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# ENVIRONMENTAL CONTAMINATION

# Uncertainties Continue to Affect the Progress of the Spring Valley Cleanup

Statement of David G. Wood, Director
Natural Resources and Environment

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GAO-02-836T

Madam Chairwoman and Members of the Subcommittee:

I am pleased to be here today to discuss the results of our work on the Spring Valley cleanup. As you know, during World War I, the U.S. Army operated a large research facility to develop and test chemical weapons and explosives at a portion of American University and in other areas that became the Spring Valley neighborhood in Washington, D.C. During the 1950s, and again in the 1980s, American University and others raised concerns about buried munitions in the Spring Valley neighborhood. The Army concluded in 1986 and again in 1996 that it had not found evidence of large-scale burial of hazards remaining at Spring Valley. However, subsequent investigations discovered ordnance in large burial pits and widespread arsenic-contaminated soil. This experience raised questions about the adequacy of the Army's process for assessing cleanup needs at sites formerly used for defense purposes, and we currently have work with a nationwide scope underway on that issue, which will result in a report later this summer.[1] At the Spring Valley site, the U.S. Army Corps of Engineers (the Corps) is still locating buried munitions and discovering elevated levels of arsenic in the soil on more properties.

My testimony is based on our report that you are releasing today.[2] At your request, and as agreed with your offices, the report provides information on the (1) specific roles and responsibilities of the government entities involved at the Spring Valley site, as authorized by statute, regulation, or guidance, and as actually carried out, (2) progress the government entities have made toward identifying and removing hazards at the site, (3) health risks government entities have determined are associated with the hazards at the site and the impact of these risks on cleanup decisions, and (4) estimated cost and schedule of the remaining cleanup. In addition, you asked us to provide a list of sites in the District of Columbia where hazards resulting from federal activities have been found. That list, which we compiled from information provided by the Corps, the U.S. Environmental Protection Agency (EPA), and the District of Columbia's Department of

[1] In examining the about 9,200 sites nationwide the U.S. Army has identified more than 4,000 as not needing cleanup. At the request of the Ranking Member, House Committee on Energy and Commerce, we are examining the basis for those decisions made by the U.S. Army where it concluded that no cleanup actions were needed.

[2] U.S. General Accounting Office, *Environmental Contamination: Many Uncertainties Affect the Progress of the Spring Valley Cleanup*, GAO-02-556 (Washington, D.C.: June 6, 2002).

Health, is included in our report. These three agencies are the primary government entities involved in the Spring Valley cleanup.

In summary:

- The principal government entities involved at the Spring Valley site are carrying out their roles and responsibilities in cleaning up the site primarily under the Defense Environmental Restoration Program (environmental restoration program), which was established by the Superfund Amendments and Reauthorization Act of 1986. Under the environmental restoration program, Defense is authorized to identify, investigate, and clean up environmental contamination at formerly used defense sites (FUDS). The Corps is responsible for these activities at Spring Valley. Defense is required under the environmental restoration program to consult with EPA, which has its own authority to act at the site under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (sometimes referred to as "Superfund"). Under the program, Defense's activities must also be consistent with a statutory provision that addresses, among other things, participation by the affected states—in this case, the District of Columbia. Under the Corps' program guidance for FUDS, the District of Columbia has a role in defining the cleanup levels at the Spring Valley site. In carrying out their roles, the government entities have, over time, formed an active partnership to make cleanup decisions. For example, the Corps leads the effort to identify hazards, but in many cases it uses the recommendations of the District of Columbia and EPA to look for hazards buried at certain sites. While the entities have not agreed on all cleanup decisions, officials acknowledge that, by having formed a partnership, a means exists to foster communication and collaboration, and officials of all three entities stated that the partnership is operating effectively. Continued progress at the site will depend, in part, on the effectiveness of this partnership over the duration of the cleanup period.

- The government entities have identified and removed a large number of hazards, but the extent to which hazards remain is unknown. The hazards identified include buried ordnance; chemical warfare agents in glass containers; and arsenic-contaminated soil. Beginning in 1986, the U.S. Army searched records and reviewed photographs to identify locations where ordnance and chemicals might have been buried and concluded that there was no evidence of large-scale burials at the site. However, following the discovery of buried ordnance by a utility contractor in 1993, the U.S. Army identified and removed 141 pieces of

ordnance, 43 of which were suspected chemical munitions (but most were destroyed before being tested). After the ensuing investigation of the site, the Corps concluded in 1996 that it was unlikely to discover additional hazards at the site. Since then, however, the Corps has found and removed 667 pieces of ordnance, 25 of which were chemical munitions, and 101 bottles of chemicals. Moreover, the Corps has discovered arsenic in the soil throughout the site that exceeds naturally occurring levels. As of April 2002, the Corps had identified and removed 5,623 cubic yards of arsenic-contaminated soil from three properties. The Corps has extensive work remaining to search for any additional hazards at the site, and, if found, remove them.

- The primary health risks influencing cleanup activities currently at Spring Valley are the possibility of injury or death from exploding or leaking ordnance and containers of chemical warfare agents and potential long-term health problems from exposure to arsenic-contaminated soil, according to the government entities involved. Because of the immediacy of the risks, ordnance and containers are to be removed as soon as possible after they are found. Efforts to determine the health risks posed by the arsenic contamination at the site are ongoing. Exposure to arsenic has been generally linked to cancers and other health conditions. A recent descriptive epidemiological study by the District of Columbia concluded that Spring Valley residents showed no increased incidence of certain cancers, while exposure testing by the Agency for Toxic Substances and Disease Registry (an agency of the Department of Health and Human Services) found no evidence of significant exposure to arsenic in the individuals tested. However, these studies, according to some residents, were not sufficiently broad, and additional studies to assess whether residents have actually been exposed to arsenic are ongoing. Over the past year, the partners have been in the process of reaching agreement on a single level of arsenic that may remain in the soil throughout the site and that is protective of human health and the environment.

- As of April 2002, the U.S. Army estimated that the remaining cleanup activities at Spring Valley would cost $71.7 million and take 5 years to complete, but the reliability of these estimates is uncertain. Many factors—such as the discovery of additional hazards or changes in annual funding levels—make it inherently challenging to estimate the costs and schedule for cleaning up the site. Since fiscal year 1997, the Corps has continually needed to increase the scope of the remaining cleanup, as more information about the hazards at the site became

known. As a result, the Corps increased the total estimated cost for the Spring Valley cleanup six-fold, from about $21 million in fiscal year 1997 to about $125 million as of April 2002. On the other hand, the Corps has reduced its estimate of the time it will take to complete the cleanup since fiscal year 2000 (the first year the Corps made public this estimate) by increasing considerably the amount of annual funding it plans to devote to the site. It is unclear at this time how long the Corps will be able to accommodate the increasing funding needs at Spring Valley because funding the cleanup activities at the site is currently adversely affecting the pace and progress of cleanups at other formerly used defense sites (according to Corps' data, approximately 2,800 such sites have been found to require remediation). Consequently, any significant increases in the cost of completing the Spring Valley cleanup, or decreases in the amount of available annual funding, would likely require the Corps to extend the completion date further into the future.

## Background

During World War I, at a portion of American University and in other areas that became the Spring Valley neighborhood in Washington, D.C., the U.S. Army operated a large research facility to develop and test chemical weapons and explosives. After World War I, the majority of the site was returned to private ownership and was developed for residential and other uses. The site now includes, in addition to American University, about 1,200 private residences, Sibley Hospital, 27 embassy properties, and several commercial properties.

In 1993, buried ordnance was discovered in Spring Valley, leading to its designation by the Department of Defense (Defense) as a FUDS currently comprising 661 acres. FUDS are properties that were formerly owned, leased, possessed, or operated by Defense or its components, and are now owned by private parties or other governmental entities. These properties, located throughout the United States and its territories, may contain hazardous, toxic, and radioactive wastes; unexploded ordnance; and/or unsafe buildings. Such hazards can contribute to deaths and serious illness or pose a threat to the environment. According to the U.S. Army, Spring Valley is the only FUDS where chemical agents were tested in what became a well-established residential neighborhood at the heart of a large metropolitan area.

To fund the environmental restoration program, the Superfund Amendments and Reauthorization Act of 1986 (SARA) established the Defense Environmental Restoration Account. During the 5 most recent fiscal years (1997-2001), annual program funding for FUDS cleanups has

decreased from about $255.9 million to about $231 million, with program funding estimated to decrease further to about $212.1 million by fiscal year 2003. By the end of fiscal year 2001, the Corps had identified 4,649 potential cleanup projects on 2,825 properties requiring environmental response actions. Through fiscal year 2001 (the latest figure available), the Corps had spent about $53.4 million on cleanup activities at Spring Valley.

## The Government Entities' Roles at Spring Valley

The principal government entities involved at the Spring Valley site are carrying out their roles and responsibilities under the Defense Environmental Restoration Program (environmental restoration program). The program was established by SARA, which amended the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Under the environmental restoration program, Defense is authorized to identify, investigate, and clean up environmental contamination at FUDS. Defense is required to consult with EPA in carrying out the environmental restoration program; EPA, in turn, has established written guidance under CERCLA for its activities at FUDS. Defense is also required to carry out activities under the environmental restoration program consistent with a statutory provision that addresses, among other things, participation by the affected states—in this case, the District of Columbia.[3] Under the Corps' program guidance, the District of Columbia has a role in defining the cleanup levels at the Spring Valley site. According to a District of Columbia Department of Health official, the department assesses the human health risks associated with any exposure to remaining hazards at Spring Valley.[4]

In carrying out their roles, these government entities have, over time, formed an active partnership to make important cleanup decisions. Under the partnership approach, each entity participates in the cleanup at Spring Valley. The Corps, with extensive experience in ordnance removal, is carrying out the physical cleanup. Other activities include the following:

- **Identification of hazards:** Defense consults with EPA and the District of Columbia on cleanup decisions at specified points in the

[3] Specifically, Defense's activities addressing hazardous substances, pollutants, or contaminants are required to be carried out consistent with section 120 of CERCLA.

[4] The Department of Health defines exposure as any completed pathway—through the air, water, or soil—of the contaminant that results in an inhaled, ingested, or dermal-absorbed dose associated with adverse human health effects.

environmental restoration process. EPA has provided assistance in identifying possible buried hazards by using photographic interpretation of aerial maps and providing technical expertise with regard to the presence of hazards in soil, water, and air.

- **Assessing human health risks:** According to the District of Columbia's Department of Health, the department assesses the human health risks associated with any exposure to remaining hazards at Spring Valley. In addition, the District of Columbia, together with the Agency for Toxic Substances and Disease Registry (ATSDR), has been investigating whether residents have actually been exposed to arsenic in the soil.[5]

- **Selecting a cleanup level:** The entities are currently finalizing decisions on a cleanup level for arsenic that will determine how much contamination can be left in the soil throughout the site without endangering human health and the environment.

While the entities have not agreed on all cleanup decisions, officials of all three entities state that the partnership has been working effectively in the recent past. Continued progress at the site will depend, in part, on the effectiveness of this partnership over the duration of the cleanup.

## Hazards Identified and Removed from Spring Valley

Although the U.S. Army twice concluded that it had not found any evidence of large-scale burials of hazards remaining at Spring Valley, an accidental discovery of buried ordnance and subsequent investigations have led to the discovery of additional munitions and chemical contamination. In March 1986, American University was preparing to begin the largest construction project in its history. At the request of American University, the U.S. Army reviewed historical documents and available aerial photographs of the site taken during the World War I era to determine whether chemical munitions might have been buried on campus. Based on the results of its review, in October 1986, the U.S. Army concluded that no further action was needed. However, in January 1993, a utility contractor accidentally uncovered buried ordnance at another location in the Spring Valley site. The U.S. Army immediately responded

[5] ATSDR is an agency of the Department of Health and Human Services. Created by CERCLA, its mission is to take responsive public health action and provide public health information to prevent harmful exposures and diseases related to toxic substances.

and, by February 1993, had removed 141 pieces of ordnance, 43 of which were suspected chemical munitions (but most were destroyed before being tested).

Immediately following this removal, the Corps began to investigate the site. To focus its investigation, the Corps identified 53 locations with the greatest potential for hazards. During the investigation, the Corps conducted subsurface (geophysical) soil surveys with metal detectors to identify buried ordnance and analyzed soil samples to identify chemical contamination. The Corps' soil surveys led the Corps to identify and remove one piece of ordnance containing a suspected chemical agent, 10 expended pieces of ordnance, an empty bomb nose cone, and several fragments of ordnance scrap. Concurrently with the Corps' investigation, another piece of ordnance was found by a builder during construction activities, and two pieces of ordnance were anonymously left for the Corps to find. Based on the results of soil sampling and the ensuing risk assessment, the Corps concluded that no remedial action was needed. Following this investigation, in June 1995, the U.S. Army determined that no further action was required at the Spring Valley site, except for an area that contained concrete shell pits, or bunkers, referred to as the Spaulding/Captain Rankin Area, which was then still under investigation. Subsequent sampling and a risk assessment indicated that no remedial action was necessary, and in June 1996, the Corps recommended that no further action be taken at this area as well.

In 1997, the District of Columbia raised a number of concerns about how the Corps had completed its investigation. In response, the Corps reviewed its work at the site and concluded that it had incorrectly located one of the potentially hazardous locations it had previously investigated, which should have been situated on a property owned by the Republic of Korea (South Korea) on Glenbrook Road. In February 1998, the Corps surveyed the soil on the South Korean property and identified two potential burial pits. By March 2000, the Corps had completed the removal of 288 pieces of ordnance, 14 of which were chemical munitions; 175 glass bottles, 77 of which contained various chemicals, including mustard and lewisite; and 39 cylinders and 9 metal drums. Subsequent soil sampling conducted by EPA led the Corps to remove arsenic-contaminated soil from these properties. By May 2001, the Corps had removed about 4,560 cubic yards of arsenic-contaminated soil from the South Korean property and the adjacent property. As of April 2002, the Corps had not yet removed contaminated soil from the third property, which is the American University President's residence.

After the discovery of hazards on the Glenbrook Road properties, in January 2000, at the request of the District of Columbia, the Corps expanded its arsenic investigation to include about 60 nearby residences and the southern portion of the American University campus. Sampling at these locations indicated that the Corps needed to remove arsenic-contaminated soil from the American University Child Development Center and other locations on the American University campus, and 11 residential properties. As of April 2002, the Corps had removed about 1,063 cubic yards of contaminated soil from American University.

At a public meeting in February 2001, community members urged testing the entire Spring Valley neighborhood for arsenic. The Corps began to test all 1,483 properties within the Spring Valley site for arsenic in May 2001. As of April 2002, the Corps had identified about 160 properties that will require some degree of cleanup, with 7 identified for priority removals of arsenic-contaminated soil because they present relatively higher risks of exposure. Recently, the District of Columbia's Department of Health has urged the Corps to consider including nine additional properties on the list. In addition, the Corps has sampled for additional chemicals at selected locations as a result of information it has about what type of research activities might have occurred at the locations in the past. The results of the sampling are currently under review, but preliminary results have not identified any additional chemicals of concern, according to the Corps.

In May 2001, at the urging of the District of Columbia and EPA, the Corps began to investigate an additional burial pit on the property line between the South Korean property and the adjoining residence on Glenbrook Road. The Corps is continuing to investigate the burial pit, and as of January 2002, had found 379 pieces of ordnance, 11 of which contained the chemical warfare agents mustard and lewisite; fragments of another 8 pieces of ordnance; 60 glass bottles and 3 cylinders, 24 of which contained mustard, lewisite, and acids; and 5 metal drums that showed signs of leakage.[6]

[6] In January 2001, the Corps also removed oil filters, glass, and lab equipment, along with soil contaminated with elevated levels of lead and arsenic from a small surface disposal area discovered on American University property adjacent to the South Korean property. However, according to the Corps, it was not possible to determine whether these hazards resulted from past Defense research activities, or from another source.

Concurrently with the efforts to expand the arsenic investigation, the Corps is planning to expand its efforts to survey properties for buried ordnance. The Corps plans to begin excavating two properties on Sedgwick Street where surveys indicate the presence of buried metallic objects that could possibly be pieces of ordnance. In addition, the Corps, in conjunction with EPA and the District of Columbia, is developing a list of properties to be geophysically surveyed for potential buried ordnance. Site-specific information, such as the results of a review performed by EPA's Environmental Photographic Interpretation Center, will be factored into determining priorities for surveying these additional sites. As of April 2002, the Corps had estimated that a total of 200 properties would be surveyed for ordnance. The government entities recognize that the extent to which hazards remain may never be known with certainty because of the technical limitations associated with sampling and geophysically surveying soil.

## Health Risks Associated with Hazards Found at Spring Valley

At Spring Valley, cleanup decisions depend on the immediacy of the safety and human health risks presented. Throughout the cleanup of the site, identification and removal of buried ordnance have been and continue to be the government entities' top priorities in terms of human health concerns and cleanup decisions. The partners have agreed to remove buried ordnance as soon as possible after its discovery. Accordingly, since early in the Spring Valley cleanup effort, removal of buried ordnance has taken priority over other tasks. The partners also attempt to set priorities for cleaning up properties containing elevated levels of chemicals or metals in soil on the basis of the risk the hazards pose. Although many chemical agents were tested at Spring Valley during World War I, of those contaminants now present at elevated levels, arsenic is deemed to pose the greatest risk to human health and therefore is the contaminant of most concern to the partners.

During its remedial investigation of the site from 1993 to 1995, the Corps used EPA's criteria to assess the health risks associated with these hazards to determine whether further sampling or soil removal was necessary. This assessment found no elevated health risk requiring remedial action. Arsenic was not identified as a contaminant of potential concern for the risk assessment, since, according to the Corps, the sampling results of the arsenic level in the soil were not significantly different from naturally occurring levels. EPA noted that it was involved in the oversight of the cleanup and did not object to the decision made at the time. However, since early 1999, with the additional discovery of buried ordnance and elevated levels of arsenic-contaminated soil at the South

Korean property, the arsenic levels in the soil have become the primary focus of soil cleanup efforts.

Arsenic exposure at certain doses in drinking water has been generally linked to cancers and other adverse health conditions.[7] Based on scientific studies, the District of Columbia has identified lung cancer, bladder cancer, and skin cancer as effects associated with the long-term ingestion of arsenic. However, the precise extent to which arsenic is present and residents are exposed through ingestion, inhalation, or external contact at Spring Valley is unknown, and recent and ongoing efforts are directed at providing this information.

- **Soil sampling:** Through soil sampling, the partners have attempted to detect levels of arsenic in the soil to assist in ascertaining health risks and to set priorities for cleanup. Recent sampling results have registered elevated levels of arsenic in the soil at certain residences. Consequently, the District of Columbia's Department of Health has requested that additional properties be added to the priority removal list.

- **Exposure testing:** After the Corps confirmed elevated arsenic soil levels at American University's Child Development Center, at the request of the District of Columbia, ATSDR conducted an exposure study to determine the extent of arsenic exposure in children and employees at the site. After testing hair samples, ATSDR concluded that the children and employees had had no significant exposure to arsenic. At the request of the District of Columbia, ATSDR is conducting another exposure study (biomonitoring), in which it is studying the level of arsenic present in biological samples from residents on Spring Valley properties with the highest levels of arsenic in the soil. The individual results from the biological samples collected during the exposure investigation were mailed to the residents and were reviewed and discussed by the Mayor's Scientific Advisory Panel. During the Panel's recent meeting, several members noted that this study was a small sample screening investigation, not a full scientific human research project or epidemiological study. The Panel discussed

[7] For example, EPA recently established a more stringent standard for arsenic in drinking water. See U.S. General Accounting Office, *Environmental Protection Agency: Use of Precautionary Assumptions in Health Risk Assessments and Benefits Estimates*, GAO-01-55 (Washington, D.C.: Oct. 16, 2000).

the possibility of ATSDR's continuing a screening investigation during the summer months.

- **Descriptive epidemiological studies:** The District of Columbia has also conducted descriptive epidemiological studies in an attempt to assess the arsenic-related health effects in Spring Valley compared with two control groups as well as with the nationwide incidence and mortality rates for certain cancers. The studies examined bladder, skin, lung, liver, and kidney cancers. However, the number of cases of liver and kidney cancers at Spring Valley was too small to conduct a meaningful statistical analysis. Of bladder, skin, and lung cancers, however, the District of Columbia observed no excesses of cancer incidence and mortality in Spring Valley.

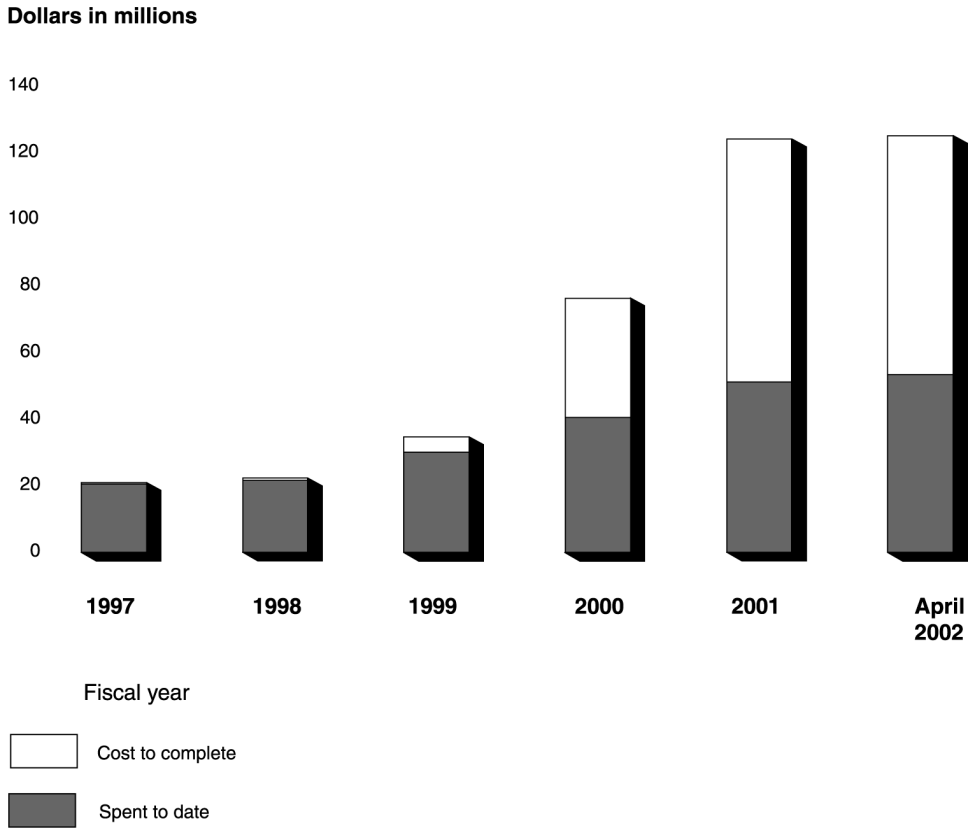
Residents have raised concerns about the extent of the population studied and completeness of data used for the exposure tests and epidemiological studies. For example, some residents have voiced concerns that the full suite of hazards—not just arsenic—present at Spring Valley, even at trace levels, has not been factored into exposure and epidemiological studies. The District of Columbia and the Corps have indicated that mustard agent was found in containers in the pit discovered at Glenbrook Road in May 2001. The District of Columbia's Department of Health does not plan to study exposure to mustard agent, however, because it did not identify a pathway of exposure to mustard agent that could produce a dose resulting in adverse human health effects. The District of Columbia's Department of Health has told Spring Valley residents that, if necessary, it will expand the investigation to hazards other than arsenic, if the hazard is found at levels of concern in Spring Valley.

## The Corps' Estimated Cost and Cleanup Schedule

Under the environmental restoration program, the Secretary of Defense is required to report annually to the Congress on the progress the department has made in carrying out environmental restoration activities at military installations and FUDS. From fiscal years 1997 through 2001 (the most recent report available), the total estimated cost to clean up Spring Valley reported by Defense increased by about six-fold, from about $21 million to about $124.1 million. In response to our request, the U.S. Army provided us with a more up-to-date estimate. As of April 2002, the Corps had slightly revised its estimated cost to about $125.1 million, as shown in figure 1.[8]

[8] For our report, we focused on the revised cost figures that the Army provided to us in April 2002, rather than the figures reported in the fiscal year 2001 Defense Environmental Restoration Program report. According to the Corps, the revised figures more accurately reflect the costs incurred by the Corps through fiscal year 2001 and the Corps' estimate of the cost to complete cleanup activities at Spring Valley.

**Figure 1: Total Estimated Cost to Clean up Spring Valley, Fiscal Years 1997 through 2001 and as of April 2002**




Note: For April 2002, "spent to date" reflects the Corps' revised total of the dollars spent through the end of fiscal year 2001 (September 2001), whereas "cost to complete" reflects the Corps' revised estimate for fiscal years 2002 through 2007, as of April 2002.

Source: GAO's analysis of data from Defense's Defense Environmental Restoration Program annual reports to the Congress, fiscal years 1997 through 2001, and data from the Corps.

Costs have increased principally because the Corps needed to increase the scope of the remaining cleanup, as more information about the site became known. For example, from fiscal year 2000 to fiscal year 2001, the Corps doubled its estimate of the cost to complete the cleanup to include the cost of expanding the scope of planned investigation activities. In fiscal year 2000, the Corps estimated that completing the cleanup would cost about $35.8 million. In fiscal year 2001, the Corps raised its estimate to about $72.9 million to include the cost of sampling the entire Spring Valley site for arsenic-contaminated soil, geophysically surveying selected properties for buried ordnance, and completing additional work needed to remove buried hazards at one location. As of April 2002, the Corps slightly

lowered its fiscal year 2001 estimate to about $71.7 million, as the preliminary results of the sitewide soil sampling yielded additional information about the extent of arsenic contamination.

The Corps' latest estimate of the cost to complete the cleanup depends on assumptions the Corps has made about how many properties will require the removal of arsenic-contaminated soil and how many properties will need to be surveyed and excavated to remove possible buried hazards. For example, as of April 2002, the Corps estimated that, in addition to the ordnance and soil removal activities taking place at the South Korean property and two adjacent properties, arsenic-contaminated soil will need to be removed from another 161 properties and 202 properties will need to be excavated for possible buried ordnance.

Despite the large increases in the scope and cost of the remaining cleanup work, in April 2002, the Corps shortened its estimate of the time to complete the cleanup by 5 years, projecting completion in fiscal year 2007. Prior to fiscal year 2000, Defense's annual reports to the Congress did not provide any estimate of when the Corps planned to complete cleanup activities at Spring Valley. In Defense's fiscal year 2000 annual report to the Congress, the Corps estimated that it would complete such activities by the end of fiscal year 2012. The Corps plans to meet the shortened time frame by applying considerably more funding to the site in the near term.

However, we question whether the Corps will be able to achieve its planned completion even if there are no further changes to the scope of work. As part of its April 2002 revised estimate, the Corps acknowledged that meeting the schedule would depend on the FUDS budget and the U.S. Army's ability to apply the specified funding to the Spring Valley site. In order to continue to meet these needs, the U.S. Army may have to reprogram funds from possible use at other sites nationwide in each of the remaining years of the cleanup. Furthermore, in fiscal year 2002, the Corps planned to allocate to Spring Valley about 8 percent of the national budget for FUDS—which has declined in recent years—and about 86 percent of the FUDS budget for the Baltimore District, which includes funding for FUDS in six states and the District of Columbia. According to the U.S. Army, the provision of funds for the Spring Valley cleanup is already adversely affecting the availability of funding and progress at other sites.

As more information becomes available about the hazards at the site, the Corps will develop a clearer sense of how reliable its assumptions are on the extent of the hazards present and the cost of removing them. The Corps' experience with excavating buried hazards at two Glenbrook Road

properties illustrates the difficulty of estimating the cost of removing buried hazards. In fiscal year 2002, the Corps determined that completing the removal would cost about $6 million more than anticipated at the end of fiscal year 2001. Furthermore, the Corps assumed that arsenic would remain the focus of its efforts to reduce the risks of exposure to contaminated soil, and based its cost estimate on the work needed to meet a proposed cleanup level for arsenic; as of April 2002, the partners had not finalized this level. As part of its expanded soil sampling efforts, the Corps could identify the presence of yet other chemicals and expand the scope of soil removal. Until more complete information is known about the actual types and extent of the hazards present throughout the site and the actual cost of removing them, the reliability of the Corps' estimate of the cost and schedule to complete the cleanup remains uncertain.

## Properties in the District of Columbia Where Hazards Resulting from Federal Activities Have Been Found

We found data on 58 properties in the District of Columbia where hazards resulting from federal activities have been found, using Defense data as of March 2002, EPA data as of April 2002, and District of Columbia data as of January 2002. These properties included 8 active Defense installations and 30 FUDS. For an active Defense installation, the host military branch of the installation is responsible for the cleanup, while the Corps is responsible for the cleanup of all FUDS. We also found six properties involving other federal agencies, including the Department of Agriculture and the National Park Service. Hazards at these sites include, among others, ordnance and explosive waste; hazardous, toxic, and radioactive waste; polychlorinated biphenyls (PCB); petroleum by-products; solvents; and heavy metals contamination. Finally, we found data on 30 federal properties (including 16 of the properties already identified) in the District of Columbia on which remediation of leaking underground storage tanks was in process, as of January 2002. Hazards at these sites include, among others, diesel fuel, gasoline, heating oil, kerosene, and waste oil.

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In conclusion, Madam Chairwoman, a number of interdependent uncertainties continue to affect the progress of the Spring Valley cleanup. Until some of the existing uncertainties are resolved, the government entities will not be able to provide the community with definitive answers on any remaining health risks or the cost and duration of the cleanup.

This concludes my prepared statement. I will be happy to respond to any questions from you or other Members of the Subcommittee.

## GAO Contact and Staff Acknowledgement

For further information on this testimony, please contact me at (202) 512-3841 or Peg Reese at (202) 512-9695. Stephen Cleary, Richard Johnson, and Margaret McDavid also made key contributions to this testimony.