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Report to the Chairman, Committee on Commerce, House of Representatives

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# NUCLEAR WASTE

# Corps of Engineers' Progress in Cleaning Up 22 Nuclear Sites

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

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The Honorable Tom Bliley
Chairman, Committee on
Commerce
House of Representatives

Dear Mr. Chairman:

The Formerly Utilized Sites Remedial Action Program (FUSRAP) was created in the mid-1970s to clean up radiological contamination resulting from the early development of nuclear weapons. The Department of Energy (DOE) was responsible for FUSRAP until October 1997, when responsibility for the program was transferred to the U.S. Army Corps of Engineers (the Corps). FUSRAP currently consists of 22 sites and was funded at $140 million in both fiscal years 1998 and 1999.

At your request, this report discusses (1) the Corps' cost and schedule estimates for cleaning up the FUSRAP sites; (2) the Corps' progress in meeting milestones for site cleanups, FUSRAP staffing levels, and environmental document preparation; and (3) the transition of the program from DOE to the Corps.

## Results in Brief

When the Corps took over the program, it reviewed the Department of Energy's cost and schedule estimates for the 22 sites, visited the sites, and developed new cost and schedule estimates for each. The Corps' cost estimates, in total, are higher than estimates previously developed by the Department. The Corps estimated that it would cost up to $2.25 billion and would take until after 2004 to complete cleanup at all sites. However, there is potential for the $2.25 billion estimate to increase in the future because no proven technology is available to clean up one site and characterization is incomplete for several others. The Department had estimated that it would cost up to $1.5 billion and would take until as late as 2006 to complete the cleanup. An examination of the individual cost estimates, however, shows that much of the difference between the Department's and the Corps' estimates can be attributed to two sites where new information became available after the program was transferred and/or the scope of the cleanup alternatives was changed.

Since the program was transferred to the Corps in October 1997, the Corps has achieved or exceeded its milestones for planned cleanup activities at

16 of the 22 sites. The Corps did not achieve one or more of its milestones at five sites, and one site did not have any milestones for fiscal year 1998. To accomplish its goals for the program, in fiscal year 1998, the Corps had 71 full-time equivalents involved in program management and support. In regard to completing the environmental documentation necessary to begin removal and remedial work, the Corps has made considerable progress, including issuing two Records of Decision and five Engineering Evaluation/Cost Assessments that provide detailed plans for site cleanups.

During the program's transition from the Department of Energy to the Corps, the Corps established transition teams and worked with departmental officials to transfer the 22 sites. When the program was transferred, several issues remained unresolved. Currently, only one issue remains to be formally resolved, specifically, which agency should be accountable for property management for the sites while they are in the program. Attempts to resolve this issue through negotiation of a Memorandum of Understanding between the Corps and the Department are ongoing.

## Background

DOE began FUSRAP in 1974 to address radiological contamination at sites operated by the Manhattan Engineering District and the Atomic Energy Commission, both predecessor agencies to DOE. During the 1940s through 1960s, work was performed at numerous locations within the United States as part of the nation's nuclear weapons program. Storing, transporting, sampling, mining and milling, machining, and processing radioactive materials that were used to make nuclear weapons created sites that became contaminated with uranium, thorium, radium, and their decay products, as well as nonradioactive materials.

In general, these sites were cleaned up or released for use under the guidelines in effect when the work was completed. However, those guidelines were not as strict as those in effect today, and radiological contamination in excess of current guidelines remained at a number of sites. To date, 46 sites have been included in FUSRAP. After reviewing several hundred sites, DOE originally identified 41 sites for inclusion in FUSRAP. According to DOE, these sites were included because they had met several criteria, including the following: (1) they had been involved in processing or handling radioactive materials owned by the government, (2) DOE determined that it had authority over the sites, and (3) there was significant or potential radioactive contamination. In addition to the sites identified by DOE, the Congress assigned five sites to DOE for remediation,

and the Department placed them in FUSRAP because of their similarity with or proximity to sites in the program. By 1997, DOE had completed the cleanup of 24 sites, leaving 22 sites in Connecticut, Illinois, Maryland, Massachusetts, Missouri, New Jersey, New York, and Ohio, as shown in table 1.

**Table 1: FUSRAP Sites, Locations, and Estimated Cost to Complete**

Dollars in millions

| Corps of Engineers District | Site | Location | Estimated cost to complete |
|---|---|---|---|
| Baltimore | W.R. Grace | Baltimore, Md. | $39.6-$53.3 |
| Buffalo | Ashland 1 | Tonawanda, N.Y. | 28.7 |
| Buffalo | Ashland 2 | Tonawanda, N.Y. | 14.4 |
| Buffalo | Bliss & Laughlin Steel | Buffalo, N.Y. | 0.3 |
| Buffalo | Linde | Tonawanda, N.Y. | 33.2 |
| Buffalo | Niagara Falls Storage Site | Lewiston, N.Y. | 285.0-434.5 |
| Buffalo | Seaway | Tonawanda, N.Y. | 10.2 |
| Buffalo | Luckey | Luckey, Ohio | 157.3-179.9 |
| Buffalo | Painesville | Painesville, Ohio | 10.3 |
| New England | CE Site | Windsor, Conn. | 40.7-99.3 |
| New England | Ventron | Beverly, Mass. | 0.07 |
| New England | Shpack Landfill | Norton/Attleboro, Mass. | 0.03 |
| New York | Maywood | Maywood, N.J. | 266.2-304.8 |
| New York | Middlesex Sampling Plant | Middlesex, N.J. | 46.6 |
| New York | Wayne Interim Storage Facility | Wayne, N.J. | 56.1-79.9 |
| New York | Colonie | Colonie, N.Y. | 24.3 |
| Philadelphia | Dupont Chambers Works | Deepwater, N.J. | 16.5 |
| St. Louis | Madison | Madison, Ill. | 1.8-3.0 |
| St. Louis | St. Louis Airport Site | St. Louis, Mo. | 123.4-179.5 |
| St. Louis | St. Louis Airport Site, Vicinity Properties[a] | St. Louis, Mo. | 85.9-122.0 |
| St. Louis | St. Louis Downtown Site | St. Louis, Mo. | 55.0-167.2 |
| St. Louis | Hazelwood Interim Storage Site and Latty Ave. Properties | Hazelwood, Mo. | 114.0-214.0 |
| Total | | | $1,409.6-$2,022 |

Note: The cost estimate range shows the Corps' baseline and conservative estimates. In cases where only one estimate is shown, the baseline and conservative estimates were identical. The total of the individual site costs differs from the Corps' total cleanup cost estimate of $1.56 billion (baseline) and $2.25 billion (conservative) because the individual site cost estimates are in October 1997 dollars and the total cleanup costs are adjusted for inflation.

[a]A vicinity property is a property near the original site that contains residual radioactive material from the site. Typically, the material migrated by wind or rain runoff, or was hauled for backfill. In general, activities at these properties involve the removal of contaminated soil.

Source: Formerly Utilized Sites Remedial Action Program (FUSRAP) Report to Congress, U.S. Army Corps of Engineers (Mar. 1998).

In October 1997, the Energy and Water Development Appropriations Act for fiscal year 1998 (P.L. 105-62) transferred responsibility for the administration and execution of FUSRAP from DOE to the Corps. At that time, about $582 million had been spent for cleaning up sites since the program's inception. Funding for FUSRAP for fiscal year 1998 was $140 million (compared with the funding levels of about $70 million per year during the last few years that DOE managed the program).

The conference report on the legislation transferring FUSRAP directed the Corps to review the cost and schedule for each cleanup site. In March 1998, the Corps issued a report to Congress on the status and future of FUSRAP. The Corps included two cost and schedule estimates—baseline and conservative. The baseline estimates assumed cleanup levels consistent with future restricted or industrial land use, while the conservative estimates assumed cleanup levels consistent with future residential land use at all sites. Both the baseline and conservative estimates assumed unconstrained funding. Whether the baseline or conservative assumptions are closer to the cleanup that is actually implemented will depend on the results of the Corps' risk analysis and coordination with the Environmental Protection Agency and state and local representatives.

## Corps' Cost and Schedule Estimates Differ From DOE's and May Change

Soon after FUSRAP was transferred, the Corps developed cost and schedule estimates for each FUSRAP site. In comparison to prior cost and schedule estimates prepared by DOE, the Corps' cost estimates, in total, are higher. The Corps estimated that it would cost up to $2.25 billion and would take until after 2004 to complete cleanup at all sites. DOE had estimated that it would cost up to $1.5 billion and would take until as late as 2006 to complete cleanup. An examination of the individual cost estimates, however, shows that much of the difference between DOE's and the Corps' estimates can be attributed to two FUSRAP sites where new information became available after the program was transferred and/or the scope of cleanup alternatives was changed. At several sites, the extent of contamination is unknown, and, at one site, a treatment technology or disposal site may not be available. For those sites, the Corps' current cost and schedule estimates are probably not accurate and can be expected to increase as more information is developed.

## Corps Based Cost and Schedule Estimates on DOE's Prior Work, but Made Revisions at Some Sites

The Corps' cost and schedule estimates were generally based on DOE's site characterizations, scope of work, and estimates and do not differ significantly from DOE's estimates at most of the 22 sites. Corps officials told us that this was because the Corps either agreed with DOE's plan or did not have sufficient knowledge and information about a site to deviate from DOE's plan. For example, within the Buffalo (N.Y.) District, the Corps' report to Congress identified planned efforts at the Ashland 1 site during fiscal year 1998 that were very similar to those planned for by DOE in its June 1997 accelerated plan.[1] Ashland 1 is a 10.8-acre site in Tonawanda, New York, that was used to store wastes from uranium processing. Contamination on the site is from uranium, radium, and thorium and the decay products associated with those elements. To estimate the site's cleanup costs and schedule, the Corps used site characterization data compiled while the program was under DOE. Just as DOE had planned, the Corps plans to remove about 29,000 cubic yards of contaminated material. When completed, the site will be available for industrial use.

The cost or schedule estimates for some sites were based on the Corps' judgment that the scope of the cleanup would have to be altered. For example, the Seaway site (located in Tonawanda, N.Y.) is a 93-acre landfill that includes 16 acres that are contaminated with uranium, thorium, and radium. DOE officials informed us that they had reached a tentative agreement with local officials to leave buried material in place. Other material in the landfill that was accessible would be assessed to determine if removal was required. DOE's $250,000 cost estimate and 1999 closure date for the site assumed that no further remedial action was necessary. The Corps reviewed this information and determined that additional remedial action may be necessary. The Corps listed several options for remediating the site and estimated that the cost to complete the cleanup would be $10.2 million and that the cleanup would take until 2001.

Similarly, at the W.R. Grace site (the 260-acre site in Baltimore, Md., was used to extract thorium and other elements from sand), DOE was still conducting site characterization work and had not developed a cleanup plan. DOE estimated that it would cost from $12.1 million to $12.8 million to clean up the site and that it would take until 2002 or 2003 to complete the cleanup. The Corps reviewed DOE's data and estimated that a further review of site information and remedial actions would cost from $39.6 million to $53.3 million and would take until 2002. The Corps also

[1]In June 1997, DOE developed a plan that would allow for the completion of cleanup activities at all 22 sites by 2002. FUSRAP, Accelerating Cleanup: A Focus on 2006, U.S. Department of Energy, Oak Ridge Operations, Discussion Draft (June 1997).

assumed that cost sharing with the site owner would not occur, while DOE assumed that the site's owner would bear a portion of the costs.

In total, the Corps' March 1998 report to Congress stated that the cleanup of the remaining 22 FUSRAP sites would cost from $1.56 billion under the baseline estimate to $2.25 billion under the conservative estimate, in addition to the costs incurred prior to fiscal year 1998. The Corps also estimated that, given unconstrained funding, 16 of the remaining 22 sites could be cleaned up and removed from FUSRAP by 2002. Four additional sites could be cleaned up by 2004 if funding were unconstrained and if the cleanup parameters—such as cleanup criteria or disposal location—were significantly changed. The report stated that the remaining two sites—the Niagara Falls (N.Y.) Storage Site and Luckey, Ohio—could not be completed until after 2004 because the contamination at those sites was not fully characterized and technological uncertainties existed.

In May 1997, DOE estimated that cleaning up the 22 FUSRAP sites would cost about $1.5 billion and could be completed by 2006. In June 1997, DOE estimated that cleaning up the 22 FUSRAP sites would cost about $983 million and could be completed by 2002. The May 1997 cost and schedule estimates were part of a plan to complete cleanup at all FUSRAP sites within 10 years. The June 1997 estimate was part of an accelerated plan to complete the cleanup within 6 years. In order to complete the cleanup within 6 years, many sites would be cleaned up to a less stringent level, leaving higher levels of contamination at the site than would have remained under the May 1997 plan. Because of this, the June cost estimate was much lower than the May cost estimate.

The difference between the Corps' estimates and DOE's estimates results primarily from the estimates for two sites—the Niagara Falls, New York, and Luckey, Ohio, sites. Table 2 shows DOE's and the Corps' cost estimates for these sites. (See app. I for a site-by-site comparison of DOE's and the Corps' estimates.)

**Table 2: DOE's and the Corps' Cost Estimates for Niagara Falls Storage Site and Luckey, Ohio**

Dollars in millions

| Site | DOE's May 1997 estimate | DOE's June 1997 estimate | Corps' baseline estimate | Corps' conservative estimate |
|---|---|---|---|---|
| Niagara Falls Storage Site, Lewiston, N.Y. | $226.0 | $6.0 | $285.0 | $434.5 |
| Luckey Luckey, Ohio | 31.0 | 32.0 | 157.3 | 179.9 |
| Total | $257.0 | $38.0 | $442.3 | $614.4 |

The Corps' overall total cost estimates for these sites differ from DOE's because of changes in the scope of cleanup or additional contamination information that has become available. For example, the Niagara Falls Storage Site may eventually be cleaned to a more stringent level than was planned by DOE. The Niagara Falls site is a federally owned site consisting of 191 acres about 19 miles north of Buffalo, New York. Beginning in 1944, the former Manhattan Engineering District used the site to store waste material from processing uranium. On-site contamination includes uranium decay products, radium, and thorium. The site also contains highly radioactive processing residues in a containment structure with an interim cap.[2] In its June 1997 plan, DOE planned to clean up two buildings at the site and monitor and maintain the interim cap that currently contains the contamination. This alternative would have resulted in the site's removal from the program in 2002 at a cost of $6 million. DOE also planned to conduct long-term surveillance and maintenance at the site. Although DOE issued a draft plan that favored this approach, it was not universally accepted.

The National Research Council conducted a study that questioned DOE's approach of leaving the contamination in place.[3] DOE's response included plans to review possible technologies for dealing with the highly radioactive processing residues prior to developing plans for their removal. In view of that study, the Corps may do more than DOE was planning to do at the site. The Corps intends to decontaminate the two on-site buildings and conduct a study to determine what to do with the rest of the contamination. The study will consider (1) removing the highly radioactive processing residues only, (2) removing all wastes, and (3) leaving all wastes in place under a permanent cap. Of these

[2]The interim cap is a containment structure consisting of topsoil, clay, sand, and fabric.

[3]Safety of the High-Level Uranium Ore Residues at the Niagara Falls Storage Site, Lewiston, New York, National Research Council (1995).

alternatives, the Corps' baseline cost and schedule estimate ($285 million, with completion in 2006) provides for removing the highly radioactive processing residues only, while the conservative estimate ($434.5 million, with completion in 2008) provides for removing all contaminated soil. (The Corps' baseline and conservative estimates included the first two alternatives only. A cost estimate for the third alternative was not developed.)

The Corps' cost and schedule estimates in its March 1998 report to Congress for the Luckey, Ohio, site were based on a project scope different from that used by DOE because additional information became available after FUSRAP was transferred to the Corps. The Luckey site consists of 40 acres about 22 miles southeast of Toledo, Ohio. The former Atomic Energy Commission used the site to produce beryllium from 1949 through 1959. Radioactive contamination in the form of uranium, radium, and thorium and chemical contamination in the form of beryllium still exist on the site.[4] In its June 1997 plan, DOE estimated that the site's cleanup would cost $32 million and would be completed in 1999. However, site characterization had not been completed when FUSRAP was transferred, and the Corps has since found that beryllium contamination is much more extensive than previously known and that larger amounts of soil will have to be excavated. The Corps' report to Congress described a baseline scope—assuming that a portion of the contaminated soils would be required to be disposed of off-site—for which, remediation was estimated to cost about $157.3 million and be completed in 2004. Under the conservative estimate, the Corps planned to remove larger amounts of contaminated soil, all of which would be disposed of off-site. The conservative cost estimate was $179.9 million, and completion was scheduled for 2005.

## Corps' Cost and Schedule Estimates Could Change for Some Sites

When DOE was responsible for FUSRAP, contaminated materials that were removed from sites were primarily shipped to one waste site—Envirocare in Utah. Since the program was transferred, the Corps has sent contaminated material to two additional waste sites—International Uranium Corporation's uranium-processing facility in Utah and Envirosafe in Idaho. According to Corps officials, the competition created by using multiple sites has reduced disposal costs. For example, Corps officials informed us that they negotiated a contract with Envirosafe for the disposal of lead-contaminated waste at a cost of about 58 percent of the average disposal cost in fiscal year 1997. For the Ashland 2 site, the Corps

[4]Beryllium is a metal that is a possible carcinogen.

negotiated a disposal contract with International Uranium Corporation for $90 per cubic yard of contaminated material. According to Corps officials, the disposal cost under the Corps' existing contract with Envirocare ranged from $150 per cubic yard to over $1,000 per cubic yard, depending on the type of waste. Corps officials estimate that the lower disposal cost resulted in savings of about $16 million. The use of the International Uranium Corporation disposal site provides an additional benefit in that the radioactive material is extracted and recycled for use in the power industry. In addition, the Corps has negotiated a new contract with Envirocare to dispose of contaminated material at about one-half of the cost of a year ago and in December 1998 issued a request for proposals for additional FUSRAP disposal contracts.

Since the publication of its report, the Corps has gathered additional data related to radioactive and chemical contaminants that could affect its cost and schedule estimates. For example, the data for the Luckey, Ohio, site mentioned earlier show that beryllium has migrated and was found in a drinking water well at an adjacent residence. The extent of the contamination is currently being studied, but Corps officials believe it has expanded beyond what was anticipated. The Corps' Buffalo District officials told us that if additional remediation is required for the drinking water, it could potentially double cleanup costs (the March 1998 baseline estimate was $157.3 million) and delay completion of cleanup activities until 2004 or 2005.

In a similar situation, the Colonie, New York, site consists of an 11.2-acre site and 56 vicinity properties that have been contaminated. From 1958 through 1984, several different processes that involved radioactive materials were conducted on the site. The site's primary known radioactive contaminants include uranium and thorium. In addition, at the time of the report to Congress, the site had known lead, copper, and tetrachloroethylene contamination.[5] While the contaminants were known at the time of the report and DOE and state officials had an agreement that would allow some contaminated material to remain on-site under a cap, the extent of groundwater contamination and the cleanup needed had not been finalized. According to Corps officials, the lead and possible groundwater contamination could significantly increase costs and delay completion dates.

[5]Tetrachloroethylene is a colorless liquid that, when heated, emits toxic fumes. It has been found to be a possible carcinogen.

The CE site in Windsor, Connecticut, is a location where possible changes in cleanup levels could alter the cost and schedule information contained in the Corps' report to Congress. The CE site consists of 1,100 acres and is located about 8 miles north of Hartford, Connecticut. From 1958 through 1961, nuclear fuel assemblies using highly enriched uranium were fabricated on-site. The CE site owner also conducted commercial nuclear manufacturing on-site and disposed of waste from those activities in many of the same areas as the FUSRAP wastes. Known site contamination involves the highly enriched uranium. In the Corps' report to Congress, the baseline cost estimate was $40.7 million and the completion date was 2005; the conservative cost estimate was $99.3 million, and the completion date was 2005 also. The facility operator and the government have not agreed on the level of enriched uranium that will be cleaned up under FUSRAP. However, the current facility operator wants FUSRAP to be responsible for remediating additional uranium contamination, which DOE had not agreed to do and which would result in increased quantities and costs. In the fall of 1998, the current facility operator submitted a proposal to the Corps to expand the scope of FUSRAP cleanup at the CE site. The Corps is reviewing the proposal.

Unknown information on the Niagara Falls Storage Site mentioned earlier also has the potential to change the cleanup costs and completion schedule contained in the report to Congress. Although the Corps has made cost and schedule estimates to clean up the Niagara Falls site (the baseline estimate, with completion in 2006, is $285 million, and the conservative estimate, with completion in 2008, is $434.5 million), there is no proven technology for treating the contamination with the highest activity. The highly radioactive processing residues at the site are of the same material that DOE has at its Fernald, Ohio, facility. In 1994, DOE began building a pilot-scale vitrification plant at Fernald to demonstrate a treatment process for these residues.[6] The purpose of the plant was to gather information for the design of a future full-scale facility. However, the project experienced significant delays, equipment problems, and cost overruns. As a result, DOE closed the plant and is currently reevaluating its remediation options. If the Corps' study of alternatives for cleaning up the Niagara Falls site results in the selection of an option that requires treatment of the highly radioactive processing residues before shipping them to a disposal site, the technology developed to treat these residues will significantly affect the cost and schedule for cleaning up the site.

[6]Vitrification is a process that transforms the residues into a glass-like substance.

## Corps' Efforts Since the Transition

The Corps has been responsible for FUSRAP for only a little more than 1 year. Therefore, it is difficult to extrapolate the chances for FUSRAP's future successes or failures from the Corps' short history with the program. However, since FUSRAP was transferred to the Corps, it has achieved, and in some cases exceeded, its planned milestones for evaluating and cleaning up most individual sites. In fiscal year 1998, the Corps had 71 full-time equivalents involved in program management and support. The Corps' staffing for FUSRAP has fluctuated and is expected to continue to fluctuate because of the type of work being conducted. It is difficult to compare the Corps' staffing levels with DOE's because the two agencies used a different basis for calculating the number of staff in the program. Considerable progress has also been achieved in completing environmental documents necessary to begin removal and remedial work.

## Corps' Efforts to Meet Site Milestones

DOE had planned to conduct decontamination work at 14 sites during fiscal year 1998. The Corps planned decontamination work at 11 sites during fiscal year 1998. (See app. II for the Corps' and DOE's fiscal year 1998 milestones for each FUSRAP site.) At 12 sites, planned environmental documentation and cleanup work were conducted as scheduled. For example, the Corps planned to complete Engineering Evaluation/Cost Assessments for the St. Louis Airport Site, and the Wayne, New Jersey, site. These documents were completed. In addition, the St. Louis District planned to, and issued, a Record of Decision for the St. Louis Downtown Site.

At four sites, the Corps not only met its milestones, but also conducted additional work. At the Maywood, New Jersey, site, the New York District had planned to remediate 13 vicinity properties during fiscal year 1998. Instead, the District was able to remediate 15 vicinity properties. In addition, the Corps remediated four other properties where contamination was found during the planned excavation of the vicinity properties. At Middlesex, New Jersey, half of a contaminated waste pile was scheduled for removal; however, because the New York District was able to obtain a favorable disposal rate by using an alternate disposal site, it was able to remove the entire pile. At the Painesville, Ohio, site, the Buffalo District originally planned to remove 250 cubic yards of contaminated soil; however, as the soil was removed, additional contamination was found, and 300 cubic yards was subsequently removed. The original milestones for the Niagara Falls Storage Site included only providing for site security and maintenance. The Corps provided security and maintenance and also decontaminated a building on the site.

At five sites, the milestones established for fiscal year 1998 were not met for various reasons. For example, the Corps originally planned to remove the Shpack Landfill site near Attleboro, Massachusetts, from FUSRAP by summer 1998. However, the Corps questioned whether the site's contamination was attributable to the government. The Corps has delayed the closing and did not meet its milestone because it decided to do a more intensive review of the project records than it originally anticipated. One site (Madison, Ill.) did not have any fiscal year 1998 milestones.

## Corps' Staffing Changes to Meet the Program's Needs

The Corps set a number of expectations for the program, including one that the Corps would implement the program without an increase in its overall staffing levels. During fiscal year 1998, the Corps had 71 full-time equivalents.[7] Most of these—65 full-time equivalents—were located at the six Corps district offices that manage FUSRAP sites. In addition, six full-time equivalents were located at the Hazardous, Toxic, and Radioactive Waste Center of Expertise in Omaha, Nebraska.[8] The Corps does not employ contractor staff to manage this program.

During the first year that the Corps managed FUSRAP, staffing levels fluctuated. Transition teams were formed and disbanded, and district FUSRAP teams and site teams were created. In addition, district officials have indicated that they expect staffing levels to continue to change in the near term as specific sites move through the different phases of cleanup. For example, Corps officials told us that the preparation of environmental documentation requires significantly more staff involvement than does the actual physical removal of contaminated material. (See app. III to this report for a listing of the number of staff involved in FUSRAP.)

At the time the program was transferred, DOE reports that it had 14 federal and 50 contractor full-time equivalents involved in a joint federal/contractor management team. It is difficult to compare the Corps' and DOE's staffing levels. Consistent with other DOE programs, DOE used a federally led management team in FUSRAP, while the Corps used all federal staff. In addition, as stated previously, the Corps' staffing level includes program management and some program support staff, while DOE's reported staffing level includes only program management.

[7]A full-time equivalent is the measure of the total number of hours worked divided by the number of compensable hours in a fiscal year. For example, one full-time employee counts as one full-time equivalent, and two employees that work half time also count as one full-time equivalent.

[8]The Center of Expertise provides FUSRAP with technical expertise on environmental matters.

## Corps' Preparation of Environmental Documentation

The Corps believes that its authority to execute FUSRAP is the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended. One of the challenges the Corps identified during the program's transition from DOE was completing environmental documents necessary to begin removal or remediation of contamination pursuant to the act. Removal actions are short-term actions taken to clean up, remove, and monitor contamination. Remedial actions are the study, design, and construction of longer-term responses aimed at permanently cleaning up a site.

When DOE managed FUSRAP, it used action memorandums as its primary decision document to carry out removal actions. An action memorandum identifies the selected removal action and authorizes the cleanup. It is supported by an Engineering Evaluation/Cost Assessment, which characterizes the waste, examines different options, tentatively selects a remedy, and obtains public comment. DOE's use of Engineering Evaluation/Cost Assessments and action memorandums was consistent with a GAO report recommending that DOE consider the increased use of removal actions, where appropriate, as a potential means of schedule and cost savings.[9]

The Corps has prepared five Engineering Evaluation/Cost Assessments for removal actions involving six sites and two Records of Decision for cleanup involving four sites and plans to prepare Records of Decision to remediate and close out nearly all sites. Records of Decision document the selected remedy and authorize the cleanup. They are supported by a work plan, a remedial investigation, a feasibility study, and a proposed plan that tentatively selects a remedy and obtains public comment. Records of Decision are generally prepared to support and document longer, more complex remedial action cleanups. Corps officials told us that they make extensive use of Records of Decision because the Corps believes that Records of Decision are required under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, to achieve finality and completion of response actions at a site. Furthermore, the Corps believes that the Record of Decision process ensures full public comment on the selected remedial alternative.

The use of either decision document complies with relevant requirements for documenting cleanup actions. Implementing regulations and applicable guidance documents for the Comprehensive Environmental Response,

[9]Nuclear Waste: Greater Use of Removal Actions Could Cut Time and Cost for Cleanups (GAO/RCED-96-124, May 23, 1996).

Compensation, and Liability Act of 1980, as amended, provide that both removal and remedial actions require a decision document to be included as part of the administrative record of each response action. The regulations and guidance indicate that this requirement may be satisfied differently for each type of action. While a Record of Decision is the document to be used for a remedial action, an action memorandum generally is used for a removal action.

## Transition Activities and Issues

During the transition from DOE to the Corps, the Corps established transition teams and met with DOE officials to transfer contracts and obtain information related to the FUSRAP sites. The transition of FUSRAP sites and information to the Corps was achieved quickly and smoothly. However, several issues related to the program needed to be resolved. DOE and the Corps are negotiating a Memorandum of Understanding to clarify roles and responsibilities. DOE and Corps officials told us that the memorandum may be finalized in early 1999.

### Transfer of FUSRAP Sites

When FUSRAP was initially transferred from DOE, the Corps set out to review and analyze the program, facilitate a smooth transition from DOE to the Corps, develop and submit a report to the Congress, and execute the program and projects within budget and on schedule. To accomplish the objectives, the Corps developed a management plan and created two teams—the Program Assessment Team and the Oak Ridge Transition Team.

The Program Assessment Team consisted of six members with backgrounds in hazardous, toxic, and radioactive waste management; technical requirements; construction contracting; laws and regulations; health physics and safety; and real estate. The team was chartered to develop the Corps' overall assessment of the status of FUSRAP projects, DOE's strategy for completion, and the technical appropriateness and funding level of existing DOE-directed contractor activities. During November 1997, the team visited the six Corps districts that manage FUSRAP sites and also visited most of the FUSRAP sites. The team was also to work with the Corps' districts to determine if the cleanup of all sites could be completed by 2002, to determine a transition strategy for each project, and to consolidate, assemble, and coordinate site-specific components of the Corps' report to Congress.

The Oak Ridge Transition Team had four members with expertise in hazardous, toxic, and radioactive waste; program and project management; contracting; and contract management. The team was chartered to assess DOE's FUSRAP management practices, contract requirements, financial systems, scheduling, regulatory interfaces, community relations, and future program requirements. In addition, the team was responsible for assisting in preparation of the report to Congress.

The Corps' and DOE's staff held numerous meetings during the first few months of fiscal year 1998. For example, the day after the President signed the bill transferring the program, Corps officials from headquarters and the districts met with DOE headquarters officials. The Corps' teams spent from October 20 through 24, 1997, with DOE and Bechtel National, Inc., (DOE's prime management support contractor) staff in Oak Ridge, Tennessee, where they were briefed on individual FUSRAP sites. The Corps' headquarters officials again met with DOE officials on November 7. The Corps' March 1998 report to Congress stated that during the transition period, DOE personnel at Oak Ridge and the FUSRAP sites provided outstanding cooperation. The report also stated that DOE's program and project managers and its contractors involved in FUSRAP acted professionally and responsibly. DOE and Corps officials agreed that both agencies were cooperative and that the transition was a smooth, coordinated effort.

## Transition Issues

Early in the transition, it was not clear whether the Corps had the same authority as DOE for regulating certain safety activities of contractors carrying out FUSRAP cleanups. With respect to nuclear safety and occupational safety and health activities, through the terms of its contracts, DOE regulated its FUSRAP cleanup contractors as authorized by the Atomic Energy Act.[10] As a result, DOE's contractors followed safety requirements imposed by DOE under its authority rather than those imposed by the Nuclear Regulatory Commission or by the Occupational Safety and Health Administration. The Corps questioned whether this authority had been transferred. As a result, the Corps' contractors were required to comply with the substantive provisions of all applicable safety

[10]DOE's statutory authority for these activities is contained in sections 110(a)(2) and 161(i)(3) of the Atomic Energy Act (42 U.S.C. 2140(a)(2) and 2201(i)(3), respectively). Section 110(a) excludes DOE's contractor-operated facilities from the requirement for a Nuclear Regulatory Commission license for the construction or operation of these facilities. Section 161(i)(3) authorizes DOE to prescribe regulations or orders that it considers necessary to protect health and safety at its facilities, including standards governing the design and operation of those facilities.

and regulatory requirements of the Nuclear Regulatory Commission and Occupational Safety and Health Administration.

Corps officials informed us that they have taken the position that the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, does not require the Corps to obtain Nuclear Regulatory Commission licenses for FUSRAP work performed entirely on-site but does require compliance with provisions of otherwise applicable license requirements for on-site work. Corps officials also believe that any portions of FUSRAP work that are entirely off-site are subject to applicable license or permit requirements. The Corps therefore requires its contractors to comply with all federal, state, and local regulations regarding the handling of FUSRAP materials and to meet all license or permit requirements for off-site work. On January 12, 1999, the Corps wrote a letter to the Nuclear Regulatory Commission that stated the Corps' position and asked for the Commission's guidance.

Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, an agency that cleans up a contaminated site may be able to recover some of the funds spent for response actions from potentially responsible parties. The Corps believed it needed specific legislative authority to deposit funds recovered this way in its FUSRAP accounts and then to use the funds for additional FUSRAP response actions. This issue was resolved when specific authority to deposit these funds was provided in the Energy and Water Development Appropriations Act for Fiscal Year 1999 (P.L. 105-245).

Sites may be added to FUSRAP when new information about radioactive contamination related to sites used by DOE's predecessor agencies becomes available. For example, as recently as 1994, the CE site in Windsor, Connecticut, was added to the program. The Corps does not regard the designation of new FUSRAP sites as being within the scope of responsibilities that were transferred. The Corps believes that DOE is the repository for information on the Manhattan Engineering District and early activities by the Atomic Energy Commission and that such information is essential for determining the eligibility for cleanups under FUSRAP. DOE's initial position was that the Energy and Water Development Appropriations Act of 1998 transferred complete responsibility for carrying out FUSRAP to the Corps—including the designation of new sites, although DOE also stated that it would provide the Corps with reasonable assistance in evaluating the eligibility of potential new sites. DOE and Corps officials informed us that they have tentatively resolved this issue—DOE

will research the history of proposed new FUSRAP sites to determine their eligibility, and the Corps will assess the sites' level of contamination—in a Memorandum of Understanding that is currently being negotiated.

Questions about which agency should be accountable for sites is another transition issue that requires resolution. DOE and Corps officials informed us that they have tentatively agreed—in the Memorandum of Understanding that is currently being negotiated—that DOE will be responsible for any surveillance and maintenance of sites that have been released from the program. Questions about which agency should be accountable for sites still in FUSRAP remain under discussion. Specifically, the matter of which agency is responsible for property management has not been decided. The Corps has proposed that DOE should retain responsibility for these matters. DOE's position is that while the Corps' cleanup activities are in progress, these responsibilities are best handled by the Corps. DOE and Corps officials informed us that they are attempting to resolve this issue in the Memorandum of Understanding, which may be finalized in early 1999.

## Conclusions

The Corps has been responsible for FUSRAP for only a little more than a year; because of this short period, it is difficult to predict the future of the program. However, during the first year that the Corps managed FUSRAP, it accomplished much. The Corps reviewed all 22 sites, developed cost and schedule estimates for each, and established site-specific milestones. For most sites, these milestones were achieved or exceeded. The Corps also realized reductions in the costs of disposing of contaminated materials and in staffing levels. The transition of the sites from DOE to the Corps was achieved quickly and smoothly.

Despite the successes of the Corps' first year, unknowns still exist for several aspects of FUSRAP. We found several sites where the extent of contamination had not yet been completely characterized or the technology required to clean up the contamination is not yet available. As a result, there is potential for the Corps' $2.25 billion cleanup cost estimate to increase in the future. In addition, several overall transition issues related to the Corps' responsibilities and authorities remain to be formally resolved, particularly, its responsibility for determining the eligibility of new FUSRAP sites, accountability for the sites removed from the program, and accountability for the sites currently in the program. The first two issues have been tentatively resolved; discussions continue on the third.

## Agency Comments and Our Evaluation

We provided the Corps and DOE with a draft of this report for their review and comment. The Corps concurred with the report's assessment of the Formerly Utilized Sites Remedial Action Program. The Corps also commented about its 71 full-time equivalent management and support staff that we reported were employed in the program. The Corps' letter stated that management of the program was accomplished with 26 full-time equivalents. During our review, we requested information on program management staffing levels, and the Corps informed us that it had 71 full-time equivalents involved in program management and support. We included that information in the report and the Corps' comments provide no basis for making changes to the report. As stated in the report, we are aware that a comparison between DOE's and the Corps' staffing levels is difficult and that staffing levels for the program tend to fluctuate. Nevertheless, the staffing level data that the Corps previously provided us with and the President's fiscal year 2000 budget—which show staffing levels of 97 full-time equivalents for the program for fiscal year 1998 and 140 full-time equivalents for fiscal years 1999 and 2000—further support our view that the assessment of the Corps' staffing levels presented in this report should not be adjusted downward.

DOE's letter provides a perspective on the last several years of the Formerly Utilized Site Remedial Action Program—when it was managed by DOE—and the condition of the program when it was transferred to the Corps. This report focused on transition issues and activities that occurred after the program was transferred, and, as a result, we did not make any changes to the report. The full texts of the Corps' and the DOE's comments are included in appendixes IV and V, respectively.

## Scope and Methodology

To obtain information on issues related to FUSRAP's transition from DOE to the Corps, we held discussions with and obtained documents related to the transition period from the Corps' headquarters, division, and district officials; former DOE program officials in headquarters and Oak Ridge, Tennessee; and DOE contractor officials who were responsible for FUSRAP. To determine the basis for the Corps' cost and schedule estimates contained in its report to Congress and to obtain information on the Corps' program milestones, staffing levels, and environmental document preparation, we visited and held discussions with officials from the six Corps districts that are responsible for FUSRAP sites. We obtained documents related to cleanup costs and schedules, site contamination, program milestones and accomplishments, staffing levels, and environmental requirements. We visited 21 of the 22 FUSRAP sites (the site

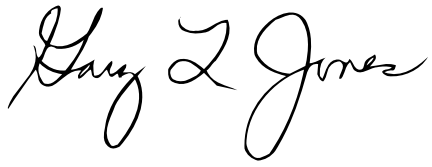
we did not visit is an active site, and the operator requested that we not visit because doing so could disrupt current activities). We also visited the Corps' Omaha, Nebraska, District Office and the Hazardous, Toxic, and Radioactive Waste Center of Expertise in Omaha to obtain documents and information on contractual and technical assistance that they provided for FUSRAP districts. We conducted our review from July 1998 through January 1999 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days after the date of this letter. At that time, we will send copies of the report to the Secretaries of Defense and Energy, the Director, Office of Management and Budget, and other interested congressional parties. We will also make copies available to others on request.

If you or your staff have any questions about this report, please call me at (202) 512-3841. Major contributors to this report were Glen Trochelman,

Assistant Director; Ilene Pollack, Senior Evaluator; Kenneth E. Lightner, Jr., Senior Evaluator; and Susan W. Irwin, Senior Attorney.

Sincerely yours,



(Ms.) Gary Jones
Associate Director, Energy,
Resources, and Science Issues

# Contents

## Abbreviations

| | |
|---|---|
| DOE | Department of Energy |
| GAO | General Accounting Office |
| FUSRAP | Formerly Utilized Sites Remedial Action Program |

# DOE's and Army Corps of Engineers' Cost Estimates for FUSRAP Sites

Dollars in millions

| Site and location | DOE's estimates of cost to complete | | Corps' estimates of cost to complete | |
|---|---|---|---|---|
| | May 1997 plan | June 1997 plan | Baseline | Conservative |
| W.R. Grace Site, Baltimore, Md. | $13.0 | $12.0 | $39.6 | $53.3 |
| Ashland 1, Tonawanda, N.Y. | 14.0 | 26.0 | 28.7 | 28.7 |
| Ashland 2, Tonawanda, N.Y. | 9.0 | 14.0 | 14.4 | 14.4 |
| Bliss & Laughlin Steel, Buffalo, N.Y. | 1.0 | 1.0 | 0.3 | 0.3 |
| Linde, Tonawanda, N.Y. | 47.0 | 47.0 | 33.2 | 33.2 |
| Niagara Falls Storage Site, Lewiston, N.Y. | 226.0 | 6.0 | 285.0 | 434.5 |
| Seaway Site, Tonawanda, N.Y. | 0.5 | 0.5 | 10.2 | 10.2 |
| Luckey, Luckey, Ohio | 31.0 | 32.0 | 157.3 | 179.9 |
| Painesville, Painesville, Ohio | 10.0 | 10.0 | 10.3 | 10.3 |
| CE Site, Windsor, Conn. | 29.0 | 27.0 | 40.7 | 99.3 |
| Ventron, Beverly, Mass. | 8.0 | 8.0 | 0.07 | 0.07 |
| Shpack Landfill, Norton/Attleboro, Mass. | 1.0 | 1.0 | 0.03 | 0.03 |
| Maywood, Maywood, N.J. | 229.0 | 221.0 | 266.2 | 304.8 |
| Middlesex Sampling Plant, Middlesex, N.J. | 37.0 | 36.0 | 46.6 | 46.6 |
| Wayne Interim Storage Facility, Wayne, N.J. | 55.0 | 55.0 | 56.1 | 79.9 |
| Colonie Site, Colonie, N.Y. | 26.0 | 24.0 | 24.3 | 24.3 |
| Dupont Chambers Works, Deepwater, N.J. | 11.0 | 11.0 | 16.5 | 16.5 |
| Madison Site, Madison, Ill. | 5.0 | 5.0 | 1.8 | 3.0 |
| St. Louis Airport Site, St. Louis, Mo. | 192.0 | 38.0 | 123.4 | 179.5 |
| St. Louis Airport Site Vicinity Properties, St. Louis, Mo. | 189.0 | 166.0 | 85.9 | 122.0 |
| St. Louis Downtown Site, St. Louis, Mo. | 187.0 | 90.0 | 55.0 | 167.2 |

(continued)

Dollars in millions

| Site and location | DOE's estimates of cost to complete | | Corps' estimates of cost to complete | |
|---|---|---|---|---|
| | May 1997 plan | June 1997 plan | Baseline | Conservative |
| Hazelwood Interim Storage Site & Latty Ave. Properties, Hazelwood, Mo. | 183.0 | 150.0 | 114.0 | 214.0 |
| Total | $1,503.5 | $980.5 | $1,409.6 | $2,022.0 |

Legend

DOE = Department of Energy

FUSRAP = Formerly Utilized Sites Remedial Action Program

Note: This appendix shows the Corps' cost estimates for the 22 FUSRAP sites, which total $1.4 billion (baseline) and $2 billion (conservative). The total of the individual site costs differs from the Corps' total cleanup cost estimate of $1.56 billion (baseline) and $2.25 billion (conservative) because the individual site cost estimates in this table are in October 1997 dollars and the total cleanup costs are adjusted for inflation. This appendix also shows DOE's estimated cost (adjusted for inflation) for the 22 FUSRAP sites which total $1.5 billion (under the May 1997 10-year plan) and $980.5 million (under the June 1997 accelerated plan). The total of the individual site costs differs under the accelerated plan from the DOE accelerated total cleanup cost estimate of $983 million because the individual site costs do not include site closeout costs.

Source: DOE estimates of Cost to Complete: 1997 Plan: FUSRAP Ten-Year Plan Executive Summary, U.S. Department of Energy, Oak Ridge Operations, discussion draft (May 1997). Accelerated Clean up Plan: FUSRAP Accelerating Cleanup: A Focus on 2006, Executive Summary, U.S. Department of Energy, Oak Ridge Operations, discussion draft (June 1997). Corps' Estimates of Cost to Complete: Baseline and Conservative: FUSRAP Report to Congress, U.S. Army Corps of Engineers (Mar. 1998).

# Status of Fiscal Year 1998 Milestones at FUSRAP Sites

| District | Site and location | DOE's proposed FY 1998 milestones | Corps' FY 1998 milestones | Status |
|---|---|---|---|---|
| Baltimore | W.R. Grace, Baltimore, Md. | No FY 1998 milestones. | Award contract to prepare Engineering Evaluation/Cost Assessment. | Occurred. |
| Buffalo | Ashland 1, Tonawanda, N.Y. | Begin removal of contamination. | Complete Record of Decision. | Occurred. |
| Buffalo | Ashland 2, Tonawanda, N.Y. | Begin removal of contamination. | Complete Record of Decision and initiate remediation. | Occurred. |
| Buffalo | Bliss & Laughlin Steel, Buffalo, N.Y. | No FY 1998 milestones. | Release Engineering Evaluation/Cost Assessment to the public. | Delayed because of lack of access to site. |
| Buffalo | Linde, Tonawanda, N.Y. | Demolish building No. 30. Decontaminate building No. 14. | Complete decontamination of building No. 14 and demolish and remove building No. 30. | Occurred. |
| Buffalo | Niagara Falls Storage Site, Lewiston, N.Y. | Surveillance and maintenance. | Provide for site security and maintenance. | Exceeded. Decontaminated Building No. 403. |
| Buffalo | Seaway, Tonawanda, N.Y. | Issue hazard assessment. | Issue Record of Decision. | Has not occurred because additional characterization found higher volume of contaminated material. |
| Buffalo | Luckey, Luckey, Ohio | Continue site characterization and begin remedial action. | Complete site characterization. | Occurred. Planned characterization was completed; however, beryllium was found to have migrated, and additional characterization work will be performed. |
| Buffalo | Painesville, Painesville, Ohio | Complete remedial action. | Issue Engineering Evaluation/Cost Assessment and Action Memorandum and excavate/dispose of 250 cubic yards of material. | Exceeded. Additional contamination found. Removed 300 cubic yards. |
| New England | CE Site, Windsor, Conn. | Start site characterization. | Initiate site characterization. | Occurred. |

(continued)

| District | Site and location | DOE's proposed FY 1998 milestones | Corps' FY 1998 milestones | Status |
|---|---|---|---|---|
| New England | Ventron, Beverly, Mass. | Issue final certification document. | Complete Record of Decision | Has not occurred because of Corps' desire not to put out Record of Decision for public review prior to completion of negotiations related to the owner's plans to sell the site. |
| New England | Shpack Landfill, Norton/Attleboro, Mass. | Remove from program. | Remove from program. | Has not occurred because of the need to review more records than originally anticipated. |
| New York | Maywood, Maywood, N.J. | Complete residential vicinity properties. Begin remediation of municipal vicinity properties. | Remediate 13 vicinity properties. | Exceeded. Completed 15 vicinity properties and began remediation of 6 vicinity properties scheduled for FY 1999. Completed four additional properties not originally in the program. |
| New York | Middlesex Sampling Plant, Middlesex, N.J. | Complete Engineering Evaluation/Cost Assessment. Remove 50 percent of waste pile. | Issue Engineering Evaluation/Cost Assessment. Remove half of contaminated waste pile. | Exceeded. Issued Engineering Evaluation/Cost Assessment and removed entire waste pile. |
| New York | Wayne Interim Storage Facility, Wayne, N.J. | Complete removal of waste pile. Begin removal of subsurface contamination. | Issue Engineering Evaluation/Cost Assessment and remove 10,000 cubic yards. | Occurred. |
| New York | Colonie, Colonie, N.Y. | Complete vicinity property cleanup. Begin subsurface soil remediation. | Award contract for total site remediation. Conduct various decontamination and removal activities. | Occurred. |
| Philadelphia | Dupont Chambers Works, Deepwater, N.J. | Remove drums containing waste. | Issue Engineering Evaluation/Cost Assessment and remove drums containing waste. | Occurred. Drums removed under a Post Hazard Assessment document. (Engineering Evaluation/Cost Assessment was not used.) |
| St. Louis | Madison, Madison, Ill. | No FY 1998 milestones. | No FY 1998 milestones. | Not applicable. |

(continued)

| District | Site and location | DOE's proposed FY 1998 milestones | Corps' FY 1998 milestones | Status |
|---|---|---|---|---|
| St. Louis | St. Louis Airport Site, St. Louis, Mo. | Begin excavation of surface and subsurface soil. Remove contaminated sediment in ditches. | Complete rail spur for loading out material and issue Engineering Evaluation/Cost Assessment. Remove contaminated material. | Occurred. |
| St. Louis | St. Louis Airport Site Vicinity Properties, St. Louis, Mo. | Continue remediation of haul routes. | Issue Engineering Evaluation/Cost Assessment for ball fields as part of Airport Site Engineering Evaluation/Cost Assessment. Remove contaminated material. | Occurred. |
| St. Louis | St. Louis Downtown Site, St. Louis, Mo. | Continue building decontamination. Begin subsurface soil remediation. | Issue Record of Decision. Remove contaminated material. | Occurred. |
| St. Louis | Hazelwood Interim Storage Site and Latty Ave. Properties, Hazelwood, Mo. | Begin removal of waste storage pile. | Issue Engineering Evaluation/Cost Assessment and start rail spur. | Engineering Evaluation/Cost Assessment was issued, and rail spur was not started because the property owner would not sign the agreement to allow the Corps on the property. |

Legend

FUSRAP = Formerly Utilized Sites Remedial Action Program

FY = fiscal year

# Army Corps of Engineers' FUSRAP Staffing Levels at the End of Fiscal Year 1998

| Organization | Full-time equivalents |
|---|---|
| New York | 8.1 |
| Buffalo | 30.8 |
| St. Louis | 20.3 |
| New England | 3.0 |
| Philadelphia | 1.0 |
| Baltimore | 2.0 |
| Omaha | 6.1 |
| Headquarters | N/A[a] |
| **Total** | **71.3** |

Legend

FUSRAP = Formerly Utilized Sites Remedial Action Program

N/A = not applicable

[a]Headquarters is funded through General Expense funds and is not attributable to FUSRAP budget.

Source: U.S. Army Corps of Engineers.

# Comments From the Army Corps of Engineers

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

10 FEB 1999

REPLY TO
ATTENTION OF:

Ms. Gary Jones
Associate Director, Energy, Resources, and
Science Issues
Resources, Community, and Economic Analysis Division
United States General Accounting Office
Washington, D.C. 20548

Dear Ms. Jones:

Thank you for the opportunity to review and comment on your draft report entitled "Nuclear Waste: Progress in Cleaning Up Formerly Used Nuclear Sites." The U. S. Army Corps of Engineers concurs with your report's assessment of our progress in executing the Formerly Utilized Sites Remedial Action Program.

I would like to clarify our utilization of 71 full time equivalents referred to in your cover letter to Congressman Bliley and at several places in the report itself. Our management of the FUSRAP program was accomplished by 26 full time equivalents (FTE) in Fiscal Year (FY) 1998, consisting of 10 FTE at our Headquarters, four FTE at three Division offices, five FTE at Corps district offices, and seven FTE contracted through the FUSRAP management support contract the Corps inherited from the Department of Energy. The report would be clearer if it stated that the Corps used a total of 26 FTE's for program management in FY 98 as opposed to the 71 FTE which covered a wider variety of tasks.

If you have any questions or require further assistance in connection with our response, please contact Hans Moennig at (202) 761-0372.

Sincerely,

Timothy L. Sanford
Colonel, U.S. Army
Deputy Chief of Staff for Operations

# Comments From the Department of Energy

**Department of Energy**
Washington, DC 20585

FEB 03 1999

Ms. Gary Jones
Associate Director, Energy, Resources, and
Sciences Issues
U.S. General Accounting Office
Washington, D.C. 20548

Dear Ms. Jones:

My staff and I have reviewed the draft of your report entitled Nuclear Waste: Progress in Cleaning Up Formerly Used Sites (GAO/RCED-99-48). We previously reviewed the "Statement of Facts" associated with this report, met with you and your staff, and provided comments on that document. I appreciate your consideration of those comments and your incorporation of the vast majority of them into the report.

However, the report does not put into context the "condition" of the Formerly Utilized Sites Remedial Action Program at the time of the transfer to the Corps. In late 1995, we became concerned that substantial progress was needed in completing the cleanup of the sites. Up to this time, cleanup had been completed at some of the smaller sites as well as cleanup at many vicinity properties at the larger sites. Considerable effort had been made in characterizing the larger sites and in providing this information to the regulators and local communities. But, agreement could not be reached on the cleanup levels at the sites, the condition of the sites when the cleanup was completed, and the future ownership of many of the sites. We decided to take a dramatic step and embark on a two-fold strategy: (1) we would get consensus from the regulators/communities on the cleanup approach for each site; and (2) we would request a nearly doubling of the Formerly Utilized Sites Remedial Action Program budget with the commitment/goal of completing the cleanup in five years. This would provide incentives for the regulators/communities to come to achievable cleanup approaches while providing the Office of Management and Budget and the Congress with a commitment/goal to get to completion of the Formerly Utilized Sites Remedial Action Program. While we knew this was somewhat of a "Man on the Moon Goal" and we did not have all the answers, we knew it was plausible based on our experience with the Uranium Mill Tailings Remedial Action program which involved the completion of work at 24 locations with thousands of vicinity properties.

Our task for 1996 was to achieve consensus on as many of the large sites as possible so we could provide sufficient justification for the budget increase. We knew it would be difficult to complete Records of Decisions for the cleanup approach since there was not sufficient characterization work done to be able to agree on the extent to which soil should be removed. Rather than spend more time and money on characterization, we suggested to the regulators/communities that we proceed with "removal actions" with agreement on what the level of cleanup would be depending on the depth below the surrounding ground level. So, where we had a pile of contaminated dirt which had been stockpiled as interim storage from the cleanup of vicinity properties, we would remove the contaminated dirt which was above certain levels of contamination. We would continue the excavation until the contamination level was below acceptable levels. In some cases, this would be a couple of feet below the surrounding ground level--in other cases the excavation would be further. I personally led a lot of the negotiations with the regulators, communities, and congressional delegations during 1996 and the early part of 1997. We believed we had a winning strategy and had received support in achieving consensus on the cleanup approach and had received support for the funding increase. This was the case at the Tonawanda disposal sites in New York, the Maywood interim disposal site in New Jersey, the Wayne interim disposal site in New Jersey, the St. Louis disposal sites near the airport and downtown sites in Missouri, the Middlesex interim disposal site in New Jersey, and the Colonie disposal site in New York. We had developed a contracting strategy at the Wayne site where we competitively bid the entire job on a fixed priced basis for the removal and disposal of the contaminated interim disposal site with several options for the excavation below grade depending on how much contamination we found. Since this approach was successful, we were preparing contracts for each of the sites.

We knew we only had limited information for the Painesville and Luckey sites in Ohio, but we believed we could provide a reasonable estimate for the cleanup at these sites. For the Niagara Falls Storage Site in Lewiston, New York, we knew, and declared, we needed to wait until we had a successful cleanup approach for similar materials at our Fernald site in Ohio before we could proceed with this Niagara Falls Storage Site or even make an estimate for the cleanup. In fact, we had the National Academy of Sciences prepare a report for us on the plausible alternatives we should consider for this site and had widely shared this with the regulators, local community, and the congressional delegation.

The management for Formerly Utilized Sites Remedial Action Program was accomplished at the Oak Ridge Operations Office. A technical study contractor performed the analysis of each site's conditions and prepared cleanup options, and a second contractor was responsible for the field work and actual cleanup. We had significantly reduced the "study" contractor since we believed we knew enough to allow us to proceed with "removals" without having to be 100 percent

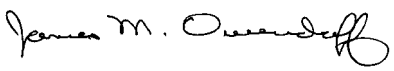
accurate on the complete conditions of each site. We had also changed the approach of the "cleanup" contractor from one of doing the cleanups on a cost basis, to an integrating contractor who lets a number of competitive fixed-price contracts and only performed cleanups themselves where the extent of the contamination was extremely difficult to quantify such as contaminated soil along old haul roads. The integrating contractor had project managers and a health and safety staff at each site to ensure the conditions of the contract were met, and to provide ready availability to the local regulators and community. Thus we had taken steps to ensure we were utilizing funds efficiently and effectively with only essential overhead.

I believe in October 1997, at the time the Congress transferred responsibility to the Corps, we had: (1) developed consensus on the cleanup strategy with the regulators, communities, and congressional delegations; (2) prepared a contracting strategy which would provide safe and cost-effective cleanups; and (3) adjusted the management approach which could focus on cleanups in a streamlined and efficient manner. With the transfer to the Corps, through the hard work by the transition teams in both agencies, I do not believe the regulators or the communities saw a miss in the heartbeat of the cleanups. We were pleased with the progress we had made from late 1995 to October 1997 in getting Formerly Utilized Sites Remedial Action Program onto a fast track for cleanup and remove contamination from urban areas. We also believed that the two-fold strategy we embarked upon in late 1995 was the right approach and proved successful.

Currently, the Department of Energy and the Corps of Engineers are working together to complete a memorandum of understanding on the implementation of the Formerly Utilized Sites Remedial Action Program. Substantial progress has been made, and the majority of the issues have been resolved. Discussions are underway concerning the remaining issues with the goal of completing the negotiations and executing the memorandum of understanding shortly.

If you would like to discuss any of our comments, please contact Albert Johnson at 301-903-7226.

Sincerely,



James M. Owendoff
Acting Assistant Secretary for
Environmental Management

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