems at their facilities and that EPA's oversight of these activities has been insufficient. For example, in 1984, we found that agencies' compliance with CERCLA's site inventory requirements and EPA's oversight of these activities were inadequate. We recommended that EPA place greater emphasis on maintaining complete and accurate information on potential hazardous

waste sites on federal lands.¹ In 1986, we reported that agencies had been slow to complete inventories of hazardous waste facilities under RCRA. We recommended that EPA increase the monitoring of agencies' site identification programs and, where needed, work with agency heads to improve such programs.² In 1987, we reported that civilian agencies had moved slowly to identify, assess, and clean up their hazardous waste sites. The report did not include recommendations, noting that amendments to CERCLA established new site-reporting procedures.³ (See the "Related GAO Products" section at the end of this report for a list of selected reports and testimonies on federal hazardous waste cleanups.)

Agencies' Site Discovery Efforts Are Uneven and Incomplete

The progress of federal agencies toward identifying their universe of facilities that could need cleanup has been uneven. Some agencies, such as DOD, DOE, and NASA, report complete inventories or substantial progress in developing inventories. Inventories at other agencies, including some that are expected to have significant cleanup problems, are still under way and, in some cases, far from complete. We summarize agencies' progress below and present additional details in appendix II.

Some Agencies Have Made Substantial Progress in Inventorying Their Sites

Officials at DOD reported that their site discovery efforts are now largely complete and that they have reported all appropriate facilities to EPA for docketing purposes. At DOE, officials maintained that most of the Department's facilities requiring cleanup have been identified, except for facilities to be decommissioned because of DOE's reduced defense operations. Thousands of facilities are expected to be decommissioned and their cleanup is expected to become a major budget item. NASA and USDA's Agricultural Research Service (ARS) also reported that their inventories are complete or nearly so.

Inventory Efforts Still Under Way at Some Agencies

Inventories of hazardous waste sites are still incomplete at USDA's Forest Service, some Interior agencies, and DOT's Coast Guard and Federal Aviation Administration (FAA). New inventory initiatives within USDA, Interior, and DOT are either under way or planned. The Coast Guard began a formal site discovery program in late 1990, and officials expect it to be completed by 2002. FAA recently formulated a site discovery program,

¹See Status of Civilian Federal Agencies' Efforts to Address Hazardous Waste Problems on Their Lands (GAO/RCED-84-188, Sept. 28, 1984).

²See Hazardous Waste: Federal Civil Agencies Slow to Comply With Regulatory Requirements (GAO/RCED-86-76, May 6, 1986).

³See Superfund: Civilian Federal Agencies Slow to Clean Up Hazardous Waste (GAO/RCED-87-153, July 24, 1987).

which it plans to implement over the next 3 to 5 years as part of a larger environmental auditing program.

Forest Service. Forest Service officials told us that they have identified all facilities on the agency's lands with potential contamination problems except abandoned and inactive mines and landfills, which they are still investigating. The Forest Service began a comprehensive survey of these sites in 1992 but has not set a deadline for the survey's completion. One Forest Service official speculated that the program may be completed in the next 3 years. On the basis of sample studies, the Forest Service projects that 2,620 mines and landfills, or 10 percent of the Service's estimated universe of potential CERCLA sites, will require cleanup. As of November 1993, the Forest Service had 79 facilities listed on EPA's docket.

Interior's agencies. So far, Interior's Bureau of Land Management has investigated only a fraction of its properties—which are estimated to include hundreds of inactive landfills and hundreds of thousands of abandoned mines—for potential hazardous waste contamination. The Bureau still lacks a program to identify such sites systematically but has recently proposed some strategies for beginning this work. Resource and staffing limitations and disagreement among the Bureau's program offices about the appropriate direction of this effort, however, have delayed its implementation. In 1989, the Bureau estimated that 10 to 15 percent of its potential sites will require substantial cleanup; according to one official we met with, the Bureau has since revised this estimate downward to between 1 and 7 percent of its hazardous waste sites. As of November 1993, EPA's docket listed 299 Bureau sites or facilities. (See app. I for a discussion of EPA's docketing policy with regard to land management agencies like the Bureau.)

At Interior's National Park Service, officials have developed an internal inventory of sites potentially requiring cleanup. On the basis of the Park Service's analysis thus far of sites on that list, one Park Service official anticipated that at least 40 more sites will be added to EPA's docket but explained that the Park Service's inventory process has not progressed to the point where the Park Service can estimate the final number of reportable sites. As of November 1993, EPA's docket listed 43 Park Service sites or facilities.

Officials from Interior's Fish and Wildlife Service (FWS) said that they have discovered hazardous waste sites through a variety of activities, including refuge contaminant surveys and preacquisition land surveys, but also said

that FWS lacks a comprehensive program for identifying such sites. They also said that they are developing procedures for conducting environmental audits at their refuges, which they believe will help them to identify additional sites. FWS officials do not know when their inventory efforts will be complete. As of November 1993, EPA's docket listed 33 FWS sites or facilities.

Recent studies by congressional committees and Interior itself conclude that despite the possible enormity of cleanup problems at Interior, its bureaus have failed to adequately identify and address problems of hazardous waste contamination on their lands. Interior's Office of the Inspector General described overall progress as "inordinately slow" and estimated that the Department's site identification process remains "years from completion." As of November 1993, EPA's docket listed 428 sites or facilities belonging to Interior's bureaus.

In response to these and other criticisms, Interior officials have begun some Department-wide initiatives to facilitate the inventory's completion, including (1) reviews of existing site information to target areas where further efforts are needed, (2) improvements to Interior's data-tracking capabilities, and (3) efforts to modify existing cost-estimating techniques for use at Interior sites.

Interior and USDA officials indicated that several related factors contributed to slow progress in developing inventories at land management agencies, including (1) the vast extent of agencies' landholdings and the multiple uses to which these lands have been put, (2) insufficient funding, and (3) debate over federal cleanup liability at abandoned mine sites. Public lands administered by these agencies—hundreds of millions of acres in total—have been put to a variety of uses involving hazardous substances, such as mining and waste disposal. Many of these activities were conducted by private entities with little federal oversight or without government knowledge, and information to indicate potential contamination at these locations is therefore limited.

The sheer size of these agencies' landholdings and resource limitations have also slowed the process in developing inventories, according to agency officials. Interior officials said that their inventory effort had been seriously underfunded especially in comparison to some other agencies' efforts. Interior's bureaus are exploring opportunities for using advanced survey techniques and have requested environmental data obtained

through remote sensing surveys from other governmental entities to facilitate site discovery.

Debate over the government's liability under CERCLA for cleaning up hazardous waste contamination at abandoned mines has also hindered the progress of inventories at land management agencies. At issue are (1) whether mine waste is exempted from CERCLA's requirements and (2) whether the government's limited landowner role and its statutory responsibility to promote mining on federal lands render it immune from cleanup liability at abandoned mine sites. Some agencies have been reluctant to devote resources to investigating abandoned mines for hazardous waste contamination pending clarification of these liability issues.⁴ The Forest Service and Interior face the largest potential liability in this area, since they have an estimated 25,000 and 300,000 mines, respectively, on their lands.

Agencies' Costs Are Largely Unknown

The effort to clean up federal hazardous waste sites is likely to be among the costliest public works projects ever attempted by the government. Estimates of the full costs of the effort and the costs of meeting alternative cleanup standards would be helpful for planning and management. But agencies' estimates are generally incomplete or preliminary and not consistently developed. We summarize our findings on agencies' cost estimating below. (See app. III for more details.)

Department of Defense

Since 1985, DOD has made several estimates of its long-term cleanup costs. These estimates have grown steadily from an initial estimate of \$5 billion to \$10 billion in 1985 to its latest estimate of \$24.5 billion, made in 1991. The latest estimate was developed by projecting historical costs forward, rather than by building from estimates of individual installation costs.

We reported in 1991 that DOD's \$24.5 billion estimate does not represent the Department's full cleanup liability because (1) it may not include all potential sites to be cleaned up, (2) most studies of known sites have not been completed, (3) the time required for studies and cleanups could be

⁴Two federal appeals courts have held that hazardous components of mining waste are covered by CERCLA, even though the mining waste itself is exempt. [*Eagle-Picher Industries v. U.S.*, 759 F.2d 922 (D.C. Cir. 1985) and *Louisiana-Pacific Corp. v. ASARCO, Inc.*, 6 F.3d 1332 (9th Cir. 1993)].

longer than expected, and (4) some facilities are requiring more cleanup than originally anticipated.⁵

Despite the evidence of the need to update its cleanup estimates regularly, DOD lacks a system for accomplishing this but instead has developed new estimates as it deemed necessary. DOD's Deputy Under Secretary of Defense for Environmental Security announced recently, however, that improved cost estimating would be an element in DOD's new system for managing cleanups. In recent congressional testimony, the Deputy Under Secretary said that

"While we do have cost estimates for our site cleanups, the accuracy of our estimates, especially in the out-years, is low. At the time of our [\$24.5 billion] estimate, many uncertainties prevailed, such as total number of sites, future land uses, and level of cleanup. We lack a Department-wide methodology for accurate, uniform cost estimation and projection. We have created a [Program Integration and Investment Committee] to recommend ways to improve requirements determination and to build an integrated Planning, Programming, and Budgeting System (PPBS) for our cleanup activities."⁶

Department of Energy

In 1988, DOE conducted a formal study to comprehensively estimate its long-term cleanup costs. The study concluded that costs would amount to \$35 billion to \$64 billion to clean up contaminated soil and groundwater at inactive facilities and \$3 billion to \$5 billion for decontamination and decommissioning (D&D) at surplus facilities. The estimate was based on data submitted by individual DOE field and program offices. This was DOE's last official estimate of its total cleanup costs. A more recent University of Tennessee study estimated DOE's total cleanup costs as high as \$360 billion. DOE officials do not dispute this estimate but, until recently, have not attempted to update the Department's 1988 study. In 1992, DOE revised its original estimate of D&D costs to reflect anticipated growth in the scope of its D&D program. DOE's new estimate projected total D&D costs for 1,700 surplus buildings at \$54 billion, although DOE officials have acknowledged that the number of D&D facilities will eventually be much higher. Predicting DOE's ultimate costs is also complicated by the fact that the cleanup technology to deal with some of DOE's hazardous wastes has not yet been fully developed. DOE is currently working to develop a new total cost estimate that will be based on projections for individual cleanup

⁵Hazardous Waste: DOD Estimates for Cleaning Up Contaminated Sites Improved but Still Constrained (GAO/NSIAD-92-37, Oct. 29, 1991).

⁶Testimony of Sherri Wasserman Goodman, Deputy Under Secretary of Defense (Environmental Security) before the U.S. Senate, Committee on Governmental Affairs (Sept. 21, 1993).

projects. New statutory provisions now require DOE to update and report a total cleanup cost estimate each year, beginning in 1995.

Other Agencies That Have Made Estimates

Agencies we reviewed at USDA and DOT also reported preliminary or partial estimates of their future cleanup costs. At the USDA's Forest Service, officials recently estimated that about \$1 billion will be needed to complete CERCLA cleanups at 2,620 abandoned mines and landfills over the next 30 to 40 years. They also estimated that an additional \$1 billion will be needed for natural damage assessments and restoration at those sites. These estimates were based on the average costs of past cleanups multiplied by the number of sites expected to require future work. At ARS, although a formal total cost estimate has not been developed, one USDA official told us that cleanups of facilities should be completed by 1996 and that the cost of these cleanups is not likely to exceed \$10 million. At DOT, Coast Guard officials now estimate that it will cost \$85 million to clean up contaminated sites that have already been identified. FAA estimates that cleanup costs for the period 1995 to 2002 for known and anticipated sites will total about \$183 million. FAA's estimate was developed by applying historical costs to an estimated 560 sites assumed to be contaminated.

Agencies Lacking Estimates

Despite the fact that their cleanup costs could be significant, neither NASA nor any of Interior's bureaus we reviewed—the Bureau of Land Management, FWS, and the National Park Service—has estimated its long-term cleanup liability. One EPA official we contacted told us that although NASA doesn't have many contaminated facilities, the total costs of cleaning them up could be considerable. Likewise, Interior's Office of the Inspector General anticipates that the eventual cost to the Department to investigate and clean up its hazardous waste sites will be substantial. (See app. IV for projected budgets for these and other agencies that we reviewed. These figures are not necessarily indicative of the agencies' long-term cleanup liabilities.)

Officials at most agencies identified uncertainty about critical aspects of cleanup, such as the specific nature and extent of contamination problems and type of cleanup strategies needed, as a major obstacle to estimating long-term cleanup costs. Other obstacles discussed included their agency's lack of cleanup and cost-estimating expertise, fear of reporting inaccurate estimates, and the difficulty of estimating costs when cleanup liability is shared with other federal or private entities. Nevertheless, agency officials acknowledged that cost estimates, especially those expressed in ranges to

account for uncertainties or alternative cleanup strategies, would be valuable.

Regulatory Framework Governing Federal Cleanups Does Not Facilitate Inventory Completion or Estimates of Long-Term Cleanup Costs

As discussed above, slow progress with the inventories and the lack of long-term cost estimates are attributable to a number of factors related to the management of agencies' programs. However, an underlying cause, in our view, is an absence of certain statutory requirements and oversight by EPA. CERCLA and RCRA require agencies to report potential hazardous waste sites to EPA on a continuing basis but do not impose deadlines for agencies to complete their inventories. RCRA, for example, required agencies, beginning in 1986, to undertake a continuing program to identify and report to EPA those facilities that the agencies own or operate or previously owned or operated that involved the transport, storage, or disposal of hazardous wastes. These inventories must be updated biennially. RCRA does not set a deadline for completing the inventories.

Similarly, CERCLA requires the reporting of all facilities with potential, known, or suspected hazardous waste releases as they are discovered but does not require that an inventory of these facilities be completed by a certain date. Nor does CERCLA, which establishes EPA's responsibility for overseeing federal cleanups, specify a role for EPA in ensuring the completion of agencies' site inventories. RCRA authorizes EPA to perform an inventory of sites at an agency that EPA believes is not making satisfactory progress toward providing it with information on sites reportable under section 3016 of RCRA. (See app. I.) But EPA officials said that using this authority is not practical, since EPA does not have the resources to inventory other agencies' sites and could not do so efficiently even if it had the funds. Officials from EPA's federal facilities enforcement program said that they have not focused the program on monitoring federal site discovery efforts.

The absence of statutory requirements and oversight by EPA also contributes to the lack of long-term cleanup cost estimates among agencies. CERCLA requires EPA to report annually to the Congress an estimate of the total costs to implement the Superfund program, a requirement that EPA has interpreted to mean the government's cost of completing cleanups at existing nonfederal NPL sites. No similar requirements currently exist for EPA or other agencies—with the exception of DOE—to estimate or report their long-term cleanup liabilities. Federal requirements for reporting cleanup costs focus primarily on the preparation of near-term budget estimates. In addition, CERCLA requires

agencies to report annually to the Congress on cleanup progress at NPL sites, including any cost estimates for sites where cleanup agreements among EPA, the responsible agency, and the affected state have been reached. Since interagency agreements are required only for current NPL sites and not for future sites or non-NPL sites, any cost estimates made in these agreements represent only a partial disclosure of the federal cleanup liability.

In addition, EPA's federal facility docket does not report all sites for which the government may incur cleanup costs. For example, the docket does not include facilities previously owned by the government but now privately owned or other private sites contaminated by government activities. The government may bear cleanup liability for both types of sites. (See app. I for further discussion of EPA's docketing process.)

Private Sector Reporting of Future Cleanup Liabilities

Unlike federal agencies, publicly held companies in the private sector are required by securities laws to disclose and estimate their contingent liabilities, including costs for environmental cleanups, if certain conditions are met. Disclosure of such liabilities is required in business and management reports and financial statements filed with the Securities and Exchange Commission. This information must be disclosed when it is "material," that is, necessary for investors to make informed decisions. Depending on the circumstances, companies must provide an estimate or range of estimates of their liabilities, or state that an estimate cannot be made. (See app. V for further discussion of private-sector financial reporting requirements.)

By contrast, only some federal departments and agencies are currently required to prepare comprehensive annual financial statements, and federal accounting guidance does not address whether and how environmental liabilities should be reported in those statements. (See app. V for further discussion of federal financial reporting requirements.) New requirements and standards for federal accounting and reporting of hazardous waste cleanup liabilities are being developed by the Federal Accounting Standards Advisory Board, an interagency group created to consider and recommend accounting principles for the federal government.

Conclusions

Potentially hundreds of billions of dollars are at stake in managing the cleanup of contaminated federal sites. Successfully meeting this challenge

requires better information about the government's long-term cleanup liability. First, a complete inventory of sites is needed to prevent the neglect of potentially dangerous sites. Second, estimates of the long-term costs of cleanups at these sites are needed to plan for and manage their implementation. Such information can also facilitate policy decisions about cleanup strategies for sites and serve as the basis for establishing cleanup priorities and allocating resources among sites and across agencies. In addition, the estimates would be useful to the Congress in deciding whether the federal cleanup effort is appropriately funded.

We reported as early as 1984 that federal agencies were moving slowly to identify their hazardous waste sites. The process is still a long way from being complete at some agencies. The absence of clear statutory requirements for completing the inventory and oversight by EPA have contributed to the slow pace at which sites are being identified. Likewise, the lack of up-to-date estimates of long-term cleanup costs at many agencies points to the need for explicit requirements to foster the development of this information. To make cost estimates comparable across agency lines, the estimates should be prepared on a consistent basis and with enough supporting detail to allow priority setting for individual projects. A common understanding is necessary among agencies about how to treat formerly owned or used sites and what estimation methods to use. Where a single estimate of future costs cannot be made because decisions have not been reached about which of a number of alternative cleanup strategies to use, estimates can be expressed in ranges to reflect the costs of the different approaches. This cost information can help policymakers decide on the appropriate cleanup approach.

Recommendations to the Congress

In view of the need for better information on the government's long-term cleanup costs and the importance of a comprehensive federal site inventory for making an estimate, we recommend that the Congress amend CERCLA to do the following:

- Require agencies to submit plans for completing their hazardous waste site inventories to EPA for review and approval. These plans should contain schedules of work and deadlines for completing the site inventories.
- Require agencies to report annually to EPA on progress in implementing plans for completing the site inventories.
- Require agencies to develop, update as needed, and report to EPA, in accordance with guidance to be promulgated by EPA, estimates (or ranges

of estimates for alternative cleanup standards) of the total costs to clean up their potential hazardous waste sites.

- Require EPA to report annually to the Congress on agencies' progress toward completing their site inventories and on their latest estimates of total cleanup costs.

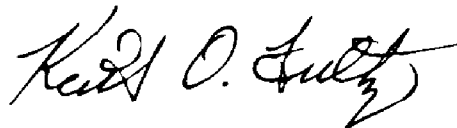
Agency Comments

We discussed the results of our review with environmental program officials at DOE, DOD, Interior, USDA, DOT, and NASA and incorporated their comments where appropriate. While these agencies generally agreed with the facts presented in our report and the need for better inventory and cost information, several emphasized the need for the Congress to allocate appropriate resources to enable agencies to fulfill any additional requirements imposed on them. As requested, we did not obtain formal agency comments on this report.

We conducted our review between August 1992 and January 1994 in accordance with generally accepted government auditing standards. (See app. VI for further discussion of our scope and methodology.)

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to the Administrator, EPA; the Secretaries of Defense, Agriculture, Energy, Transportation, and the Interior; the Administrator of NASA; and the Director, OMB. We will make copies available to others upon request.

This work was performed under the direction of Peter F. Guerrero, Director, Environmental Protection Issues, who may be reached at (202) 512-6111 if you or your staff have any questions. Major contributors to this report are listed in appendix VII.



Keith O. Fultz
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Abbreviations

ARS	Agricultural Research Service
BLM	Bureau of Land Management
BRAC	Base Closure and Realignment Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
D&D	decontamination and decommissioning
DOD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FASAB	Federal Accounting Standards Advisory Board
FASB	Financial Accounting Standards Board
FS	Forest Service
FUSRAP	Formerly Utilized Sites Remedial Action Program
FWS	Fish and Wildlife Service
GAO	General Accounting Office
JFMIP	Joint Financial Management Improvement Program
NASA	National Aeronautics and Space Administration
NPL	National Priorities List
NPS	National Park Service
OMB	Office of Management and Budget
RCRA	Resource Conservation and Recovery Act
TSD	treatment, storage, and disposal
UMTRA	Uranium Mill Tailings Remedial Action
USDA	Department of Agriculture

Environmental Protection Agency's Federal Agency Hazardous Waste Compliance Docket

The Environmental Protection Agency's (EPA) federal facilities docket serves three major purposes: (1) to identify the universe of federal facilities that must be evaluated to determine if they pose a risk to public health and the environment; (2) to compile and maintain information submitted to EPA on these facilities, as required by section 120(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and (3) to provide a mechanism for making this information available to the public.

To compile the docket, EPA uses federal facility information submitted under the following statutory requirements:

- Section 103(a) of CERCLA, which requires facility owners/operators to notify the National Response Center of any reportable releases of hazardous substances. The Center conveys this information to all appropriate government agencies.
- Section 103(c) of CERCLA, which required facility owners/operators to notify EPA, by June 1981, of the existence of facilities where hazardous substances were treated, stored, or disposed of and any known, suspected, or likely releases at those facilities.
- Section 3005 of CERCLA, which requires owners/operators of treatment, storage, and disposal (TSD) facilities to submit information about existing or planned facilities involving hazardous substances when applying for operating permits.
- Section 3010 of RCRA, which requires waste generators, transporters, and TSD facility owners/operators to notify EPA of their hazardous waste activities.
- Section 3016 of RCRA, which requires federal agencies to prepare biennial inventories of hazardous waste sites currently or previously owned or operated.

EPA's docket does not list all facilities for which the federal government may incur cleanup costs but includes only currently owned federal facilities. The government also bears potential cleanup liability for thousands of formerly owned or used facilities and private sites to which it has contributed contamination. The magnitude of the government's liability for nondocketed facilities is unknown.

EPA's docket also does not indicate the type or extent of contamination at listed facilities. EPA defines a federal facility as an installation or landholding including all contiguous land owned by a U.S. department or agency. By contrast, EPA defines a hazardous waste site as a location

**Appendix I
Environmental Protection Agency's Federal
Agency Hazardous Waste Compliance
Docket**

containing hazardous wastes. EPA's policy is generally to list a federal facility only once on the docket, even if the facility contains multiple hazardous waste sites. EPA has modified this policy to allow land management agencies, whose national parks and forests do not conform well to EPA's definition of a federal facility, to report individual hazardous waste sites on their properties.

Since its inception, EPA's docket has more than doubled, growing from 823 facilities in February 1988 to 1,945 in November 1993. As of November 1993, EPA had listed 123 federal facilities on the NPL, proposed an additional 20 for future NPL listing, and removed 360 from further NPL consideration. Although the latter facilities do not require further assessment by EPA, additional cleanup actions by the agency that owns or operates them may still be needed. Table I.1 provides a selected breakdown of EPA's November 1993 docket update.

**Table I.1: Selected Breakdown of
EPA's Federal Agency Hazardous
Waste Compliance Docket—Docket
Update No. 8, November 1993**

Department/agency	Number of facilities
Department of Agriculture	
Agricultural Research Service	31
Forest Service	79
Other	12
Total	122
Department of Defense	863
Department of Energy	90
Department of the Interior	
Bureau of Land Management	299
Fish and Wildlife Service	33
National Park Service	43
Other	53
Total	428
National Aeronautics and Space Administration	17
Department of Transportation	
Coast Guard	44
Federal Aviation Administration	58
Other	9
Total	111
Other federal agencies	314
Total	1,945

Source: GAO's analysis of EPA's data.

Federal Agencies' Site Inventory Progress

Department of Defense

The Department of Defense's (DOD) cleanup program, referred to as the Installation Restoration, encompasses investigation and cleanups at (1) active installations and (2) formerly used properties. Officials at DOD reported that the growth of their site inventory has levelled off in recent years and that their site discovery efforts are now largely complete. DOD publishes inventory information each year in its Defense Environmental Restoration Program Annual Report to Congress. By the end of 1992, DOD had identified 1,800 active installations, or facilities, containing 18,795 sites requiring evaluation for possible cleanup. On the basis of its own analysis so far, DOD has concluded that 46 percent of these 18,795 sites do not require further cleanup work. DOD also has identified over 7,300 formerly used or owned DOD sites with the potential for inclusion in its cleanup program. On the basis of its own assessments so far, DOD has screened out about 3,000 of these sites. As of November 1993, EPA's docket listed 863 DOD facilities.¹

Department of Energy

The Department of Energy's (DOE) cleanup program, known as the Environmental Restoration Program, includes (1) assessment and cleanup of sites where soil and groundwater may be contaminated by hazardous and/or radioactive releases and (2) decontamination and decommissioning (D&D) of contaminated surplus buildings/facilities. DOE's Environmental Restoration and Waste Management Five-Year Plan for fiscal years 1993-97, which was published in August 1991, reported 3,700 inactive release sites needing cleanup and 500 facilities requiring D&D work. The plan also reported over 5,000 properties associated with DOE's special cleanup projects (i.e., the Uranium Mill Tailings Remedial Action [UMTRA] Project and the Formerly Utilized Sites Remedial Action Program [FUSRAP]), which are also part of DOE's environmental restoration program but are funded separately. DOE's latest 5-year plan, covering fiscal years 1994-98, which was published in January 1993, does not provide updated estimates.

Recently DOE adopted a new system for inventorying its cleanup sites. According to DOE officials, the new inventory includes about 7,313 inactive release sites, 1,272 D&D facilities, and 5,377 UMTRA and FUSRAP sites. The significant increase in the number of inactive release sites, they explained, reflects primarily the reconfiguration of previous inventory data but also

¹The number of potential hazardous waste sites reported by an agency can differ from EPA's docket data if the agency (1) uses different methods for classifying and tracking sites (see app. I for EPA's definition of a federal facility) or (2) screens sites before reporting them to EPA. Also, there can be minor differences between the number of docketed sites counted by EPA and an agency. For example, an agency may deny ownership of a site listed on the docket.

includes some new sites. The growth in the number of D&D facilities is due in part to the reconfiguration of existing data but also reflects DOE's changing defense mission, which has caused additional facilities to be transferred to the D&D program. DOE officials expect the Department's inventory of release sites to remain stable, but anticipate substantial growth in the scope of its D&D activities. DOE's count of 1,272 D&D facilities reflects only those facilities that are currently in the D&D program. DOE is developing a separate list of facilities that may eventually be added to the D&D program in the future. In September 1993, DOE's new Assistant Secretary of Energy for Environmental Restoration testified before the Congress that an estimated 3,000 facilities, or 25 percent of the 13,000 facilities currently in DOE's Real Property Inventory System, could ultimately require D&D attention. DOE officials we spoke with said that the future scope of the D&D program could not be estimated reliably at this time. As of November 1993, EPA's docket listed 90 DOE facilities.

Other Agencies That Have Reported Complete or Nearly Complete Inventories

At the National Aeronautics and Space Administration (NASA), officials told us that they have identified the agency's universe of potential hazardous waste sites. Officials from USDA's Agricultural Research Service (ARS) said that they expect only a few more facilities to be added to EPA's docket. EPA's November 1993 docket listed 17 NASA facilities and 31 ARS facilities.

Department of Transportation Agencies

Inventories at the Coast Guard and the Federal Aviation Administration (FAA), the agencies with the largest potential cleanup challenges within the Department of Transportation (DOT), are incomplete, although inventory efforts are under way or planned. According to one Coast Guard official, in the past, hazardous waste sites were reported as they were discovered, typically during construction or other on-site activities. Prompted by statutory requirements imposed in 1989 to develop an environmental compliance and cleanup program, the Coast Guard began a formal site discovery program in October 1990. The first phase of this program—investigations of facilities suspected of having the worst contamination problems—was completed in September 1993. Coast Guard officials expect that all major problem sites will be identified by the end of 1997 and that the entire site discovery program will be completed by 2002. EPA's November 1993 docket listed 44 Coast Guard facilities.

At FAA, a program for identifying hazardous waste sites is getting under way. According to officials there, FAA's earliest CERCLA sites were identified by sources outside the agency and not by FAA itself. Since the

**Appendix II
Federal Agencies' Site Inventory Progress**

establishment of FAA's hazardous waste program in 1989, site discovery efforts have varied among regions, and officials believe that FAA has identified only a small portion of the agency's likely universe of potential hazardous waste sites. EPA's November 1993 docket listed 58 facilities for FAA. On the basis of the results of a recent pilot study, FAA has formulated a site discovery program, to be implemented over the next 3 to 5 years as part of a broader environmental auditing strategy. The first phase of the site discovery program is expected to be completed in fiscal year 1994. On the basis of EPA statistics, FAA estimates that about 560 facilities, or 7 percent of the agency's 8,000 facilities, will require cleanup.

Federal Agencies' Cleanup Cost Estimates

DOD

DOD's 1991 cleanup cost estimate of \$24.5 billion was prepared by a DOD consultant using a "top down" approach in which historical costs for various cleanup phases were extrapolated for the number of sites expected to require investigation and cleanup. The study assumes that about 7,300 sites will require cleanup over the next 20 years. The study does not address specific costs associated with potentially different cleanup standards among sites.

The estimate included costs to clean up military bases within the United States, except for those to be closed or restructured under the Base Closure and Realignment Act (BRAC) of 1988—DOD's first round of base closures. According to DOD officials we spoke with, DOD's latest estimate for cleanups at BRAC Round I bases is about \$760 million. Since 1988, additional bases have been selected for closure under BRAC Rounds II (1990) and III (1993), and costs associated with accelerated cleanup at those bases will need to be recognized in future estimates.

DOE

In 1988, DOE published a study that estimated cleanup costs for all environmental activities until 2010 at \$75 billion to \$115 billion.¹ Of this, \$35 billion to \$64 billion would be needed to identify, investigate, and clean up inactive sites and about \$3 billion to \$5 billion would be needed to address sites included in DOE's D&D program.² These projected cost ranges aimed to reflect possible variation in the applicability of existing laws, regulations, standards, and the anticipated level of cleanup among DOE sites but did not include anticipated cleanup maintenance costs beyond 2010 for sites with complex contamination problems. In 1991, the then-Assistant Secretary of Energy for Environmental Restoration and Waste Management testified at a congressional hearing that DOE's environmental costs could reach \$160 billion over the next 30 years—one-third for environmental restoration and two-thirds for waste management. This estimate excluded unidentified costs for D&D activities at thousands of surplus facilities.

Following the 1988 study, DOE shifted away from trying to do long-term estimates and adopted its current practice of developing 5-year planning projections. Under this system, cost projections are derived using a

¹"Environment, Safety, and Health Needs of the U.S. Department of Energy," Dec. 1988.

²The remaining amounts would be spent on bringing and keeping DOE's operations in compliance with relevant environmental, safety, and health laws and requirements, and for several special remedial projects (i.e., the Surplus Facilities Management Program, FUSRAP, the UMTRA Project, and the West Valley Demonstration Project).

"bottom-up" approach whereby financial and technical data for individual cleanup tasks and sites are summed together. These estimates are updated and published each year in DOE's Environmental Restoration and Waste Management Five-Year Plan. DOE's latest plan estimates total environmental spending for 1994-98 at nearly \$35.5 billion, of which slightly more than one-third, or \$12.3 billion, is targeted for environmental restoration or cleanup. DOE's system of short-term cost estimating is the most fully developed among the agencies we reviewed.

In 1992, DOE revised its original estimate of D&D costs to reflect anticipated growth in the scope of its D&D program. DOE's new estimate projected total D&D costs for 1,700 surplus buildings at \$54 billion. DOE officials have acknowledged that the number of D&D facilities will eventually be much higher, but they have not developed a new cost estimate. One DOE official speculated that, because of the shift in DOE's defense mission, D&D activities could soon surpass CERCLA cleanups to become the costliest component of DOE's cleanup program. The pace at which DOE's D&D program is implemented, however, will depend on whether D&D activities continue to be regarded as discretionary or are regulated under CERCLA. This issue has been the subject of discussions between DOE and EPA but remains unresolved.

Under new leadership, DOE's Office of Environmental Restoration and Waste Management has placed greater emphasis on obtaining a long-term view of the agency's cleanup challenge, and efforts to develop a new total cost estimate are under way. Agency officials expect to produce the total estimate or ranges of estimates on the basis of different cleanup assumptions by March 1995. DOE is also working to develop cost baselines for its cleanup activities, which have been consolidated into 17 Major System Acquisitions and Major Projects. These baselines are intended to better enable DOE to manage and track cleanup costs over time. Partial baselines (i.e., for the next 5 to 7 years) will be completed for the 17 projects by the end of 1994. The National Defense Authorization Act for Fiscal Year 1994 created a statutory requirement for DOE to update and report its cleanup cost estimates annually, beginning in 1995.

Department of Agriculture Agencies

According to one Department of Agriculture (USDA) official, cleanups at ARS facilities should be completed by 1996 and the costs of these cleanups are not likely to exceed \$10 million. The Forest Service, by contrast, recently estimated that the costs for CERCLA remediation and natural damage assessments/restoration at 2,620 mines and landfills could total

about \$2 billion over the next 30 to 40 years. This estimate includes costs for sites wholly or partially owned by the Forest Service. The estimate is based on average costs for National Priorities List (NPL) and non-NPL projects extrapolated for the number of sites expected to require remediation or restoration. Forest Service officials also expect to recover some of their cleanup costs from private parties that contributed to contamination at sites under mixed ownership.

DOT Agencies

At DOT, both the Coast Guard and FAA have made partial estimates of their future cleanup costs. According to one Coast Guard official, the agency estimates that it will cost \$85 million to clean up known contaminated sites, including operation and maintenance activities. FAA has developed a preliminary estimate of its cleanup liability for the period 1995 to 2002 for known and anticipated sites. The estimate, which totals about \$183 million, was based on projections of average cleanup costs for an estimated 560 sites expected to be contaminated. This figure is consistent with cost estimates developed separately for FAA by a contractor. Site inventory efforts at the Coast Guard and FAA are ongoing.

Federal Agencies' Projected Budgets for Environmental Cleanups

Table IV.1 summarizes information on projected budget needs for hazardous waste cleanups provided by federal departments and agencies we reviewed.

Table IV.1: Agencies' Budget Projections for Environmental Cleanups

Department/ agency	Projected Resource Plans for Hazardous Waste Cleanups ^a				
	1995	1996	1997	1998	1999
DOD	2,180.2	N/A	N/A	N/A	N/A
DOE	2,094.0	2,122.0	2,164.0	2,206.0	2,250.0
ARS	4.2	1.0	0	0	0
FS	12.1	42.2	24.8	22.2	16.5
BLM ^b	16.1	3.5	3.9	4.6	5.5
FWS ^b	0.3	N/A	N/A	N/A	N/A
NPS ^b	2.8	4.7	5.2	6.2	7.3
NASA	21.7	26.0	27.5	27.5	26.4
FAA	16.5	26.6	22.0	17.0	9.9
Coast Guard	9.1	9.1	9.1	9.1	9.1

Legend:
BLM=Bureau of Land Management.
FS=Forest Service.
N/A=Not available.
NPS=National Park Service.

^aFor budget purposes, OMB defines cleanup activities to include federal remedial actions under CERCLA, as amended; corrective actions under RCRA; cleanups from leaking underground petroleum storage tanks; site studies in preparation for cleanup or corrective action, and equivalent actions under other federal, state, interstate, and local laws, regulations, or requirements.

^bBLM's fiscal year 1995 figure includes approximately \$13 million for CERCLA activities included in Interior's new Central HAZMAT Account, which otherwise would have been included in fiscal year 1995 budget requests for FWS and NPS. However, BLM's outyear numbers do not include funding requirements associated with these FWS and NPS sites, which will probably continue to be funded through the Central Account. According to an Interior official, the Central Account will be administered by BLM, and funds for CERCLA activities will be distributed from it to the agencies responsible for cleanup. As the table indicates, FWS has not attempted to estimate its outyear funding requirements for remediation activities. NPS' outyear figures also do not reflect potential future "transfers" to the Central Account.

Source: Agency budget data.

Standards and Requirements for Disclosure and Estimation of Environmental Liabilities in the Private and Public Sectors

Public Sector Requirements

Chief Financial Officers' Act of 1990

The Congress enacted the Chief Financial Officers Act in 1990 to improve the quality of federal financial data. The act specifies that, at a minimum, all federal agencies must prepare and submit to the Office of Management and Budget (OMB) annual financial statements for selected commercial operations (i.e., revolving funds and trust funds). The act also established a pilot program in which selected agencies must prepare financial statements for their entire operations.¹ The purpose of financial statements for agencies is (1) to disclose a federal entity's financial position and the results of its operations for the effective allocation of resources and (2) for the Congress, agency managers, the public, and others to assess management performance and stewardship. The act requires the above agency financial statements to be audited.²

Hierarchy of Accounting Standards for Federal Agencies

In preparing financial statements, agencies must abide by a variety of accounting standards and principles. OMB, after consulting with the American Institute of Certified Public Accountants and with agreement from us and Treasury, approved a new interim hierarchy of accounting standards for federal agencies to use in preparing financial statements. Under this hierarchy, applicable standards are divided into four categories, listed here in order of descending priority:

- Level 1: Individual standards agreed to and published by the Joint Financial Management Improvement Program (JFMIP) principals.
- Level 2: Form and content requirements included in OMB Bulletin 94-01, dated November 16, 1993.
- Level 3: Accounting standards contained in agency accounting policy, procedures manuals, and/or related guidance as of March 29, 1991, as long as they are prevalent practices.
- Level 4: Accounting principles published by authoritative standard-setting bodies and other authoritative sources (1) in the absence of other

¹Of the agencies covered in our review, only USDA, the Army, and the Air Force are currently required to prepare comprehensive financial statements.

²On the basis of audits done so far under the act, OMB has found marked improvements in the timeliness and accuracy of federal financial information. Therefore, OMB has requested that provisions of the act concerning the issuance of audited financial statements be continued and expanded.

guidance in the first three parts of this hierarchy and (2) if the use of such accounting standards improves the meaningfulness of the financial statements.³

Federal Accounting Standards Advisory Board

The Federal Accounting Standards Advisory Board (FASAB) was established in October 1990 to consider and recommend new accounting and financial reporting standards for the federal government. FASAB was created jointly by the Comptroller General, the Secretary of the Treasury, and the Director of OMB and comprises representatives from each of these agencies, along with three other federal agencies and three nonfederal representatives.

As part of its overall mission, FASAB is working to develop federal accounting standards and reporting criteria for environmental liabilities, including hazardous waste cleanup liability and information that is to be reported in agencies' annual financial statements. FASAB expects to recommend final standards by March 1995. FASAB's recommendations must be approved by the JFMIP principals (i.e., GAO, OMB, and Treasury).⁴

OMB Bulletin 94-01, "Form and Content of Agency Financial Statements"

Agencies must prepare financial statements according to guidelines provided in OMB Bulletin 94-01 entitled, "Form and Content of Agency Financial Statements." This bulletin, published in November 1993, defines minimum disclosure requirements and prescribes the form and content of federal financial statements according to applicable accounting principles, standards, and requirements. OMB's 1993 bulletin identifies several categories of liabilities for which disclosure is currently required. The bulletin does not address the reporting of environmental liabilities.

In the absence of a governmentwide requirement to prepare comprehensive financial statements and specific requirements to disclose environmental liabilities, federal entities have considerable discretion in terms of what, if any, cleanup liabilities to report.

³Authoritative standard-setting bodies and other authoritative sources include the Government Accounting Standards Board, the Financial Accounting Standards Board, and the American Institute of Certified Public Accountants.

⁴In May 1993, OMB issued Circular A-134, which establishes policies and procedures for approving, publishing, and interpreting financial accounting principles and standards.

Private Sector Requirements

Security and Exchange Commission Disclosure Requirements

Security and Exchange Commission Regulation S-K requires the disclosure of the financial effects of environmental regulations on publicly held businesses. Disclosure is required only if the company determines that the information is "material" (i.e., necessary for investors to make informed decisions). In general, the regulation mandates disclosure of (1) the material effects of compliance with environmental laws on capital expenditures for the current year, the succeeding fiscal year, and any further periods that are deemed material; (2) material pending legal proceedings stemming from environmental liabilities; and (3) management's analysis of the future effects of environmental laws and liabilities on business performance.

Financial Accounting Standards Board

Accounting standards for the disclosure of future environmental liabilities by private companies are provided in the Financial Accounting Standards Board's (FASB) Statement No. 5, "Accounting for Contingencies" and Interpretation No. 14, "Reasonable Estimation of the Amount of a Loss." The FASB statement and its interpretation prescribe that companies must disclose a contingent loss or liability when (1) there is at least a reasonable possibility that the loss or liability may have been incurred and (2) the amount of the loss or liability can be reasonably estimated. Companies must indicate the nature of the contingency, give an estimate or estimated range of the possible loss, or state that such an estimate cannot be made.

Scope and Methodology

The following federal departments and agencies were covered in this review:

- Department of Agriculture
Forest Service
Agricultural Research Service
- Department of Energy
- Department of Defense
- Department of the Interior
Bureau of Land Management
National Park Service
Fish and Wildlife Service
- Department of Transportation
Coast Guard
Federal Aviation Administration
- National Aeronautics and Space Administration

We selected these agencies on the basis of information from EPA's federal facilities docket and discussions with EPA officials indicating that these agencies were likely to have significant cleanup liabilities. The agencies listed above accounted for 1,557, or about 80 percent, of the 1,945 federal facilities listed on EPA's November 1993 docket update.

Our review focused on federal progress in (1) identifying facilities with potential hazardous waste contamination and (2) estimating future cleanup costs. The review also focused on obstacles to overall federal progress in these areas. We did not evaluate individual agencies' site discovery or cost-estimating activities. We also did not verify inventory data or cost estimates reported by agencies.

To ascertain federal inventory progress, we identified and analyzed current legal requirements for federal identification and reporting of potential hazardous waste sites. We interviewed agency officials and reviewed agencies' documentation to identify planned, ongoing, and/or completed site inventory efforts. We also reviewed relevant studies by agencies and other government and private organizations.

To evaluate federal progress in estimating future cleanup costs, we identified and analyzed current statutory and other requirements for federal estimation of cleanup costs. We reviewed available agency cost estimates, budget data, annual financial statements, and related program materials. We interviewed agency officials to identify factors influencing

the development and reliability of long-term cleanup cost estimates, cost-estimating initiatives under way or planned, and estimating methods used.

To identify obstacles to federal inventory and cost estimation progress, we analyzed federal cleanup laws, interviewed agency officials, reviewed relevant studies of federal cleanup efforts, and interviewed EPA officials concerning their oversight responsibilities with regard to site discovery and cost estimation activities at federal facilities.

Finally, we analyzed applicable laws, requirements, and guidance on environmental liability disclosure by private industry and the federal government. We interviewed FASAB staff to obtain information about evolving standards for federal reporting of such liabilities.

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Related GAO Products

Superfund: Backlog of Unevaluated Federal Facilities Slows Efforts
(GAO/RCED-93-119, July 20, 1993).

Department of Energy: Cleaning Up Inactive Facilities Will Be Difficult
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Federal Facilities: Issues Involved in Cleaning Up Hazardous Waste
(GAO/T-RCED-92-82, July 28, 1992).

DOD Environmental Cleanup: Information on Contractor Cleanup Costs
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Related GAO Products

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Status of Civilian Federal Agencies' Efforts to Address Hazardous Waste Problems on Their Lands (GAO/RCED-84-188, Sept. 28, 1984).

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