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# NATIONAL PRIORITIES LIST SITES:
# Utah

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Emergency & Remedial Response
Office of Program Management
Washington, D.C. 20460

If you wish to purchase copies of any additional State volumes or the National Overview volume, ***Superfund: Focusing on the Nation at Large***, contact:

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# Table of Contents


PAGE

**INTRODUCTION:**
A Brief Overview ..... iii

**SUPERFUND:**
How Does the Program Work to Clean Up Sites ..... vii

**HOW TO:**
Using the State Volume ..... xvii

**NPL SITES:**
A State Overview ..... xxi

**THE NPL PROGRESS REPORT** ..... xxiii

**NPL:** Site Fact Sheets ..... 1

**GLOSSARY:**
Terms Used in the Fact Sheets ..... G-1

# INTRODUCTION:

# A BRIEF OVERVIEW

## WHY THE SUPERFUND PROGRAM?

As the 1970s came to a close, a series of headline stories gave Americans a look at the dangers of dumping industrial and urban wastes on the land. First there was New York 's Love Canal. Hazardous waste buried there over a 25-year period contaminated streams and soil, and endangered the health of nearby residents. The result: evacuation of several hundred people. Then the leaking barrels at the Valley of the Drums in Kentucky attracted public attention, as did the dioxin tainted land and water in Times Beach, Missouri.

In all these cases, human health and the environment were threatened, lives were disrupted, property values depreciated. It became increasingly clear that there were large numbers of serious hazardous waste problems that were falling through the cracks of existing environmental laws. The magnitude of these emerging problems moved Congress to enact the Comprehensive Environmental Response, Compensation, and Liability Act in 1980. CERCLA — commonly known as the Superfund — was the first Federal law established to deal with the dangers posed by the Nation's hazardous waste sites.

### After Discovery, the Problem Intensified

Few realized the size of the problem until EPA began the process of site discovery and site evaluation. Not hundreds, but thousands of potential hazardous waste sites existed, and they presented the Nation with some of the most complex pollution problems it had ever faced.

In the 10 years since the Superfund program began, hazardous waste has surfaced as a major environmental concern in every part of the United States. It wasn't just the land that was contaminated by past disposal practices. Chemicals in the soil were spreading into the groundwater (a source of drinking water for many) and into streams, lakes, bays, and wetlands. Toxic vapors contaminated the air at some sites, while at others improperly disposed or stored wastes threatened the health of the surrounding community and the environment.

### EPA Identified More than 1,200 Serious Sites

EPA has identified 1,236 hazardous waste sites as the most serious in the Nation. These sites comprise the "National Priorities List": sites targeted for cleanup under the Superfund. But site discoveries continue, and EPA estimates that, while some will be deleted after lengthy cleanups, this list, commonly called the NPL, will continue to grow by approximately 100 sites per year, reaching 2,100 sites by the year 2000.

## THE NATIONAL CLEANUP EFFORT IS MUCH MORE THAN THE NPL

From the beginning of the program, Congress recognized that the Federal government could not and should not address all environmental problems stemming from past disposal practices. Therefore, the EPA was directed to set priorities and establish a list of sites to target. Sites on the NPL (1,236) are thus a rela-

tively small subset of a larger inventory of potential hazardous waste sites, but they do comprise the most complex and environmentally compelling cases. EPA has logged more than 32,000 sites on its National hazardous waste inventory, and assesses each site within one year of being logged. In fact, over 90 percent of the sites on the inventory have been assessed. Of the assessed sites, 55 percent have been found to require no further Federal action because they did not pose significant human health or environmental risks. The remaining sites are undergoing further assessment to determine if long-term Federal cleanup activities are appropriate.

## EPA IS MAKING PROGRESS ON SITE CLEANUP

The goal of the Superfund program is to tackle immediate dangers first, and then move through the progressive steps necessary to eliminate any long-term risks to public health and the environment.

The Superfund responds immediately to sites posing imminent threats to human health and the environment at both NPL sites and sites not on the NPL. The purpose is to stabilize, prevent, or temper the effects of a hazardous release, or the threat of one. These might include tire fires or transportation accidents involving the spill of hazardous chemicals. Because they reduce the threat a site poses to human health and the environment, immediate cleanup actions are an integral part of the Superfund program.

Immediate response to imminent threats is one of the Superfund 's most noted achievements. Where imminent threats to the public or environment were evident, EPA has completed or monitored emergency actions that attacked the most serious threats to toxic exposure in more than 1,800 cases.

The ultimate goal for a hazardous waste site on the NPL is a permanent solution to an environmental problem that presents a serious (but not an imminent) threat to the public or environment. This often requires a long-term effort. In the last four years, EPA has aggressively accelerated its efforts to perform these long-term cleanups of NPL sites. More cleanups were started in 1987, when the Superfund law was amended, than in any previous year. And in 1989 more sites than ever reached the construction stage of the Superfund cleanup process. Indeed construction starts increased by over 200 percent between late 1986 and 1989! Of the sites currently on the NPL, more than 500 — nearly half — have had construction cleanup activity. In addition, over 500 more sites are presently in the investigation stage to determine the extent of site contamination, and to identify appropriate cleanup remedies. Many other sites with cleanup remedies selected are poised for the start of cleanup construction activity. Measuring success by "progress through the cleanup pipeline," EPA is clearly gaining momentum.

## EPA MAKES SURE CLEANUP WORKS

EPA has gained enough experience in cleanup construction to understand that environmental protection does not end when the remedy is in place. Many complex technologies — like those designed to clean up groundwater — must operate for many years in order to accomplish their objectives.

EPA 's hazardous waste site managers are committed to proper operation and maintenance of every remedy constructed. No matter who has been delegated responsibility for monitoring the cleanup work, the EPA will assure that the remedy is carefully followed and that it continues to do its job.

Likewise, EPA does not abandon a site even after the cleanup work is done. Every

five years the Agency reviews each site where residues from hazardous waste cleanup still remain to ensure that public and environmental health are still being safeguarded. EPA will correct any deficiencies discovered and report to the public annually on all five-year reviews conducted that year.

## CITIZENS HELP SHAPE DECISIONS

Superfund activities also depend upon local citizen participation. EPA's job is to analyze the hazards and deploy the experts, but the Agency needs citizen input as it makes choices for affected communities.

Because the people in a community with a Superfund site will be those most directly affected by hazardous waste problems and cleanup processes, EPA encourages citizens to get involved in cleanup decisions. Public involvement and comment does influence EPA cleanup plans by providing valuable information about site conditions, community concerns and preferences.

This State volume and the companion National Overview volume provide general Superfund background information and descriptions of activities at each State NPL site. These volumes are intended to clearly describe what the problems are, what EPA and others participating in site cleanups are doing, and how we as a Nation can move ahead in solving these serious problems.

## USING THE STATE AND NATIONAL VOLUMES IN TANDEM

To understand the big picture on hazardous waste cleanup, citizens need to hear about both environmental progress across the country and the cleanup accomplishments closer to home. The public should understand the challenges involved in hazardous waste cleanup and the decisions we must make — as a Nation — in finding the best solutions.

The National Overview volume — ***Superfund: Focusing on the Nation at Large*** — accompanies this State volume. The National Overview contains important information to help you understand the magnitude and challenges facing the Superfund program as well as an overview of the National cleanup effort. The sections describe the nature of the hazardous waste problem nationwide, threats and contaminants at NPL sites and their potential effects on human health and the environment, the Superfund program's successes in cleaning up the Nation's serious hazardous waste sites, and the vital roles of the various participants in the cleanup process.

This State volume compiles site summary fact sheets on each State site being cleaned up under the Superfund program. These sites represent the most serious hazardous waste problems in the Nation, and require the most complicated and costly site solutions yet encountered. Each State book gives a "snapshot" of the conditions and cleanup progress that has been made at each NPL site in the State through the first half of 1990. Conditions change as our cleanup efforts continue, so these site summaries will be updated periodically to include new information on progress being made.

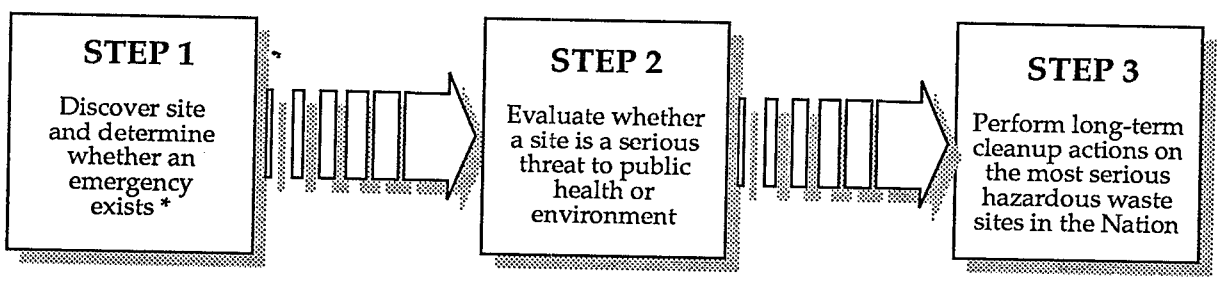
To help you understand the cleanup accomplishments made at these sites, this State volume includes a description of the process for site discovery, threat evaluation and long-term cleanup of Superfund sites. This description — ***How Does the Program Work to Clean Up Sites?*** — will serve as a good reference point from which to review the cleanup status at specific sites. A glossary also is included at the back of the book that defines key terms used in the site fact sheets as they apply to hazardous waste management.

# SUPERFUND:

# How Does the Program Work to Clean Up Sites?

The diverse problems posed by the Nation's hazardous waste sites have provided EPA with the challenge to establish a consistent approach for evaluating and cleaning up the Nation's most serious sites. To do this, EPA had to step beyond its traditional role as a regulatory agency to develop processes and guidelines for each step in these technically complex site cleanups. EPA has established procedures to coordinate the efforts of its Washington, D.C. Headquarters program offices and its front-line staff in 10 Regional Offices with the State governments, contractors, and private parties who are participating in site cleanup. An important part of the process is that any time during cleanup, work can be led by EPA or the State or, under their monitoring, by private parties who are potentially responsible for site contamination.

The process for discovery of the site, evaluation of threat, and long-term cleanup of Superfund sites is summarized in the following pages. The phases of each of these steps are highlighted within the description. The flow diagram below provides a summary of this three step process.




** Emergency actions are performed whenever needed in this three-step process*

FIGURE 1

Although this State book provides a current "snapshot" of site progress made only by emergency actions and long-term cleanup actions at Superfund sites, it is important to understand the discovery and evaluation process that leads up to identifying and cleaning up these most serious uncontrolled or abandoned hazardous waste sites in the Nation. This discovery and evaluation process is the starting point for this summary description.

## STEP 1: SITE DISCOVERY AND EMERGENCY EVALUATION

**How does EPA learn about potential hazardous waste sites?**

**Site discovery** occurs in a number of ways. Information comes from concerned citizens — people may notice an odd taste or foul odor in their drinking water, or see half-buried leaking barrels; a hunter may come across a field where waste was dumped illegally. Or there may be an explosion or fire which alerts the State or local authorities to a problem. Routine investigations by State and local governments, and required reporting and inspection of facilities that generate, treat, store, or dispose of hazardous waste also help keep EPA informed about either actual or potential threats of hazardous substance releases. All reported sites or spills are recorded in the Superfund inventory (CERCLIS) for further investigation to determine whether they will require cleanup.

**What happens if there is an imminent danger?**

As soon as a potential hazardous waste site is reported, EPA determines whether there is an emergency requiring an immediate cleanup action. If there is, they act as quickly as possible to remove or stabilize the imminent threat. These short-term **emergency actions** range from building a fence around the contaminated area to keep people away or temporarily relocating residents until the danger is addressed, to providing bottled water to residents while their local drinking water supply is being cleaned up, or physically removing wastes for safe disposal.

*However, emergency actions can happen at any time an imminent threat or emergency warrants them* — for example, if leaking barrels are found when cleanup crews start digging in the ground or if samples of contaminated soils or air show that there may be a threat of fire or explosion, an immediate action is taken.

## STEP 2: SITE THREAT EVALUATION

**If there isn't an imminent danger, how does EPA determine what, if any, cleanup actions should be taken?**

Even after any imminent dangers are taken care of, in most cases contamination may remain at the site. For example, residents may have been supplied with bottled water to take care of their immediate problem of contaminated well water. But now it's time to figure out what is contaminating the drinking water supply and the best way to clean it up. Or

EPA may determine that there is no imminent danger from a site, so now any long-term threats need to be evaluated. In either case, a more comprehensive investigation is needed to determine if a site poses a serious but not imminent danger, and requires a long-term cleanup action.

Once a site is discovered and any needed emergency actions are taken, EPA or the State collects all available background information not only from their own files, but also from local records and U.S. Geological Survey maps. This information is used to identify the site and to perform a **preliminary assessment** of its potential hazards. This is a quick review of readily available information to answer the questions:

- Are hazardous substances likely to be present?
- How are they contained?
- How might contaminants spread?
- How close is the nearest well, home, or natural resource area like a wetland or animal sanctuary?
- What may be harmed — the land, water, air, people, plants, or animals?

Some sites do not require further action because the preliminary assessment shows that they don't threaten public health or the environment. But even in these cases, the sites remain listed in the Superfund inventory for record keeping purposes and future reference. Currently, there are more than 32,000 sites maintained in this inventory.

**If the preliminary assessment shows that a serious threat *may* exist, what's the next step?**

Inspectors go to the site to collect additional information to evaluate its hazard potential. During this **site inspection**, they look for evidence of hazardous waste, such as leaking drums and dead or discolored vegetation. They may take some samples of soil, well water, river water, and air. Inspectors analyze the ways hazardous materials could be polluting the environment — such as runoff into nearby streams. They also check to see if people (especially children) have access to the site.

**How does EPA use the results of the site inspection?**

Information collected during the site inspection is used to identify the sites posing the most serious threats to human health and the environment. This way EPA can meet the

requirement that Congress gave them to use Superfund monies only on the worst hazardous waste sites in the Nation.

To identify the most serious sites, EPA developed the Hazard Ranking System (HRS). The HRS is the scoring system EPA uses to assess the relative threat from a release or a potential release of hazardous substances from a site to surrounding groundwater, surface water, air, and soil. A site score is based on the likelihood a hazardous substance will be released from the site, the toxicity and amount of hazardous substances at the site, and the people and sensitive environments potentially affected by contamination at the site.

Only sites with high enough health and environmental risk scores are proposed to be added to EPA's **National Priorities List (NPL)**. That's why there are 1,236 sites are on the NPL, but there are more than 32,000 sites in the Superfund inventory. Only NPL sites can have a long-term cleanup paid for from the national hazardous waste trust fund — the Superfund. But the Superfund can and does pay for emergency actions performed at any site, whether *or not it's on the NPL.*

## How do people find out whether EPA considers a site a national priority for cleanup using Superfund money?

The public can find out whether a site that concerns them is on the NPL by calling their Regional EPA office at the number listed in this book.

The proposed NPL identifies sites that have been evaluated through the scoring process as the most serious problems among uncontrolled or abandoned hazardous waste sites in the U.S. In addition, a site will be added to the NPL if the Agency for Toxic Substances and Disease Registry issues a health advisory recommending that people be moved away from the site. Updated at least once a year, it's only after public comments are considered that these proposed worst sites are officially added to the NPL.

Listing on the NPL does not set the order in which sites will be cleaned up. The order is influenced by the relative priority of the site's health and environmental threats compared to other sites, and such factors as State priorities, engineering capabilities, and available technologies. Many States also have their own list of sites that require cleanup; these often contain sites not on the NPL that are scheduled to be cleaned up with State money. And it should be said again that any emergency action needed at a site can be performed by the Superfund whether or not a site is on the NPL.

## STEP 3: LONG-TERM CLEANUP ACTIONS

**After a site is added to the NPL, what are the steps to cleanup?**

The ultimate goal for a hazardous waste site on the NPL is a permanent, long-term cleanup. Since every site presents a unique set of challenges, there is no single all-purpose solution. So a five-phase "remedial response" process is used to develop consistent and workable solutions to hazardous waste problems across the Nation:

1. Investigate in detail the extent of the site contamination: **remedial investigation,**
2. Study the range of possible cleanup remedies: **feasibility study,**
3. Decide which remedy to use: **Record of Decision or ROD,**
4. Plan the remedy: **remedial design,** and
5. Carry out the remedy: **remedial action.**

This remedial response process is a long-term effort to provide a permanent solution to an environmental problem that presents a serious, but not an imminent threat to the public or environment.

The first two phases of a long-term cleanup are a combined **remedial investigation and feasibility study** (RI/FS) that determine the nature and extent of contamination at the site, and identify and evaluate cleanup alternatives. These studies may be conducted by EPA or the State or, under their monitoring, by private parties.

Like the initial site inspection described earlier, a remedial investigation involves an examination of site data in order to better define the problem. But the remedial investigation is much more detailed and comprehensive than the initial site inspection.

A remedial investigation can best be described as a carefully designed field study. It includes extensive sampling and laboratory analyses to generate more precise data on the types and quantities of wastes present at the site, the type of soil and water drainage patterns, and specific human health and environmental risks. The result is information that allows EPA to select the cleanup strategy that is best suited to a particular site or to determine that no cleanup is needed.

Placing a site on the NPL does not necessarily mean that cleanup is needed. It is possible for a site to receive an HRS score high enough to be added to the NPL, but not ultimately require cleanup actions. Keep in mind that the purpose of the scoring process is to provide a preliminary and conservative assessment of *potential* risk. During subsequent site investigations, the EPA may find either that there is no real threat or that the site does not pose significant human health or environmental risks.

## How are cleanup alternatives identified and evaluated?

EPA or the State or, under their monitoring, private parties identify and analyze specific site cleanup needs based on the extensive information collected during the remedial investigation. This analysis of cleanup alternatives is called a **feasibility study.**

Since cleanup actions must be tailored exactly to the needs of each individual site, more than one possible cleanup alternative is always considered. After making sure that all potential cleanup remedies fully protect human health and the environment and comply with Federal and State laws, the advantages and disadvantages of each cleanup alternative are carefully compared. These comparisons are made to determine their effectiveness in the short- and long-term, their use of permanent treatment solutions, and their technical feasibility and cost.

To the maximum extent practicable, the remedy must be a permanent solution and use treatment technologies to destroy principal site contaminants. But remedies such as containing the waste on site or removing the source of the problem (like leaking barrels) are often considered effective. Often special pilot studies are conducted to determine the effectiveness and feasibility of using a particular technology to clean up a site. Therefore, the combined remedial investigation and feasibility study can take between 10 and 30 months to complete, depending on the size and complexity of the problem.

## Does the public have a say in the final cleanup decision?

Yes. The Superfund law requires that the public be given the opportunity to comment on the proposed cleanup plan. Their concerns are carefully considered before a final decision is made.

The results of the remedial investigation and feasibility study, which also point out the recommended cleanup choice, are published in a report for public review and comment. EPA or the State encourages the public to review the information and take an active role in the final cleanup decision. Fact sheets and announcements in local papers let the community know where they can get copies of the study and other reference documents concerning the site.

The public has a minimum of 30 days to comment on the proposed cleanup plan after it is published. These comments can either be written or given verbally at public meetings that EPA or the State are required to hold. Neither EPA nor the State can select the final cleanup remedy without evaluating and providing written answers to specific community comments and concerns. This "responsiveness summary" is part of EPA's write-up of the final remedy decision, called the Record of Decision or ROD.

The ROD is a public document that explains the cleanup remedy chosen and the reason it was selected. Since sites frequently are large and must be cleaned up in stages, a ROD may be necessary for each contaminated resource or area of the site. This may be necessary when contaminants have spread into the soil, water and air, and affect such sensitive areas as wetlands, or when the site is large and cleaned up in stages. This often means that a number of remedies using different cleanup technologies are needed to clean up a single site.

**If every cleanup action needs to be tailored to a site, does the design of the remedy need to be tailored too?**

Yes. Before a specific cleanup action is carried out, it must be designed in detail to meet specific site needs. This stage of the cleanup is called the **remedial design**. The design phase provides the details on how the selected remedy will be engineered and constructed.

Projects to clean up a hazardous waste site may appear to be like any other major construction project but, in fact, the likely presence of combinations of dangerous chemicals demands special construction planning and procedures. Therefore, the design of the remedy can take anywhere from 6 months to 2 years to complete. This blueprint for site cleanup includes not only the details on every aspect of the construction work, but a description of the types of hazardous wastes expected at the

site, special plans for environmental protection, worker safety, regulatory compliance, and equipment decontamination.

**Once the design is complete, how long does it take to actually clean up the site and how much does it cost?**

The time and cost for performing the site cleanup — called the **remedial action** — are as varied as the remedies themselves. In a few cases, the only action needed may be to remove drums of hazardous waste and decontaminate them — an action that takes limited time and money. In most cases, however, a remedial action may involve different and expensive measures that can take a long time.

For example, cleaning polluted groundwater or dredging contaminated river bottoms can take several years of complex engineering work before contamination is reduced to safe levels. Sometimes the selected cleanup remedy described in the ROD may need to be modified because of new contaminant information discovered or difficulties that were faced during the early cleanup activities. Taking into account these differences, a remedial cleanup action takes an average of 18 months to complete and costs an average of $26 million per site.

**Once the cleanup action is complete, is the site automatically "deleted" from the NPL?**

No. The deletion of a site from the NPL is anything but automatic. For example, cleanup of contaminated groundwater may take up to 20 years or longer. Also, in some cases the **long-term monitoring** of the remedy is required to ensure that it is effective. After construction of certain remedies, operation and maintenance (e.g., maintenance of ground cover, groundwater monitoring, etc.) or continued pumping and treating of groundwater, may be required to ensure that the remedy continues to prevent future health hazards or environmental damage, and ultimately meets the cleanup goals specified in the ROD. Sites in this final monitoring or operational stage of the cleanup process are designated as "construction completed".

It's not until a site cleanup meets all the goals and monitoring requirements of the selected remedy that EPA can officially propose the site for "**deletion**" from the NPL. And it's not until public comments are taken into consideration that a site can actually be deleted from the NPL. Deletions that have occurred are included in the "Construction Complete" category in the progress report found later in this book.

## Can EPA make parties responsible for the contamination pay?

Yes. Based on the belief that "the polluters should pay," after a site is placed on the NPL, the EPA makes a thorough effort to identify and find those responsible for causing contamination problems at a site. Although EPA is willing to negotiate with these private parties and encourages voluntary cleanup, it has the authority under the Superfund law to legally force those potentially responsible for site hazards to take specific cleanup actions. All work performed by these parties is closely guided and monitored by EPA, and must meet the same standards required for actions financed through the Superfund.

Because these enforcement actions can be lengthy, EPA may decide to use Superfund monies to make sure a site is cleaned up without unnecessary delay. For example, if a site presents an imminent threat to public health and the environment, or if conditions at a site may worsen, it could be necessary to start the cleanup right away. Those responsible for causing site contamination are liable under the law for repaying the money EPA spends in cleaning up the site.

Whenever possible, EPA and the Department of Justice use their legal enforcement authorities to require responsible parties to pay for site cleanups, thereby preserving the Superfund for emergency actions and sites where no responsible parties can be identified.

# HOW TO:

# USING THE STATE VOLUME

The Site Fact Sheets presented in this book are comprehensive summaries that cover a broad range of information. The fact sheets describe hazardous waste sites on the National Priorities List (NPL) and their locations, as well as the conditions leading to their listing ("Site Description"). They list the types of contaminants that have been discovered and related threats to public and ecological health ("Threats and Contaminants"). "Cleanup Approach" presents an overview of the cleanup activities completed, underway, or planned. The fact sheets conclude with a brief synopsis of how much progress has been made on protecting public health and the environment. The summaries also pinpoint other actions, such as legal efforts to involve polluters responsible for site contamination and community concerns.

The following two pages show a generic fact sheet and briefly describes the information under each section. The square "icons" or symbols accompanying the text allow the reader to see at a glance which environmental resources are affected and the status of cleanup activities.

## Icons in the *Threats and Contaminants* Section

Contaminated **Groundwater** resources in the vicinity or underlying the site. (Groundwater is often used as a drinking water source.)

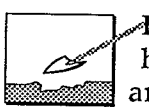
Contaminated **Surface Water and Sediments** on or near the site. (These include lakes, ponds, streams, and rivers.)

Contaminated **Air** in the vicinity of the site. (Pollution is usually periodic and involves contaminated dust particles or hazardous gas emissions.)

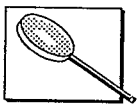
Contaminated **Soil and Sludges** on or near the site.

Threatened or contaminated **Environmentally Sensitive Areas** in the vicinity of the site. (Examples include wetlands and coastal areas, critical habitats.)

## Icons in the *Response Action Status* Section



**Initial Actions** have been taken or are underway to eliminate immediate threats at the site.



**Site Studies** at the site are planned or underway.


**Remedy Selected** indicates that site investigations have been concluded and EPA has selected a final cleanup remedy for the site or part of the site.

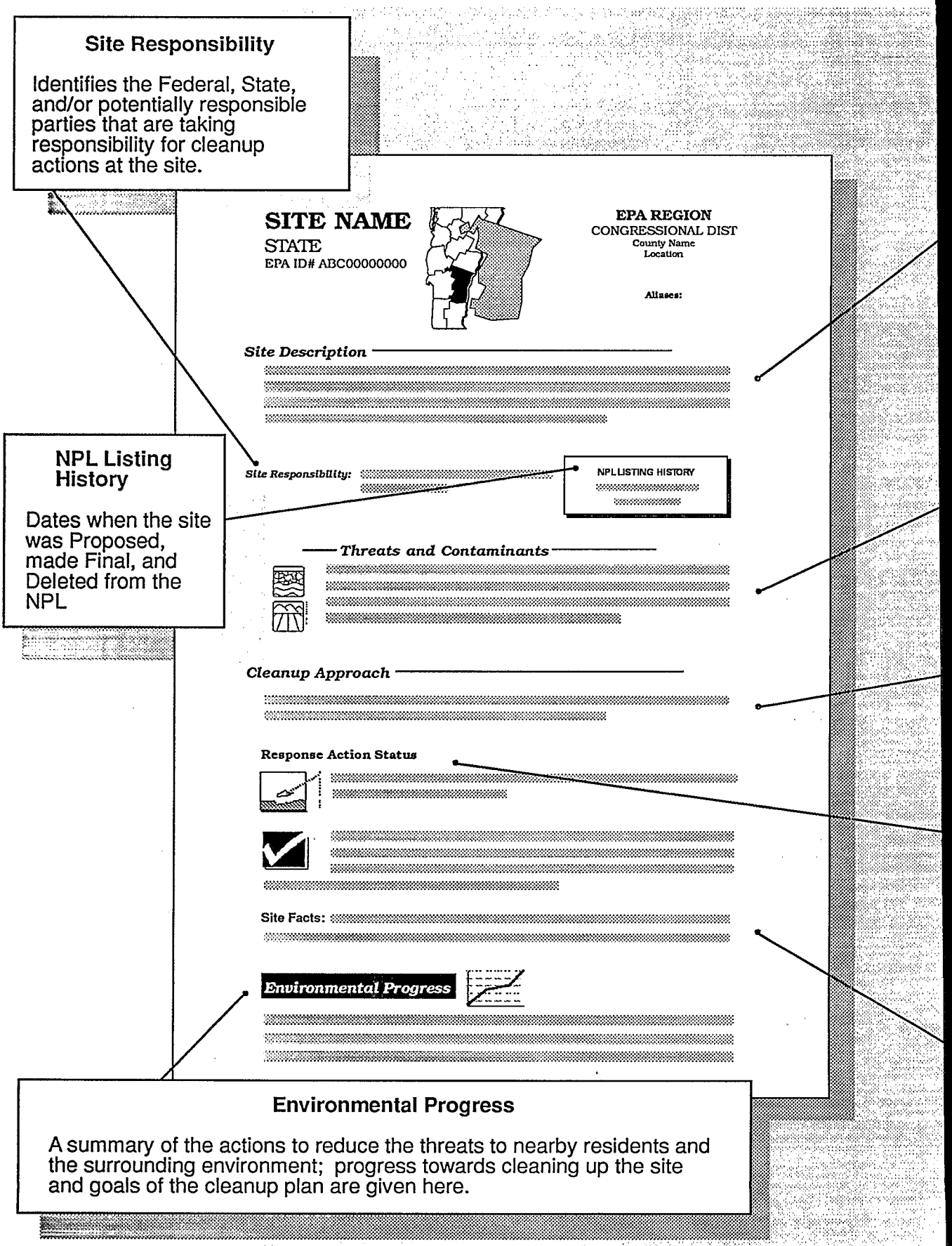
**Remedy Design** means that engineers are preparing specifications and drawings for the selected cleanup technologies.

**Cleanup Ongoing** indicates that the selected cleanup remedies for the contaminated site — or part of the site — are currently underway.

**Cleanup Complete** shows that all cleanup goals have been achieved for the contaminated site or part of the site.

### Site Responsibility

Identifies the Federal, State, and/or potentially responsible parties that are taking responsibility for cleanup actions at the site.




### NPL Listing History

Dates when the site was Proposed, made Final, and Deleted from the NPL

### Environmental Progress

A summary of the actions to reduce the threats to nearby residents and the surrounding environment; progress towards cleaning up the site and goals of the cleanup plan are given here.

# WHAT THE FACT SHEETS CONTAIN

### Site Description

This section describes the location and history of the site. It includes descriptions of the most recent activities and past actions at the site that have contributed to the contamination. Population estimates, land usages, and nearby resources give readers background on the local setting surrounding the site. Throughout the site description and other sections of the site summary, technical or unfamiliar terms that are *italicized* are presented in the glossary at the end of the book. Please refer to the glossary for more detailed explanation or definition of the terms.

### Threats and Contaminants

The major chemical categories of site contamination are noted as well as which environmental resources are affected. Icons representing each of the affected resources (may include air, groundwater, surface water, soil and contamination to environmentally sensitive areas) are included in the margins of this section. Potential threats to residents and the surrounding environments arising from the site contamination are also described. Specific contaminants and contaminant groupings are italicized and explained in more detail in the glossary.

### Cleanup Approach

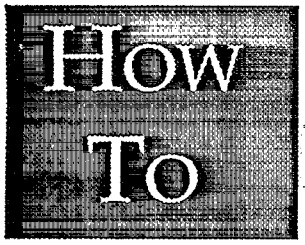
This section contains a brief overview of how the site is being cleaned up.

### Response Action Status

Specific actions that have been accomplished or will be undertaken to clean up the site are described here. Cleanup activities at NPL sites are divided into separate phases depending on the complexity and required actions at the site. Two major types of cleanup activities are often described: initial, immediate or emergency actions to quickly remove or reduce imminent threats to the community and surrounding areas; and long-term remedial phases directed at final cleanup at the site. Each stage of the cleanup strategy is presented in this section of the summary. Icons representing the stage of the cleanup process (initial actions, site investigations, EPA selection of the cleanup remedy, engineering design phase, cleanup activities underway and completed cleanup) are located in the margin next to each activity description.

### Site Facts

Additional information on activities and events at the site are included in this section. Often details on legal or administrative actions taken by EPA to achieve site cleanup or other facts pertaining to community involvement with the site cleanup process are reported here.




The fact sheets are arranged in alphabetical order by site name. Because site cleanup is a dynamic and gradual process, all site information is accurate as of the date shown on the bottom of each page. Progress is always being made at NPL sites, and EPA will periodically update the Site Fact Sheets to reflect recent actions and publish updated State volumes.

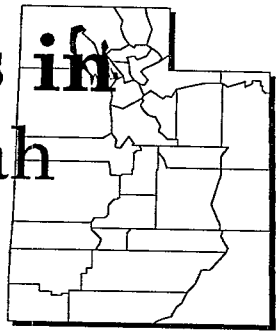
## HOW CAN *YOU* USE THIS STATE BOOK?

You can use this book to keep informed about the sites that concern you, particularly ones close to home. EPA is committed to involving the public in the decisionmaking process associated with hazardous waste cleanup. The Agency solicits input from area residents in communities affected by Superfund sites. Citizens are likely to be affected not only by hazardous site conditions, but also by the remedies that combat them. Site cleanups take many forms and can affect communities in different ways. Local traffic may be rerouted, residents may be relocated, temporary water supplies may be necessary.

Definitive information on a site can help citizens sift through alternatives and make decisions. To make good choices, you must know what the threats are and how EPA intends to clean up the site. You must understand the cleanup alternatives being proposed for site cleanup and how residents may be affected by each one. You also need to have some idea of how your community intends to use the site in the future and to know what the community can realistically expect once the cleanup is complete.

EPA wants to develop cleanup methods that meet community needs, but the Agency can only take local concerns into account if it understands what they are. Information must travel both ways in order for cleanups to be effective and satisfactory. Please take this opportunity to learn more, become involved, and assure that hazardous waste cleanup at "your" site considers your community's concerns.

# NPL Sites in State of Utah



The Middle Rocky Mountain State of Utah is bordered by Idaho and Wyoming to the north, Nevada to the west, Colorado to the east, and Arizona to the south. Utah covers 84,899 square miles and consists of high Colorado plateau in the southeast, the broad, flat, desert-like Great Basin in the west, the Great Salt Lake and salt flats in the northwest, as well as the Rocky Mountains and the valleys and plateaus of the Wasatch Front. Utah experienced a 15.7 percent increase in population during the 1980s and currently has approximately 1,690,000 residents, ranking 35th in U.S. populations. Principal State industries include manufacturing, tourism, trade, services, mining, transportation, and education. Utah manufactures guided missiles and parts, electronic components, food products, fabricated metals, steel, electrical and transportation equipment.

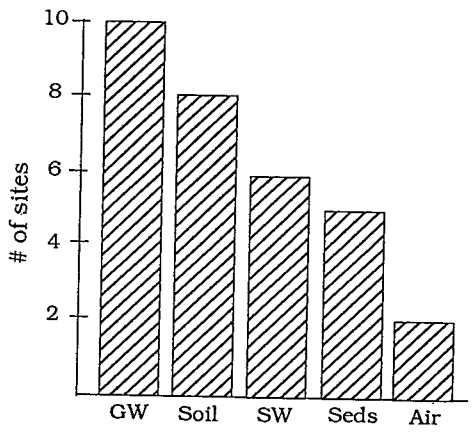
**How Many Utah Sites Are on the NPL?**

| | |
|---|---|
| Proposed | 5 |
| Final | 7 |
| Deleted | 0 |
| | **12** |

**Where Are the NPL Sites Located?**

| | |
|---|---|
| Cong. District 01 | 3 sites |
| Cong. District 02 | 6 sites |
| Cong. District 03 | 3 sites |

**How are Sites Contaminated and What are the Principal* Chemicals ?**




**Groundwater**: Heavy metals (inorganics), and volitale organic compounds (VOCs).

**Soil**: Heavy metals (mercury and inorganics), volitale organic compounds (VOCs), pesticides, creosotes (organics), and radiation.

**Surface Water and Sediments**: Heavy metals (mercury and inorganics), volitale organic compounds (VOCs), and pesticides.

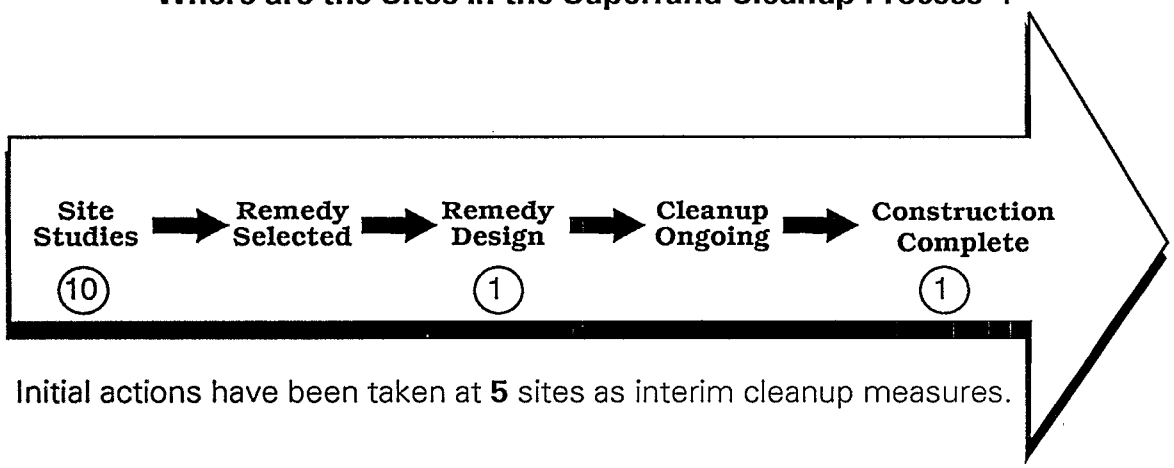
**Air:** Heavy metals ( inorganics).

Appeared at 25% or more sites.



*continued*

## Where are the Sites in the Superfund Cleanup Process*?




Initial actions have been taken at **5** sites as interim cleanup measures.

## Who Do I Call with Questions?

The following pages describe each NPL site in Utah, providing specific information on threats and contaminants, cleanup activities, and environmental progress. Should you have questions, please call one of the offices listed below:

| | |
|---|---|
| Utah Superfund Office | (801) 538-6170 |
| EPA Region VIII Superfund Office | (303) 293-1720 |
| EPA Public Information Office | (202) 477-7751 |
| EPA Superfund Hotline | (800) 424-9346 |
| EPA Region VIII Superfund Public Relations Office | (303) 294-1144 |

*Cleanup status reflects phase of site activities rather than administrative accomplishments.

# *The NPL Progress Report*

The following Progress Report lists the State sites currently on or deleted from the NPL, and briefly summarizes the status of activities for each site at the time this report was prepared. The steps in the Superfund cleanup process are arrayed across the top of the chart, and each site's progress through these steps is represented by an arrow (➨) which indicates the current stage of cleanup at the site.

Large and complex sites are often organized into several cleanup stages. For example, separate cleanup efforts may be required to address the source of the contamination, hazardous substances in the groundwater, and surface water pollution, or to clean up different areas of a large site. In such cases, the chart portrays cleanup progress at the site's *most advanced stage,* reflecting the status of site activities rather than administrative accomplishments.

- ➨ An arrow in the "Initial Response" category indicates that an emergency cleanup or initial action has been completed or is currently underway. Emergency or initial actions are taken as an interim measure to provide immediete relief from exposure to hazardous site conditions or to stabilize a site to prevent further contamination.
- ➨ An arrow in the "Site Studies" category indicates that an investigation to determine the nature and extent of the contamination at the site is currently ongoing or planned to begin in 1991.
- ➨ An arrow in the "Remedy Selection" category means that the EPA has selected the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy is selected. In these cases, the arrows in the Progress Report are discontinued at the "Remedy Selection" step and resume in the final "Construction Complete" category.
- ➨ An arrow at the "Remedial Design" stage indicates that engineers are currently designing the technical specifications for the selected cleanup remedies and technologies.
- ➨ An arrow marking the "Cleanup Ongoing" category means that final cleanup actions have been started at the site and are currently underway.
- ➨ A arrow in the "Construction Complete" category is used *only* when *all phases* of the site cleanup plan have been performed and the EPA has determined that no additional construction actions are required at the site. Some sites in this category may currently be undergoing long-term pumping and treating of groundwater, operation and maintenance or monitoring to ensure that the completed cleanup actions continue to protect human health and the environment.

The sites are listed in alphabetical order. Further information on the activities and progress at each site is given in the site "Fact Sheets" published in this volume.

# Progress Toward Cleanup at NPL Sites in the State of Utah

| Page | Site Name | County | NPL | Date | Initial Response | Site Studies | Remedy Selected | Remedy Design | Cleanup Ongoing | Construction Complete |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | HILL AIR FORCE BASE | DAVIS & WEBER | Final | 07/01/87 | | ➡ | | | | |
| 3 | MIDVALE SLAG | SALT LAKE | Prop | 06/10/86 | | ➡ | | | | |
| 5 | MONTICELLO MILL TAILINGS (DOE) | SAN JUAN | Final | 11/21/89 | | ➡ | | | | |
| 7 | MONTICELLO RADIOACTIVELY CONTAM. | SAN JUAN | Final | 06/10/86 | | ➡ | ➡ | ➡ | | |
| 9 | OGDEN DEFENSE DEPOT | WEBER | Final | 07/01/87 | ➡ | ➡ | | | | |
| 11 | PORTLAND CEMENT (KILN DUST #2&#3) | SALT LAKE | Final | 06/10/86 | ➡ | ➡ | | | | |
| 13 | RICHARDSON FLAT TAILINGS | SUMMIT | Prop | 06/24/88 | | ➡ | | | | |
| 15 | ROSE PARK SLUDGE PIT | SALT LAKE | Final | 09/08/83 | | ➡ | | ➡ | ➡ | ➡ |
| 17 | SHARON STEEL (MIDVALE TAILINGS) | SALT LAKE | Prop | 10/15/84 | ➡ | ➡ | | | | |
| 19 | TOOELE ARMY DEPOT (NORTH AREA) | TOOELE | Prop | 10/15/84 | | ➡ | | | | |
| 21 | UTAH POWER & LIGHT/AMERICAN BRL. | SALT LAKE | Final | 10/04/89 | ➡ | ➡ | | | | |
| 23 | WASATCH CHEMICAL CO. (LOT 6) | SALT LAKE | Prop | 01/22/87 | ➡ | ➡ | | | | |

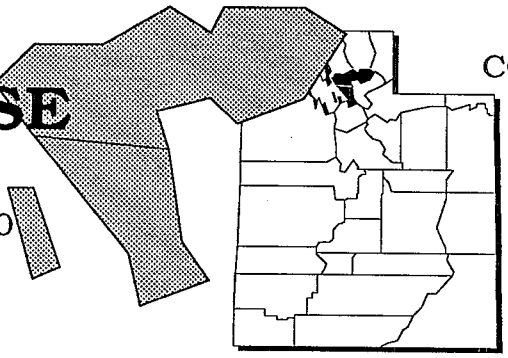
# NPL:

# Site Fact Sheets

# HILL AIR FORCE BASE

UTAH

EPA ID# UT0571724350



**REGION 8**

CONGRESSIONAL DIST. 01

Davis and Weber Counties

5 miles south of Ogden

## *Site Description*

The 6,665-acre Hill Air Force Base site is used for the overhaul and maintenance of aircraft by the Air Force. Several areas on base have been identified by the Air Force as being contaminated including four *landfills*, three chemical disposal pits, Berman Pond, Industrial Wastewater Treatment Plant Sludge Drying Beds, Fire Training Area One, Refueling Area JP-4 Spill, Bamberger Pond, Refueling Vehicle Maintenance Facility, and the Tooele Army Rail Shop. Industrial and municipal wastes were dumped on base including *volatile organic chemicals* (VOCs); electroplating wastes; *sludges* from the Industrial Wastewater Treatment Plant (IWTP); waste oils; and petroleum fuel products. *Migration* of site-related contaminants has caused low-level contamination of nearby groundwater and surface water as well as the sewer systems in the Sunset and Layton communities. A private ranch offsite also received chromium-contaminated soil from Hill Air Force Base. The site also includes areas of contamination that are located off base including the Utah Test & Training Range (UTTR), which is under the command of Hill Air Force Base but is located 150 miles west of the main base. Areas of contamination within the UTTR include two landfills, a chemical disposal pit, a herbicide-orange test area, and an explosive ordnance disposal area. Approximately 20,000 people work on Hill Air Force Base. Most of the residences in the area surrounding the site are connected to the municipal water supply system, however some of private wells or springs are used for drinking water and irrigation.

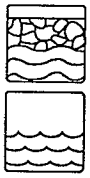
***Site Responsibility:*** This site is being addressed through Federal actions.

**NPL LISTING HISTORY**

Proposed Date: 10/15/84

Final Date: 07/01/87

## *Threats and Contaminants*

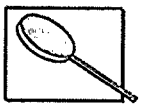


Groundwater in the disposal and pit areas is contaminated with various VOCs and heavy metals. On-site groundwater, located near the Berman Pond, contains lead, manganese and *trichloroethylene* (TCE). Groundwater located near the Industrial Wastewater Treatment Plant Drying Beds and Chemical Disposal Pit #3 contains lead and VOCs. Surface Water located in the disposal area is contaminated with lead and manganese. Surface water located in springs *downgradient* from Chemical Disposal Pit #3 is contaminated by VOCs and lead. Contaminants are migrating to off-site groundwater. Possible health threats include drinking or touching contaminated groundwater and surface water.

## *Cleanup Approach*

This site is being addressed in four *long-term remedial phases* including cleanup of: Landfills #3 and #4, Chemical Disposal Pits #1 and #2, and the Fire Training Area; IWTP Sludge Drying Beds, the Sodium Hydroxide Tank Leak Area, Berman Pond, and the Refueling Vehicle Maintenance Facility (Building 514); Landfills #1 and #2; and Tooele Army Rail Shop and Bamberger Pond.

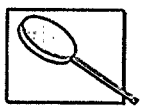
### Response Action Status



**Landfills #3 and #4, Chemical Disposal Pits #1 and #2, and the Fire Training Area:** In 1984, a clay *cap* was placed over landfill #4; installation began on a *slurry wall* around the *upgradient* areas of contamination; and a series of extraction wells were installed. The slurry wall was completed in 1985. In 1986, clay caps were constructed over landfill #3 and a portion of the chemical disposal pits. A parking lot was installed over the Fire Training Area and the rest of the chemical disposal pits. A total of about 70 acres have been covered. Over 50 million gallons of contaminated groundwater have subsequently been extracted and treated by the Air Force. Off-base migration of contaminants has been significantly reduced. Continued studies into site contamination and the most effective ways to address it are under way and are scheduled to be completed in 1992.

**IWTP Sludge Drying Beds, the Sodium Hydroxide Tank Leak Area, Berman Pond, and the Refueling Vehicle Maintenance Facility (Building 514):** Berman Pond has been filled with construction rubble and regraded, and a clay cap was installed over the area. The unlined IWTP Sludge Drying Beds were lined with asphalt and then concrete. The investigation into site contamination and methods to effectively address these sites are being conducted and are scheduled to be completed in 1992.

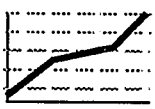
**Landfills #1 and #2:** Investigative work into site contamination and the most effective methods to address Landfills #1 and #2 is under way. Studies of cleanup alternatives are scheduled to be completed in 1992.



**Tooele Army Rail Shop and Bamberger Pond:** The investigation into site contamination and the most effective methods to address these areas was begun by the Air Force in 1989.

**Site Facts:** Since 1981, Hill Air Base has been participating in the *Installation Restoration Program* (IRP), a program where the Department of Defense addresses contamination on or caused by its facilities. The EPA completed negotiations with Hill Air Force Base to sign a Memorandum of Agreement in 1986. This document presents the procedural framework for further cleanup activities and studies of site contamination.

## *Environmental Progress*

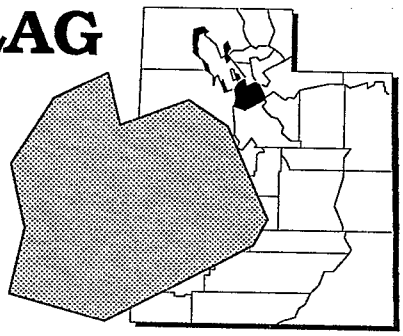


Initial actions have been performed at several of the investigation areas: the installation of a cap, a slurry wall, and extraction wells have significantly reduced the migration of contaminants from the Hill Air Force Base site while further studies and cleanup activities are taking place.

# MIDVALE SLAG

UTAH

EPA ID# UTD081834277



**REGION 8**

CONGRESSIONAL DIST. 02

Salt Lake County

Midvale

## *Site Description*

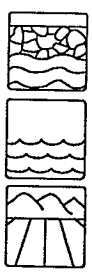
The 330-acre Midvale Slag site is a former copper and lead smelting facility. The Midvale Smelter was originally constructed on this site in 1902 as a copper plant. Over the years, the plant was changed to a lead facility, producing gold-lead-silver bullion. From 1918 to 1928, approximately 400,000 tons of lead were produced. The smelter is no longer there; however, large piles of slag and other smelter wastes remain on site. The current operators of the site process the slag for use as sand blasting and railroad bed material. Two million tons of slag containing lead, arsenic, cadmium, and radioactive contaminants are present on site. A substantial amount of slag has been removed and used for road bases, fill, and sandblasting. Access to the site is somewhat restricted by fences bordering the roads, however, the site may be accessible from the Jordan River on the west. A clay *berm* has been constructed to prevent the erosion of slag into the bordering Jordan River. There are approximately 1,500 people within 1/4 mile of the site. The contaminated shallow *aquifer* on site has been reported to discharge into the Jordan River at some locations. Public and municipal wells located near the site are used for domestic purposes. Livestock reportedly graze in an area directly adjacent to the slag piles.

***Site Responsibility:*** This site is being addressed through Federal actions.

**NPL LISTING HISTORY**

Proposed Date: 06/10/86

## *Threats and Contaminants*

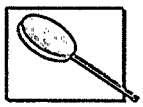


Groundwater and *sediments* are contaminated with heavy metals including cadmium, lead, and chromium. Radium was detected in off-site slag. On-site soils are contaminated with heavy metals and radioactive compounds. The Jordan River is potentially contaminated from *runoff* from the site and groundwater discharge. Potential health threats may include drinking contaminated groundwater and surface water; direct contact with groundwater, surface water, or slag; or ingestion of contaminated soil, fish, water fowl, livestock, and agricultural products.

## *Cleanup Approach*

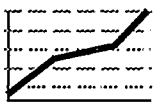
This site is being addressed in a single *long-term remedial phase* focusing on cleanup of the entire site.

### Response Action Status



**Entire Site:** The EPA is scheduled to begin in 1990 a study into the nature and extent of contamination at the site. The investigation will define the contaminants of concern and recommend alternatives for final cleanup. This site is adjacent to the Sharon Steel Site, another NPL site. Activities at both the Midvale Slag and Sharon Steel sites are on the same schedule for the investigation and claeanup phases.

## *Environmental Progress*

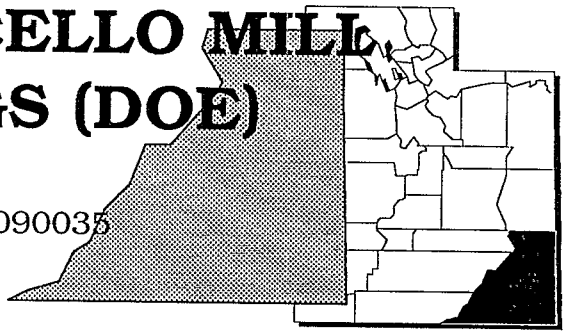


After proposing this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were required at the Midvale Slag site to protect area residents and the surrounding environment while further investigations and cleanup activities are being planned.

# MONTICELLO MILL TAILINGS (DOE)

UTAH

EPA ID# UT3890090035



**REGION 8**

CONGRESSIONAL DIST. 03

San Juan County

City of Monticello

**Aliases:**
**AEC Mill Site**
**Monticello Remedial Action Project**

## *Site Description*

The Monticello Mill Tailings site lies in the Montezuma Creek Valley, east of the Abajo Mountains. The inactive ore milling facility, on 78 acres of land, is bordered by the City of Monticello and Bureau of Land Management lands. Approximately 11 acres of the site was the mill area, and the other 67 acres constituted the *mill tailing impoundment* area containing 2 million tons of tailings and contaminated soil. The former ore buying stations and areas contaminated by wind and waterborne particulate material and tailings cover another 300 acres. These areas, known as the Peripheral Properties, contain an estimated 300,000 tons of contaminated materials. The mill was constructed by the Vanadium Corporation of America in 1942 with funds from the Defense Plant Corporation. Initially, vanadium was produced, but in 1943 the mill began production of a uranium/vanadium *sludge* for the Manhattan Engineer District. In 1948, the Atomic Energy Commission (AEC) bought the site. Uranium milling continued until 1960, when the mill was permanently closed. It is estimated that approximately 900,000 tons of ore were processed at the site. In 1961, the AEC *stabilized* the tailings piles. In 1964, the mill was dismantled. The population of the City of Monticello is estimated to be 1,900. An estimated 2,400 people live within a 1 1/2-mile radius of the site. The City of Monticello has its own water system, supplied by water from springs located on the flanks of the Abajo Mountains. The domestic water source for those people living outside the city limits is groundwater drawn chiefly from a well completed in the Burro Canyon Formation. There is no known contamination of the domestic water supplies attributable to contamination from the mill site.

***Site Responsibility:*** The site is being cleaned up through a combination of Federal and State action.

**NPL LISTING HISTORY**
Proposed Date: 07/14/89
Final Date: 11/21/89

## *Threats and Contaminants*

The groundwater and soil are contaminated with uranium from tailings deposited on the site, as well as its radioactive decay products, thorium-230, radium 226, and radon-222. Exposure to uranium through contact with contaminated soil, groundwater, and airborne contaminated dust may be a potential threat to the health of individuals in the area of the site. Montezuma Canyon, which contains sites eligible for inclusion on the National Register of Historic sites, is contaminated with site-related materials.

## *Cleanup Approach*

The site is being addressed in three *long-term remedial phases* focusing on cleanup of the tailings piles and former mill site, the peripheral properties, and the surface water and groundwater.

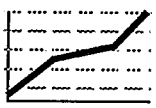
### Response Action Status

**Tailings Piles and Former Mill Site:** The Department of Energy (DOE) has completed an investigation to determine the nature and extent of contamination in the tailings piles and the former mill site. The proposed remedy, based on the results of the investigation, recommends the removal of the contaminated material from the floodplain and its contact with the groundwater and stabilization of the material in a storage area approximately 3/4 mile south of the site. The final selection of a remedy is expected in 1990.

**Peripheral Properties:** An investigation determining the nature and extent of the contamination at the peripheral properties has been completed. The proposed remedy involves excavating the contaminated material and placing it on the mill site tailings piles. The material will ultimately be disposed of in the storage facility.

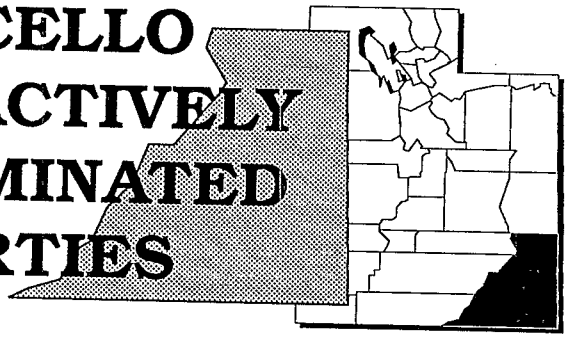
**Surface Water and Groundwater:** The DOE has initiated an investigation to determine the nature and extent of contamination in the surface water and groundwater. Completion of this investigation is not anticipated until the cleanup of the contaminated source materials at the tailing piles and mill site is finished.

### Environmental Progress



The DOE is conducting numerous investigations of the Monticello Mill Tailings site which will ultimately lead to the final selection of the most appropriate remedies for the site contamination. While these investigations are ongoing, the EPA has determined that the site does not pose an immediate threat to the surrounding community or the environment.

# MONTICELLO RADIOACTIVELY CONTAMINATED PROPERTIES



UTAH

EPA ID# UTD980667208

**REGION 8**
CONGRESSIONAL DIST. 03
San Juan County
Monticello

**Aliases:**
**Monticello Remedial Action Project**
**Monticello Vicinity Properties**

## *Site Description*

The Monticello Radioactively Contaminated Properties consist of private and commercial properties in Monticello covering approximately 4 square miles. An estimated 150 residences have been contaminated with radioactive mill wastes from ore processing operations near the town. During World War II, the Federal Government established an ore processing mill to produce vanadium, a steel hardener, for the war effort. Vanadium is not radioactive itself, but it is found in the same ore with uranium and radium; thus, the processing wastes contain significant radioactivity. Soon after its construction, the mill began production of a uranium/vanadium *sludge* for the Manhattan Engineer District. Uranium production continued until 1960, when the plant was closed and dismantled. Contaminated dust from the *mill tailings* piles has been blown into the city. Tailings from the mill site have been used as construction material, *backfill*, and as sand mix in concrete. These uses have resulted in the radioactive contamination of numerous properties within Monticello. Approximately 1,900 people live in the town of Monticello. The mill site is located immediately south of the city on the floodplain of Montezuma Creek.

***Site Responsibility:*** This site is being addressed through Federal actions.

**NPL LISTING HISTORY**
Proposed Date: 10/15/84
Final Date: 06/10/86

## *Threats and Contaminants*

Soil is contaminated with uranium. People who are exposed to the radioactive materials may suffer adverse health effects. Inhalation of radon-222 or direct contact with *radionuclides* in the tailings may be harmful to human health. There is no contamination of the domestic water supply.


*continued*

## *Cleanup Approach*

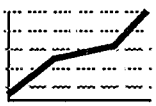
The site is being addressed in a single *long-term remedial phase* focusing on cleanup of the entire site.

### Response Action Status

**Entire Site:** In 1984, the EPA cleaned up two of the most heavily contaminated homes. Beginning in 1984, the Department of Energy (DOE) has been systematically cleaning up the remaining properties. Cleanup actions have been completed at 55 properties. An additional 90 or more properties will be cleaned up by 1994. In 1989, the EPA selected a remedy to clean up the radioactive properties by excavating the mill tailings around the residences and disposing of the material at the Monticello mill site. A repository will be built to contain the material. The DOE is presently completing the technical specifications for the repository on the Monticello mill site. The plan outlining the selected remedy is scheduled for 1990. Construction of the repository is expected to begin in 1991. The DOE recently initiated additional investigations to determine if other properties are contaminated. It is anticipated that another 40 to 50 properties requiring cleanup will be identified.

**Site Facts:** In 1988, the EPA, the DOE, and the State signed an *Interagency Agreement.* Under this agreement, the DOE will clean up the contaminated properties. Some property owners will not allow investigations or cleanup of their property.

## *Environmental Progress*

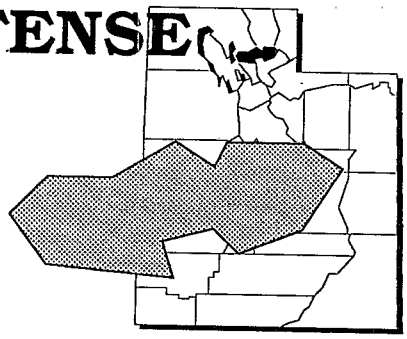


The DOE has finished cleaning 55 properties at the Monticello site, greatly reducing the potential for exposure to hazardous substances and making it safer for the public and the environment. The DOE is also completing the technical design for further cleanup activities including the repository for the mill tailings and conducting an investigation of possible off-site contamination.,

# OGDEN DEFENSE DEPOT

UTAH

EPA ID# UT9210020922



**REGION 8**

CONGRESSIONAL DIST. 01

Weber County

3 1/2 miles northwest of Ogden

**Alias:**
**Defense Depot Ogden Utah (DDOU)**

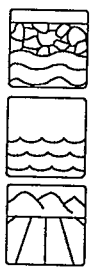
## *Site Description*

The Ogden Defense Depot (ODD) site is located northwest of Ogden. The 1,319-acre site is a major supply distribution center for the Defense Logistics Agency. Unknown quantities of hazardous wastes, including methyl bromide and mustard gas, were buried on site during the 1940s and 1950s when it was an Army installation. The ODD consists of 6 possible waste disposal areas. These areas include: the *french drain* in the herbicide/pesticide mixing area; burial site #3 used to dispose of toxic chemical warfare agents in the 1940s; burial site #4 which includes burning pits and a methyl bromide disposal pit; building 244 4-C (metal plating shop); burial site #1 (riot control agent disposal area); and burial site #5 (mosquito repellent disposal area). The ODD is located within the city limits. The population center is located approximately 3 miles from the site. The distance from the site to the nearest residence is about 500 feet. The site is located above the Weber Delta *Aquifer*, which consists of shallow and deep zones. There are no municipal wells in use within the vicinity of the ODD. Pineview Reservoir supplies the City of Ogden with drinking water and is located 10 miles east of the site. Streams and a creek are located near the site.

***Site Responsibility:*** This site is being addressed through Federal actions.

**NPL LISTING HISTORY**
Proposed Date: 10/15/84
Final Date: 07/01/87

## *Threats and Contaminants*



On-site groundwater sampling results have identified the heavy metals arsenic, cadmium, and chromium, and various *volatile organic compounds* (VOCs) including benzene, trichloroethene, vinyl chloride, and methylene chloride. Lead was identified in on-site *sediments*. Soil is contaminated with VOCs, zinc, cadmium, and the pesticide chlordane. Access to the site is restricted, thereby reducing the potential for contact with contaminants. Individuals accidentally ingesting or coming in direct contact with the contaminated groundwater, sediments, or soils may be at risk. Potential risks may also exist from eating *bioaccumulated* contaminants in fish, waterfowl, livestock, and commercial agricultural products.


*continued*

## *Cleanup Approach*

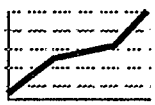
The site is being addressed in five stages: an immediate response and four *long-term remedial phases* focusing on cleanup of the three waste burial sites and the French Drain at the herbicide/pesticide mixing area.

### Response Action Status

**Immediate Response:** During soil excavations in 1988, a team from the Escort and Disposal Detachment at Dugway Proving Ground excavated Burial Site #3. During the soil excavation, vials were recovered and identified as items from both the chemical agent identification and training sets. Defused riot control grenades were also recovered and safely disposed of.

**Burial Site #1, #3, #4 and French Drain:** Investigations to determine the extent of contamination and to identify alternative technologies for cleanup in all of these areas were initiated in 1989. The EPA will evaluate the results of these investigations and then select the best remedy to address contamination at the site.

### Environmental Progress

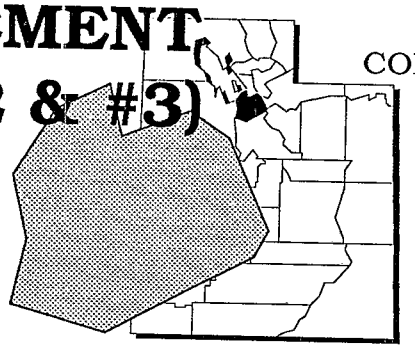


By excavating and removing contaminated soil, vials, and the defused grenades from Burial Site #3 at the Ogden Defense, the potential for exposure to hazardous materials has been significantly reduced. Investigations into the extent of contamination at the other identified areas and into appropriate cleanup alternatives are being conducted.

# PORTLAND CEMENT (KILN DUST #2 & #3)

UTAH

EPA ID# UTD980718670



**REGION 8**

CONGRESSIONAL DIST. 02

Salt Lake County

Salt Lake City

**Alias:**
**Lone Star Industries**

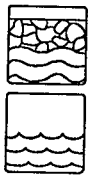
## *Site Description*

The Portland Cement (Kiln Dust #2 & #3) Company site consists of three disposal sites located on 71 acres that were used for the disposal of spent kiln dust and old kiln chromate bricks. The kiln dust and bricks are stored in piles on the surface, exposing them to transport by wind and water. The company disposed of kiln dust and old kiln chromate brick in the greater Salt Lake City area until 1983, including disposal since the mid-1960s at areas #2 and #3 and the west area. The dust, an alkaline by-product of cement manufacturing collected in baghouses from the kiln stacks, contains concentrations of lead and arsenic. The old kiln bricks contain elevated levels of heavy metals. Commercial and industrialized areas are located around the site. Four homes are located on the western side of the site. The Jordan River Surplus Canal and City Drain are surface water bodies adjacent to the site. A large residential area east of the site contains two elementary schools. Six thousand to 12,000 people live within a mile of the site.

***Site Responsibility:*** This site is being addressed through a combination of Federal, State, and *potentially responsible parties'* actions.

**NPL LISTING HISTORY**
Proposed Date: 10/15/84
Final Date: 06/10/86

## *Threats and Contaminants*



Groundwater and the nearby surface water are contaminated with heavy metals including arsenic, cadmium, chromium, lead, and molybdenum. Both also have high pH levels. Inhalation of the extremely fine dust particles may cause potential health threats to area residents and workers cleaning up the site. Potential health risks may exist for individuals touching or drinking the contaminated groundwater. Wildlife in the area may also be threatened by the contaminants. Nearby surface waters, the Surplus Canal and the City Drain, and the upper *aquifer* may be threatened by the site contamination.

## *Cleanup Approach*

The site is being addressed in two stages: immediate actions and a *long-term remedial phase* focusing on cleanup of the entire site.

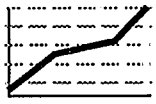
### Response Action Status

**Immediate Actions:** The site was fenced by the potentially responsible parties to prevent access to contaminants. A dust suppressant is applied on an as needed basis to prevent fugitive emissions.

**Entire Site:** An investigation to determine the nature and extent of contamination in the waste kiln dust and chromium bricks has been completed. A plan outlining the selected remedy is scheduled for 1990. A groundwater study also will be evaluated.

**Site Facts:** The State currently has a State Enforcement Agreement with the EPA to pursue a *Consent Decree* with the Portland Cement to clean up the site. The company and the State entered into an agreement in November 1985, in which the State will monitor the company's work.

## *Environmental Progress*

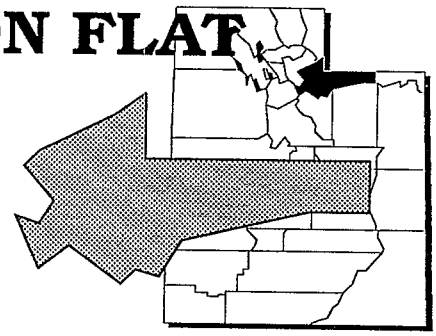


Actions taken to fence the site and apply a dust suppressant to the site surface help prevent possible contact with contamination both on and off site at the Portland Cement site. These actions also remove any immediate threat to the surrounding community or the environment. Further investigations leading to the selection of final remedies for the site have been completed, and the cleanup alternatives for the groundwater are currently being evaluated.

# RICHARDSON FLAT TAILINGS

UTAH

EPA ID# UTD980952840



**REGION 8**

CONGRESSIONAL DIST. 03

Summit County

Park City

## *Site Description*

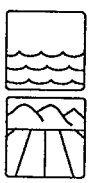
The Richardson Flat Tailings site covers approximately 60 acres in Park City and lies within a topographical depression. Mining operations near the site generated approximately 2 million tons of metal contaminated *mine tailings*. The site was most recently used to dispose of mine tailings from 1975 to 1981. Field surveys show that various metals, calcium, and sodium exist at elevated levels within the tailings. The EPA also found high levels of arsenic, copper, and lead three miles downstream from the site in Silver Creek, which is used by local residents to irrigate pastureland and fields producing hay. High winds during the spring and summer months create clouds of dust from the tailings. Approximately 4,500 people live in the town of Park City.

***Site Responsibility:*** This site is being addressed through a combination of Federal, State, and *potentially responsible parties'* actions.

**NPL LISTING HISTORY**

Proposed Date: 06/24/88

## *Threats and Contaminants*



Surface water offsite contains arsenic, copper, and lead. The tailings piles contain heavy metals including arsenic, cadmium, copper, lead, magnesium, mercury, silver, and zinc, as well as calcium and sodium. People may be at risk from direct contact with contaminants from the site or inhaling dust particles contaminated with site-related chemicals.

## *Cleanup Approach*

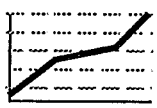
The site is being addressed in a single *long-term remedial phase* directed at cleanup of the entire site.

### Response Action Status

**Entire Site:** The State is studying the type of contaminants at the site, their exact location, and how far they have traveled from the tailings. This work was started in 1988 and is expected to be completed in 1991. Once completed, the state and EPA will evaluate the study finding and select a final cleanup strategy for all areas of site contamination.

**Site Facts:** The EPA entered into a *Cooperative Agreement* with the State of Utah to negotiate with the potentially responsible parties to conduct a study to determine the extent of site contamination. The potentially responsible parties have challenged EPA's inclusion of the site on the NPL, suggesting that the site was improperly scored. This challenge is based upon the contention that dust particles present the only source of exposure and that groundwater and surface water do not pose the same degree of risk. The EPA is currently considering the request to re-evaluate the potential threats posed by the site.

### Environmental Progress

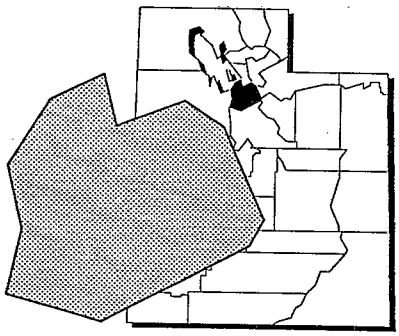


The EPA has determined the Richardson Flat Tailings site does not pose an imminent threat to the public or the environment while the exact type and extent of contamination is being investigated to select the most effective cleanup techniques. Additionally, the EPA will review the potential threats to area residents and the environment and make final determinations of the status of the site on the NPL.

# ROSE PARK SLUDGE PIT

UTAH

EPA ID# UTD980635452



**REGION 8**

CONGRESSIONAL DIST. 02

Salt Lake County

Salt Lake City

## *Site Description*

The Rose Park Sludge Pit site is approximately 2 acres in size and is located in a Salt Lake City park that includes a baseball field, tennis courts, soccer fields, and a golf course. The area was used by predecessors of Amoco Oil Co. for the disposal of petroleum wastes from in the early 1920s until 1957. Refinery *sludges* were placed into unlined storage pits. The City bought the property in 1957 and covered the site. During park development grading operations site contamination was discovered when a bulldozer broke through the cover and re-exposed the sludge. The area surrounding the site is primarily residential, with 150,000 people residing in Salt Lake City.

***Site Responsibility:*** This site is being addressed through Federal, municipal and potentially responsible parties' actions.

**NPL LISTING HISTORY**

Proposed Date: 10/23/81

Final Date: 09/08/83

## *Threats and Contaminants*

The groundwater is contaminated with *volatile organic compounds* (VOCs) as a result of refinery sludges being placed in unlined pits. Accidentally drinking or inhaling vapors from contaminated groundwater may be a potential health threat.

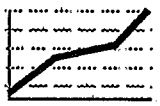
## *Cleanup Approach*

The site is being addressed in a single *long-term remedial phase* focusing on cleanup of the entire site.

### Response Action Status

**Entire Site:** Construction of a lined clay *cap* and *slurry wall* over and around the site was completed in 1983. Revegetation was completed in spring 1984. The site cleanup was completed as of 1985. However, groundwater monitoring is being continued by the Salt Lake City and County Health Departments for a period of 30 years. The annual monitoring meeting was held in 1989, at which time it was concluded that the present groundwater operation and maintenance criteria may not be adequate to determine the effectiveness of the remedy. In January 1990, Amoco submitted a plan to monitor groundwater flow around the containment area. This activity is expected to start in 1990. In early 1991, a new system of water quality monitoring wells will be installed to augment ongoing monitoring activities.

## *Environmental Progress*

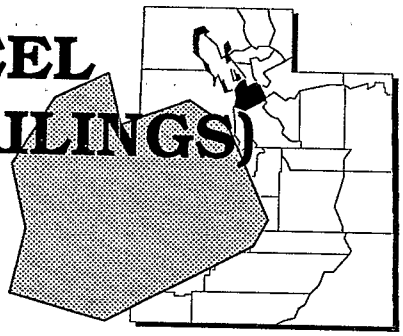


The cap and slurry wall have contained the sludges and prevented further contamination of groundwater resources. All planned cleanup activities for the Rose Park Sludge Pit size have been completed. The State will continue to monitor groundwater to insure that no further contamination is present and that the site will not pose threat to human health or the environment.

# SHARON STEEL (MIDVALE TAILINGS)

UTAH

EPA ID# UTD980951388



**REGION 8**

CONGRESSIONAL DIST. 02

Salt Lake County

Midvale

## Site Description

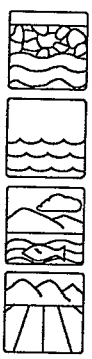
The Sharon Steel site is a former milling and smelting operation covering 268 acres in Midvale. Operations began in 1905, with the smelter closing in 1958 and the milling operations closing in 1971. Sulfide concentrates of lead, copper, zinc, and other metals were extracted from ore during the milling operations. Wastes from this process resulted in an estimated accumulation of 10 million tons of *mine tailings* piles on the site, which are 40 to 50 feet deep. The State first became involved at the mill in 1982 when it learned that nearby residents were gathering the windblown tailings for use in gardens and children's sandboxes. The State tested the "sand" from the gardens and sandboxes and found high levels of lead. The U.S. Geological Survey (USGS) found lead in groundwater underneath the site. Approximately 1,400 people live within 1/4 mile of the site; roughly 8,000 people live within 1 mile. The Jordan River supplies water to 160 acres of farm land through 10 irrigation *intakes* within 3 miles of the site. Two smaller drainage ditches, the North Jordan Canal and Galena Canal, are nearby. A 22-acre *wetland* and several small ponds also are on the mill site. The deep *aquifer* underlying the site is a source of drinking water for the metropolitan Salt Lake City area. Municipal wells that draw from this aquifer are within 3 miles of the site.

***Site Responsibility:*** This site is being addressed through Federal and *potentially responsible parties'* actions.

**NPL LISTING HISTORY**

Proposed Date: 10/15/84

## Threats and Contaminants



The shallow groundwater is contaminated with heavy metals such as arsenic, iron, manganese, and zinc from the mill site. *Sediments* from the Jordan River, which is classified by the State for cold-water game fishing and recreation other than swimming, are contaminated with heavy metals. The wetlands on the site contain heavy metals and zinc tailings. Soil is contaminated with heavy metals including lead, arsenic, cadmium, and zinc. The greatest potential health threat to people is exposure to lead and arsenic through direct contact with or inhalation of contaminated soils, including dust; children playing in nearby neighborhood soils or sandboxes are especially at risk.



*continued*

## *Cleanup Approach*

The site is being addressed in three stages: immediate actions and two *long-term remedial phases* focusing on cleanup of the groundwater and soils at the mill site and the vicinity property.

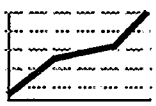
### Response Action Status

**Immediate Actions:** In 1989, the party potentially responsible for the site contamination installed a fence around the site.

**Mill Site and Grounds:** The EPA is currently conducting studies to determine the nature and extent of groundwater and soil contamination on the mill site. The studies will define the contaminants of concern and will recommend alternatives for final groundwater and soil contamination cleanup. The studies are expected to be completed in 1990.

**Vicinity Property:** The EPA is conducting an additional investigation that will define the contaminants of concern associated with properties in the vicintity of the site and will recommend the most effective alternatives for final cleanup of the area. This study also is planned to be completed in 1990.

## *Environmental Progress*

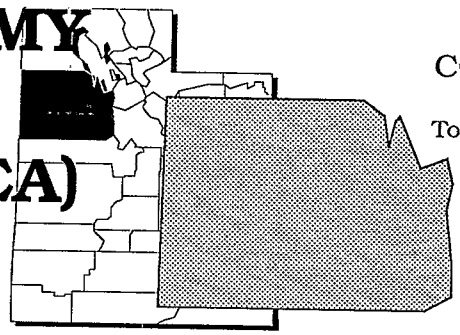


By constructing a fence to restrict access to the mill site and grounds, the potentially responsible parties and the EPA have reduced the possibility of direct exposure to the contaminants on the Sharon Steel site. Investigations leading to permanent solutions for cleaning up the soil and groundwater at the site and the surrounding affected areas are being conducted.

# TOOELE ARMY DEPOT (NORTH AREA)

UTAH

EPA ID# UT3213820894



**REGION 8**

CONGRESSIONAL DIST. 01

Tooele County

Tooele Valley, 2 miles south of Tooele

## *Site Description*

The 24,732-acre Tooele Army Depot site, established in 1942, is one of the major ammunition storage and equipment maintenance installations in the United States. Disposal practices at the site have included discharging wastes to unlined evaporation or *percolation* ponds, neutralization and thermal destruction of chemical agents and munitions, detonation and burning, and burial at the demilitarization range. The City of Tooele has a population of 15,000. The deep regional *aquifer*, used as a drinking water source by area communities, is contaminated beneath the area of the Depot and several hundred yards beyond the property boundary.

***Site Responsibility:*** This site is being addressed through Federal actions.

**NPL LISTING HISTORY**

Proposed Date: 10/15/84

## *Threats and Contaminants*

On-site groundwater is contaminated with heavy metals and *volatile organic compounds* (VOCs) including *trichloroethylene* (TCE). On-site contamination of the Industrial Waste Lagoon and wastewater ditches include some low-level organic contamination and relatively high levels of the heavy metals cadmium, chromium, lead, and selenium. A release of TCE, TNT-related compounds, and mercury contamination was identified adjacent to Building T-533 on the site. The potential health threat to people includes drinking contaminated groundwater, and direct contact with the groundwater and *sediments*. Because the site is a secure military installation, public access is restricted.

## *Cleanup Approach*

The site is being addressed in two *long-term remedial phases* focusing on groundwater cleanup and cleanup of the entire site.

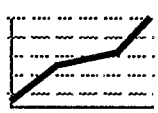
### Response Action Status

**Groundwater:** The Army has completed a Groundwater Quality Assessment and Corrective Action Plan for groundwater cleanup at the Industrial Waste Lagoon. Pilot testing of potential cleanup technologies is scheduled to begin in late 1990.

**Entire Site:** The Army has begun investigations to identify releases of hazardous chemicals and cleanup alternatives at numerous other identified areas of contamination on the site. Investigations will determine the nature and extent of the contamination and develop alternatives for final cleanup at these waste disposal and release areas.

**Site Facts:** The EPA and the State have agreed that a Federal Facility Agreement should be negotiated only after completion of the agreement for Defense Depot Ogden and for Hill Air Force Base, two other military installations listed on the National Priorities List. Regulatory questions remain due to the Federal versus State authority at the site. The Army is under a *Consent Decree* for cleanup of the Industrial Waste Lagoon. Toole Army Depot is participating in the *Installation Restoration Program* (IRP), a specifically funded program developed in 1978 by the Department of Defense (DOD) to identify, control and investigate hazardous wastes on military or other DOD installations.

## *Environmental Progress*

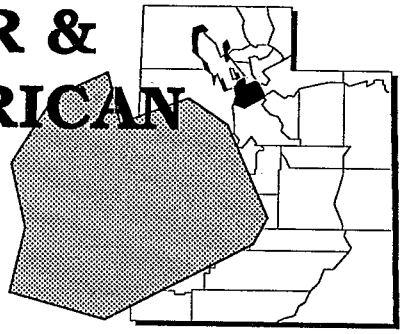


The Army, in conjunction with the EPA and the State, has selected the remedy for the groundwater contamination at both the Industrial Waste Lagoon and the areas underneath the Depot and the boundary area. The Army is conducting investigations into additional identified areas of contamination on the site and potential releases to the surrounding area.

# UTAH POWER & LIGHT/AMERICAN BARREL

UTAH

EPA ID# UTD980667240



**REGION 8**

CONGRESSIONAL DIST. 02

Salt Lake County

Salt Lake City

## *Site Description*

The 2 1/2-acre Utah Power & Light/American Barrel site was used as a barrel storage, recycling, and reconditioning facility. Empty barrels at one time contained various *volatile organic compounds* (VOCs), *degreasers*, and solvents. Prior to the barrel operation, the site was used by Utah Power and Light as a *creosote* pole treating facility. Approximately 39,700 people live within 2 miles of the site. Four schools are located within 1 mile. The nearest residence is 225 feet away. One municipal well and one private well are located within 1 mile of the site. A drainage ditch runs along the eastern fence of the site. Water conveyed by the ditch is believed to *percolate* into the ground within several yards of the site.

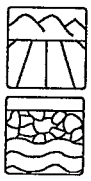
***Site Responsibility:*** This site is being addressed through Federal and *potentially responsible parties'* actions.

**NPL LISTING HISTORY**

Proposed Date: 05/05/89

Final Date: 10/04/89

## *Threats and Contaminants*



Soil contains *polycyclic aromatic hydrocarbons* (PAHs) from wood treating operations, phthalates, VOCs, and heavy metals including chromium, copper, lead, and zinc. Groundwater contains VOCs including benzene, styrene, toluene, and xylene. Potential health risks may exist for individuals who accidentally ingest or come into direct contact with contaminated soil and groundwater.

## *Cleanup Approach*

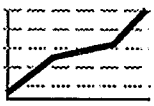
This site is being addressed in two stages: an immediate action and a *long-term remedial phase* focusing on soil and groundwater cleanup.

### Response Action Status

**Immediate Action:** In 1988, under EPA monitoring, the parties potentially responsible for the contamination removed 50,000 barrels containing VOCs, solvents, and herbicide residues to a federally approved facility.

**Soil and Groundwater:** The parties potentially responsible are scheduled to initiate an investigation in 1990 to determine the type and extent of groundwater and soil contamination and to identify possible cleanup alternatives. Once this investigation phase is completed, EPA will review the study findings and select the final cleanup remedies for contaminated soils and groundwater resources.

## *Environmental Progress*

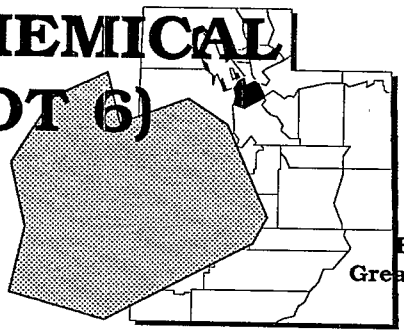


The removal of waste barrels containing VOC's, solvents, and herbicide residues has greatly reduced the potential for exposure to hazardous materials at the Utah Power & Light/American Barrel site while further site investigations and cleanup activities are planned.

# WASATCH CHEMICAL COMPANY (LOT 6)

UTAH

EPA ID# UTD000716399



**REGION 8**

CONGRESSIONAL DIST. 02

Salt Lake County

Salt Lake City

**Aliases:**

**Huntsman-Christensen Corporation**

**Great Western Chemical Company-Wasatch Industrial Park**

## *Site Description*

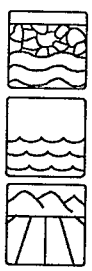
The 15-acre Wasatch Chemical Company (Lot 6) site was used for the formulation of various *volatile organic compounds* (VOCs) products in the early 1960s. Approximately 2,300 cubic yards of waste were disposed of in a concrete pond and drums on the site. During an inspection in 1985, the State found 48 drums holding ignitable and reactive liquids and 13 pressurized gas cylinders in deteriorated condition. Additional wastes from the operation were discharged into a street ditch, which eventually drains into the Great Salt Lake. Approximately 85,000 people live within a 3-mile radius of the site. The closest residence is 1/4 mile away. Although previously accessible to trespassers, the site is now secured. There are private wells within a 1/4-mile radius of the site used for drinking, bathing, cooking, and other household purposes.

***Site Responsibility:*** This site is being addressed through Federal and *potentially responsible parties'* actions.

**NPL LISTING HISTORY**

Proposed Date: 01/22/87

## *Threats and Contaminants*



Groundwater underlying the site contains VOCs and herbicides. *Sediments* contain herbicides and pesticides. Soils contain VOCs, pesticides, herbicides, and dioxin. Low levels of pesticides were detected in surface water; however, these may have resulted from an off-site source. Potential health risks may exists for individuals who accidentally ingest or touch contaminated surface water, groundwater, sediments, or soils.



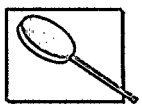
*continued*

## *Cleanup Approach*

This site is being addressed in two stages: immediate actions and a *long-term remedial phase* focusing on cleanup of the entire site.

### Response Action Status

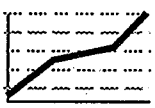
**Immediate Actions:** The EPA removed abandoned gas cylinders from the site in 1986 and detonated them at a State-owned site. The parties potentially responsible for the contamination constructed a dioxin storage facility. Abandoned drums were repackaged and stored in the facility along with certain surface soils removed from Lot 6.



**Entire Site:** The parties potentially responsible, under State monitoring, initiated an investigation in 1988 to determine the type and extent of soil, surface water, and groundwater contamination and to identify alternative technologies for the cleanup. The investigations are scheduled to be completed in 1990.

**Site Facts:** In 1986, the State of Utah and the EPA negotiated a *Consent Order* for removal of the drums. A *Consent Decree* was signed in 1988 with one of the parties potentially responsible to complete a site investigation.

## *Environmental Progress*



The removal of gas cylinders and storage of abandoned drums has greatly reduced the potential for exposure to contaminated materials at the Wasatch Chemical Company site. The EPA has determined three drums of dioxin contaminated wastes have deteriorated. The EPA plans to *overpack* the drums to further reduce the threat to public health and the environment while investigations are being completed and cleanup activities are being planned.

# GLOSSARY:

## TERMS USED IN THE FACT SHEETS

*This glossary defines the italicized terms used in the site fact sheets for the State of Utah. The terms and abbreviations contained in this glossary are often defined in the context of hazardous waste management as described in the site fact sheets, and apply specifically to work performed under the Superfund program. Therefore, these terms may have other meanings when used in a different context.*

**Administrative Order On Consent:** A legal and enforceable agreement between EPA and the parties potentially responsible for site contamination. Under the terms of the Order, the potentially responsible parties agree to perform or pay for site studies or cleanups. It also describes the oversight rules, responsibilities and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. This Order is signed by PRPs and the government; it does not require approval by a judge.

**Aquifer:** An underground layer of rock, sand, or gravel capable of storing water within cracks and pore spaces, or between grains. When water contained within an aquifer is of sufficient quantity and quality, it can be tapped and used for drinking or other purposes. The water contained in the aquifer is called groundwater.

**Backfill:** To refill an excavated area with removed earth; or the material itself that is used to refill an excavated area.

**Berm:** A ledge, wall, or a mound of earth used to prevent the migration of contaminants.

**Bioaccumulate:** The process by which some contaminants or toxic chemicals gradually collect and increase in concentration in living tissue, such as in plants, fish, or people as they breathe contaminated air, drink contaminated water, or eat contaminated food.

**Cap:** A layer of material, such as clay or a synthetic material, used to prevent rainwater from penetrating and spreading contaminated materials. The surface of the cap is generally mounded or sloped so water will drain off.

**Consent Decree:** A legal document, approved and issued by a judge, formalizing an agreement between EPA and the parties potentially responsible for site contamination. The decree describes cleanup actions that the potentially responsible parties are re-

quired to perform and/or the costs incurred by the government that the parties will reimburse, as well as the roles, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. If a settlement between EPA and a potentially responsible party includes cleanup actions, it must be in the form of a consent decree. A consent decree is subject to a public comment period.

**Consent Order:** [see Administrative Order on Consent].

**Cooperative Agreement:** A contract between EPA and the states wherein a State agrees to manage or monitor certain site cleanup responsibilities and other activities on a cost-sharing basis.

**Creosotes:** Chemicals used in wood preserving operations and produced by distillation of tar, including polycyclic aromatic hydrocarbons and polynuclear aromatic hydrocarbons [see PAHs and PNAs]. Contaminating sediments, soils, and surface water, creosotes may cause skin ulcerations and cancer with prolonged exposure.

**Degrease:** To remove grease from wastes, soils, or chemicals, usually using solvents.

**Downgradient:** A downward hydrologic slope that causes groundwater to move toward lower elevations. Therefore, wells *downgradient* of a contaminated groundwater source are prone to receiving pollutants.

**French Drain System:** A crushed rock drain system constructed of perforated pipes, which is used to drain and disperse wastewater.

**Impoundment:** A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

**Installation Restoration Program:** The specially funded program established in 1978 under which the Department of Defense has been identifying and evaluating its hazardous waste sites and controlling the migration of hazardous contaminants from those sites.

**Intake:** The source where a water supply is drawn from, such as from a river or waterbed.

**Interagency Agreement:** A written agreement between EPA and a Federal agency that has the lead for site cleanup activities (e.g. the Department of Defense), that sets forth the roles and responsibilities of the agencies for performing and overseeing the activities. States are often parties to interagency agreements.

**Landfill:** A disposal facility where waste is placed in or on land.

**Long-term Remedial Phase:** Distinct, often incremental, steps that are taken to solve site pollution problems. Depending on the complexity, site cleanup activities can be separated into a number of these phases.

**Migration:** The movement of oil, gas, contaminants, water, or other liquids through porous and permeable rock.

**Mine (or Mill) Tailings:** A fine, sandy residue left from ore milling operations. Tailings often contain high concentrations of lead and arsenic or other heavy metals.

**Overpacking:** Process used for isolating large volumes of waste by jacketing or encapsulating waste to prevent further spread or leakage of contaminating materials. Leaking drums may be contained within oversized barrels as an interim measure prior to removal and final disposal.

**Percolation:** The downward flow or filtering of water or other liquids through subsurface rock or soil layers, usually continuing downward to groundwater.

**Polycyclic Aromatic Hydrocarbons or Polyaromatic Hydrocarbons (PAHs):** PAHs, such as pyrene, are a group of highly reactive organic compounds found in motor oil. They are a common component of creosotes and can cause cancer.

**Polynuclear Aromatic Hydrocarbons (PNAs):** PNAs, such as naphthalene, and biphenyls, are a group of highly reactive organic compounds that are a common component of creosotes, which can be carcinogenic.

**Potentially Responsible Parties (PRPs):** Parties, including owners, who may have contributed to the contamination at a Superfund site and may be liable for costs of response actions. Parties are considered PRPs until they admit liability or a court makes a determination of liability. This means that PRPs may sign a consent decree or administrative order on consent [see Administrative Order on Consent] to participate in site cleanup activity without admitting liability.

**Radionuclides:** Elements, including radium, and uranium-235 and -238, which break down and produce radioactive substances due to their unstable atomic structure. Some are man-made and others are naturally occurring in the environment. Radon, which is the gaseous form of radium, decays to form alpha particle radiation, which can be easily blocked by skin. However, it can be inhaled, which allows alpha particles to affect unprotected tissues directly and thus cause cancer. Uranium, when split during fission in a nuclear reactor, forms more radionuclides which, when ingested, can also cause cancer. Radiation also occurs naturally through the breakdown of granite stones.

**Runoff:** The discharge of water over land into surface water. It can carry pollutants from the air and land into receiving waters.

**Sediment:** The layer of soil, sand and minerals at the bottom of surface waters, such as streams, lakes, and rivers that absorb contaminants.

**Sludge:** Semi-solid residues from industrial or water treatment processes that may be contaminated with hazardous materials.

**Slurry Wall:** Barriers used to contain the flow of contaminated groundwater or subsurface liquids. Slurry walls are constructed by digging a trench around a contaminated area and filling the trench with an impermeable material that prevents water from passing through it. The groundwater or contaminated liquids trapped within the area surrounded by the slurry wall can be extracted and treated.

**Stabilization:** The process of changing an active substance into inert, harmless material, or physical activities at a site that act to limit the further spread of contamination without actual reduction of toxicity.

**Trichloroethylene (TCE):** A stable, colorless liquid with a low boiling point. TCE has many industrial applications, including use as a solvent and as a metal degreasing agent. TCE may be toxic to people when inhaled, ingested, or through skin contact and can damage vital organs, especially the liver [see also Volatile Organic Compounds].

**Upgradient:** An upward slope; demarks areas that are higher than contaminated areas and, therefore, are not prone to contamination by the movement of polluted groundwater.

**Volatile Organic Compounds (VOCs):** VOCs are made as secondary petrochemicals. They include light alcohols, acetone, trichloroethylene, perchloroethylene, dichloroethylene, benzene, vinyl chloride, toluene, and methylene chloride. These potentially toxic chemicals are used as solvents, degreasers, paints, thinners, and fuels. Because of their volatile nature, they readily evaporate into the air, increasing the potential exposure to humans. Due to their low water solubility, environmental persistence, and widespread industrial use, they are commonly found in soil and groundwater.

**Wetland:** An area that is regularly saturated by surface or groundwater and, under normal circumstances, capable of supporting vegetation typically adapted for life in saturated soil conditions. Wetlands are critical to sustaining many species of fish and wildlife. Wetlands generally include swamps, marshes, and bogs. Wetlands may be either coastal or inland. Coastal wetlands have salt or brackish (a mixture of salt and fresh) water, and most have tides, while inland wetlands are non-tidal and freshwater. Coastal wetlands are an integral component of estuaries.